MEASURING URBAN FORM AND URBAN LIFE
FOUR CASE STUDIES IN BAGHDAD, IRAQ

VOLUME 1

HAIDER JASIM ESSA AL-SAAIDY

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By
Haider Jasim Essa Al-Saaidy

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Declaration

Haider J. E. Al-Saaidy

Abstract

Traditional cities have often demonstrated a capacity to adapt over time to the most remarkable economic, political, cultural and broadly environmental changes. From an Urban Morphology perspective, adaptation tends to occur through piecemeal "spontaneous" physical changes, which directly relate to the individual and collective behaviours of inhabitants and city-users in general. Since adaptivity is increasingly regarded as a major asset of a city's ability to support a thriving urban life throughout time, this research explores how the form of historical cities and their enduring social and economic success are linked at the scale where urban life occurs, namely that of the street and the neighbourhood.

This thesis observes the relationship between urban form and urban life in the city of Baghdad, Iraq, by investigating four central neighbourhoods, which represent different historical periods in the development of the city. Here, street life and the form of the built environment are quantified through an in-depth field study. A detailed observation on the ground is undertaken at four scales, namely plot, block, street and neighbourhood, through indicators identified in the relevant literature. These are tested and, in some cases, amended to better fit the research constraints and local conditions. Here ethnographic and analytical methods of data gathering are undertaken, including observations and interactive street-by-street surveys, mapping, and historical studies.

The research findings cover the three fundamental aspects of firstly, the urban form and secondly, urban life. The former considers two dimensions, namely the street centrality (MCA: betweenness/closeness) and constitutedness (permeability and intervisibility). The latter represents human activity and includes five patterns: movement, activities, gender, age and group pattern. A comparison of the four samples regarding the urban form elements revealed significant indicators that distinguish between the traditional pattern and the modern model of a neighbourhood.

In relating street life to both constitutedness and permeability, this helped to determine the interrelationship between the street edge characteristics and people's activities. Street life and the centrality (MCA) yielded a positive association between the movement volume and the betweenness centrality. Finally, both constitutedness and permeability exhibited an essential relationship to the Multiple Centrality Assessment.

Dedication

To the memory of my father, Jasim E. Al-Saaidy,
my mother, my brothers and sisters,
To the best ever gift from God in my life, my wife and daughters

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This research represents an iceberg where the study is on the top, visible and above water; however, the considerable contributions to the achievement of this knowledge significantly underpin the learning and are beneath the surface. Thus, in counting the people who effectively shared my research journey this seems a bigger number than I actually expected. My family is my miniature world, and each member is still encouraging me to reap what I sowed before in this long PhD process. To my wife and my daughter, thank you for your patience in supporting me order to accomplish this research.

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This PhD research forms part of a longer progression in architectural study that started with my B.Sc. and then moved to the M.Sc. In this regard, I would like to acknowledge my professors over the five years of my B.Sc. with special thanks to Dr. Hazim R. Al-Nijaidi. For my

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SECTION ONE

FOUNDATIONS OF THE RESEARCH

Chapter One

Introduction and Historical Background

1.1 Introduction

The historical parts of most Middle Eastern old cities usually occupy polar places in relation to the rest of their city zones. These historical centres can give a city its own identity, and embody exceptional urban assets, if carefully maintained and managed. This chapter traces the historical background of Baghdad, and highlights its development plan from two perspectives: the comprehensive and sectional. These have played a significant role in formulating the urban morphology of the city. Also, it refers to the essence of Baghdad in terms of the street characteristics, the conjunction of the old and modern fabric and the dialectic relation between them. This will contribute to addressing the research gap as the first step to formulate the research questions. Thus, addressing the research gap means determining the leading indicators of the problem, both in traditional and modern design, which entails the identification of similar studies that attempt to connect the urban form and human activities.

Since the beginning of the last century until today, Baghdad in Iraq has remained one of the more unstable cities in the world. Political unrest and wars have played a crucial role in its development. Nevertheless, as the capital of the Islamic Empire for more than 500 years, Baghdad has a vibrant historical fabric and some of the most critical historical sites. However, despite the range of academic and consultancy studies conducted throughout the last 100 years, the city has not received the care that it requires. Social and political unrest, and wars have prevented successive regimes from implementing preservation projects, and because of this, Baghdad has lost significant parts of its precious and valuable historical fabric.

Although more focus has been paid to the oldest part of Baghdad, this does not underestimate the importance of the modern era and the subsequent growth of the city. Understanding the asset of a city and the main significant stages across its long history would be useful in capturing the seed of transformation in the historic urban morphology, and how that has more recently affected the urban life. The methods to recognise and examine different aspects of the city are varied, although these can broadly be considered under two key foci. The first method of study concerns advanced programmes, for which computing systems have been developed and tested to examine and analyse the spatial configuration of the urban environment. The second method studies the interrelationship between the people and their surrounding spaces; which particularly relates to the city's street life and social interactions.

1.2 A Historical Perspective of Baghdad City

Iraq, in general, is one of the wealthiest countries due to its oil revenue; unfortunately, it is also considered a developing country and due to issues on all levels, including its architecture, urban design, and planning. This consideration is also based on the magnitude of problems that Iraqi people continue to live with. Notwithstanding, Baghdad city is a central destination, both as an administrative capital and as place that represents a new opportunity for people from other regions of Iraq to secure jobs and experience better livelihoods than those afforded elsewhere in the country (Fernea 1969). Baghdad is the capital of the Republic of Iraq and considered a significant metropolitan city with a population of approximately 6.77 million people. The city is divided into two regions by the Tigris River, namely Rusafa and Karkh, in an arid zone at 33^o 20 N latitude and 44^o 23 E longitude (Al-Akkam 2012); (Nooraddin 2004).

Since its foundation in 762 A.D. by Caliph al-Mansur, Baghdad became an attractive location for surrounding foreign powers. Therefore, its history not only witnessed frequent war and domination, but also saw the development of a unique variety of various cultures. Based on archaeological evidence, Baghdad's site was occupied by several peoples before the Arab conquest of Mesopotamia in 637 A.D. Furthermore, excavations by the famous Michaux Stone, which was founded by a French physician in 1870, discovered that a Babylonian town called 'Bak-da-du' occupied the place of Baghdad as far back as the Twelfth Century B.C. Moreover, due to its strategic location along the banks of the Tigris, it represented an attractive location as the new capital for Abbasid Caliphate (Fathi 1979a).

1.2.1 Baghdad During the Abbasid Empire

In 800 A.D., only four decades after its establishment, Baghdad became a metropolis of more than 300,000 inhabitants. As the capital of the Abbasid Caliphate, that stretched from present-day Algeria to Pakistan, Baghdad was the centre of economic and political power in the Islamic world, unrivalled in its artistic, scientific, and cultural achievements (Bosker et al. 2013). Le Strange (1900) refers to Baghdad city by describing some of the monuments and historical features that belong to the Abbasid period. The city was characterised by several features; the old wall of the Eastern city with its four gates, the Mustansiriya College as the first school at that time, as well as mosques and holy shrines.

Le Strange (1900) stated that the topography of Baghdad changed due to the shift of the river-bed, and the watercourse and canals that constituted its essential features. The primary task of

Le Strange was to achieve and prepare a map of old Baghdad and to reconstruct its fundamental elements by tracing the topography of the city in detail. Although it is difficult to access Le Strange's map directly from the primary source, it is still possible to see that, Baghdad's character has changed dramatically, particularly within the old fabric of the city (Le Strange 1900). The historical view of Baghdad reflected its general character as the seat of the Abbasid Caliphate. It was a significant kernel in the emergence of the current city; moreover, cultural, religious and economic influences provided the essential defining characteristics of the city since the construction of the Round City in 1445/762 (Gilli-elewy 2011).

The Tigris River, on which Baghdad stands, experienced multi-faceted a transformation in its physical and cultural environment, which resulted from natural and political factors and comprehensive development plans. In the old city, Baghdad's numerous urban features embody different historical periods. The transformation from the Round City to an organic pattern reflected its local physical and socioeconomic characteristics. Currently, the old urban fabric, particularly within Rusafa and Karkh which are located in the city centre of Baghdad, face severe disintegration. This has created segregation as a result of the implementation of unrestricted planning policies, and has led to the dramatic loss of Baghdad's heritage, historical architecture and the identity of its old urban fabric (Al-Hasani 2012). According to Fathi (1979a), the Abbasid period (1152-1258) is immortalised by significant historical monuments and prominent features, such as: Zumarrad Khatun's Tomb (1202) and Karkhi Mosque (1215) (Figure 1.1); Sharaibiya Madrasa (1226) and Qumriya Mosque (1228) (Figure 1.2); and Mustansiriya (1234), and Sahrawardi's Mosque (1234) (Figure 1.3).

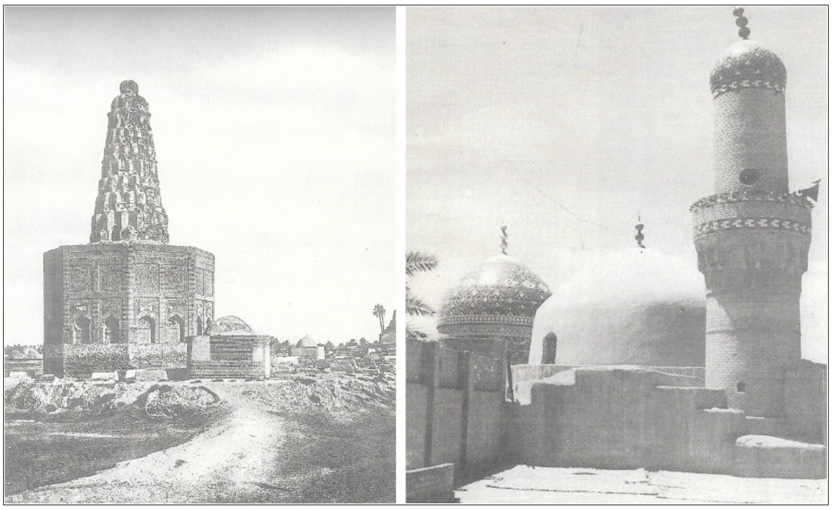


Figure 1.1. Zumarrad Khatun's Tomb 1202 AD (left) and Karkhi Mosque 1215AD (right). Source: Makiya (2005, p 312-315). All right reserved for Al Warrak Publishing Ltd, London, UK.

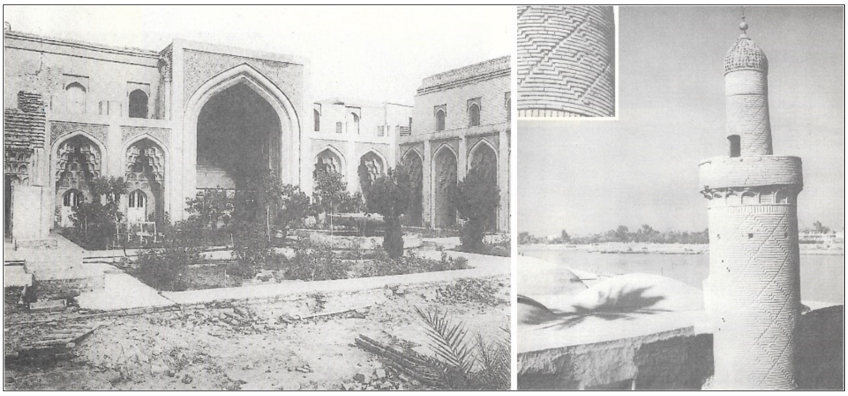


Figure 1.2. Sharaibiya Madrasa 1226 AD (left), Qumriya Mosque 1228 AD (right). Source: Makiya (2005, p 305-311). All rights reserved for Al Warrak Publishing Ltd, London, UK.

Figure 1.3. Mustansiriya 1234 AD (left), Sahrawardi's Mosque 1234 AD (right). Source: Fathi (1979a, p 42), Alousi (1982, p 86, 101, 370-371); Makiya (2005, p 305-311). All rights reserved for Al Warrak Publishing Ltd, London, UK.

These monuments and features have played a crucial role in orienting the city network and its traditional neighbourhoods. Furthermore, they have provided indispensable public places for inhabitants throughout history. When tracing an old map, it is possible to recognise the city routes which started and ended at one of these urban points, most notably mosques. Besides its historical buildings, the organic pattern of the street network is another character of the old sector of Baghdad city. The importance of Baghdad's inheritance can be studied synchronically and diachronically, including the characteristics of the network and its street edges. Between 762-775 A.D., Al-Mansur built the Round City of Baghdad (also known as Madinat al-Salam, City of Peace) on the west side of the Tigris between the locations known today as Kadhimiya and Karkh. Gradually, the Abbasid Empire was weakened by internal conflict, which allowed for other surrounding countries to invade Baghdad city during various periods of its history, such as the Persian Buwaihids in 946-1055 A.D., and the Turkish Seljuqs 1055-1152 A.D. (Figure 1.4).

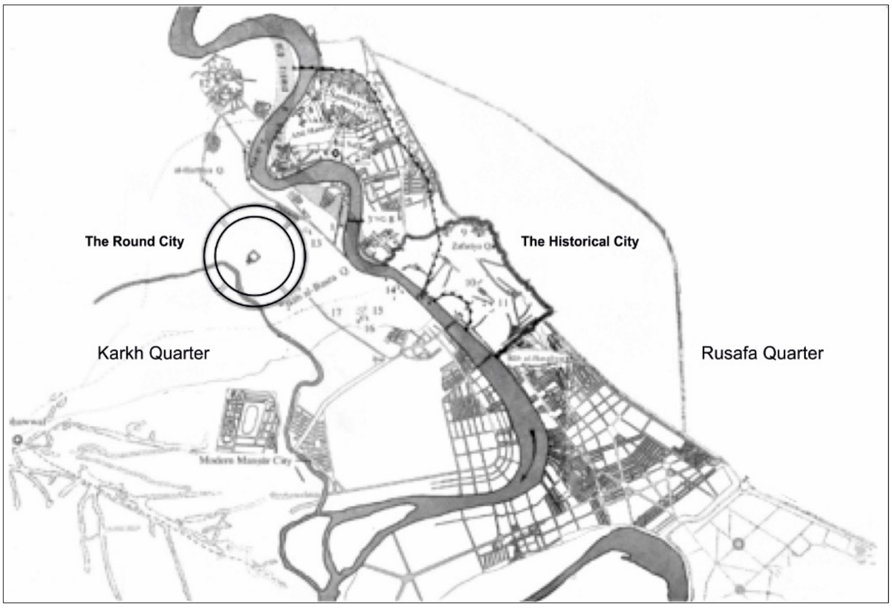
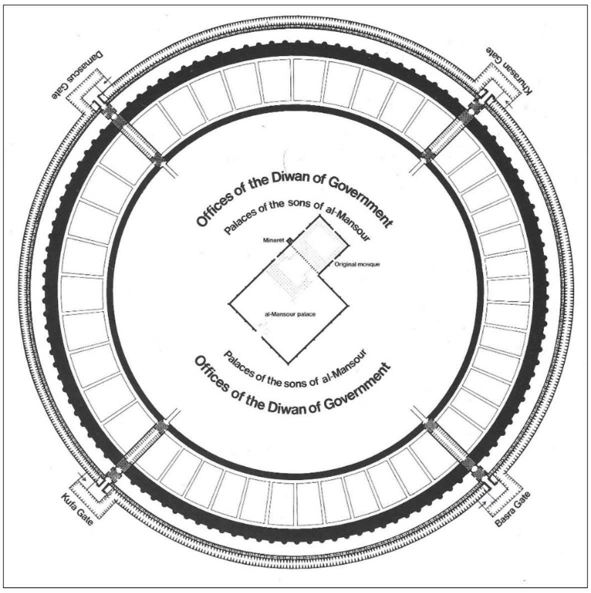


Figure 1.4. Baghdad’s morphology at the end of the Abbasid Empire. Source: Based on Al-Hasani (2012, p 81).

The Round City emerged as a kernel of Baghdad city; moreover, it continued for three centuries. The city, however, was characterised by a significant pattern, which entailed symmetric streets surrounded by geometrical residential blocks beside three walls with four gates. The wall was used to separate the public and private spaces by the third inner wall, and to divide the city into private houses and open courtyards, including the governmental buildings, such as the palace and the mosque. Furthermore, essential buildings inside the Round City comprised the Caliphate's Palace and the mosque, while Al-Hasani (2012) states that other sectors were allocated for inhabitants but did not offer, gardens, recreation space, or statues (Figure 1.5).



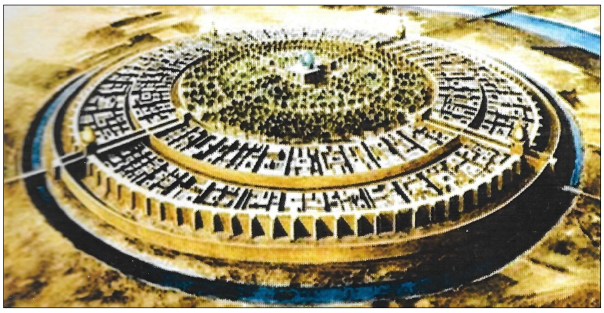


Figure 1.5. The Round City. Plan of al-Mansour’s Baghdad as originally built. Surrounded by an outer trench and two circular walls and described by historians as the most elaborate fortress city of medieval times.(top) Source: Makiya (1990, p 84). Fictive image of The Round City (bottom). Source: Al Waily (2017, p 14).

Unfortunately, the Round City disappeared without a clear reason, and nothing remains except for the carved marble of the Khasaki Mosque, which some historians believe belonged to the Mosque of Mansur (Fathi 1979a). At this stage, the city started to expand beyond its wall as a result of limited space, and more public facilities were required due to its increasing population (Al-Hasani 2012). Allawi (1988) states that there are two systems that shape the Arabic Islamic city. The first is the square system; this has a square as its central unit, followed by four surrounding square units. It is generally believed that the five square arrangement denoted the quarters of religious, military, and urban entities. The second system is hexagonal and was known as a system of *Asba* (sevenths) (Allawi 1988). Baghdad's Round City Plan was described as a turning point in the development of the Islamic city in terms of its urban form and society. This saw a shift from dependent-military settlements and expanded tribute collections to investments in private plantations, urban developments, and industrial production. Moreover, the design of the Round City of Baghdad can be discernible as an astrological schema and thus cannot be separated from astrology (Allawi 1988).

The prototype for the design of Baghdad emerged from ancient imperial traditions, which embodied new concepts through astrological schemes. Allawi (1988) states that Baghdad was created by adopting a stereographic projection of the equator and the Tropics of Cancer and Capricorn where the vertical axis refers to the meridian, and the horizontal to the equinoctial line (Figure 1.5). It is important to note that the decline of the Abbasid Empire in Baghdad did not necessarily simultaneously affect urban life; instead, "this paradox can probably be explained by the nature of the social structure that arose within the framework of Islam" (Allawi 1988, p 70). A fundamental transformation occurred in the relationship among the city's components; these included the "Islamic art, architecture, and urban forms first developed under conditions of rapid change and military expansion. They became an expression of the newly settled conditions of Islamic social life" (Allawi 1988, p 71). Following the demise of the Round City, and during the new Abbasid Empire, Baghdad city moved to the east bank of the Tigris River (shown as the left image in Figure 1.6). The assets of Baghdad today belong to this historical period of the city with its significant monuments and organic street pattern. Otherwise, the urban areas that settled outside the historical zone were designed according to a modern scheme and a modernist ideology.

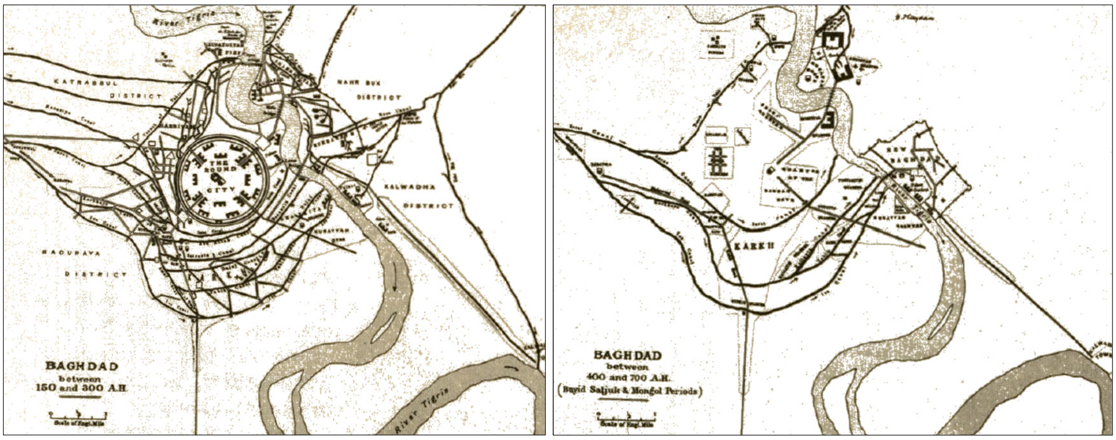


Figure 1.6. A general plan of Baghdad during the earlier period between the years 767 – 917 AD (left), during the later period between the years 1017-1317 AD (right). Source: Fathi (1979a, p 4). The Round City disappeared, and little remains today, except for the carved marbles of the Khasaki Mosque. At the end of the Abbasid Empire, Baghdad city had moved entirely to the east bank of the Tigris river. A new era started after this extraordinary move. Later, this site became the central location for the growth and expansion of Baghdad city. Some remarkable features and historical elements remain resistant to change but will not last forever. Moreover, some no longer exist for different reasons. The current study addresses this phenomenon.

1.2.2 Baghdad and Post-the Abbasid Empire | City Pattern

After the Abbasid period, Baghdad was captured by many foreign countries, which left their mark in the urban fabric of the city through the contribution of several prominent buildings that still exist today. Most of those features responded to the existing traditional fabric at that time. Five major occupations manifested their own influences on the historical area of Baghdad city, namely: Mongol Hulagu, Jalayirid, Persian Safavids, Ottoman, and the British invasion.

1.2.2.1 Mongol Hulagu Period 1258-1338

Fathi (1979a) confirms that, during the Mongol invasion from 1258 to 1338, a significant number of features emerged within Baghdad city, such as the minaret of the Caliph’s Mosque (1289) and the Aquli Mosque (1328) (Figures 1.7 and 1.8). At the end of the Abbasid Empire and at the start of a new era, Baghdad city had moved entirely to the east bank of the Tigris River to the present-day al-Rusafa. This represented the second major growth period after the Round City. The city was characterised by four fundamental elements: the major wall, minor wall, organic neighbourhoods, and the riverbank to the west of the city (Figure 1.9). The city and its neighbourhoods did not exceed the external defensive wall, excluding the main routes that linked the city to the outer settlements. The organic and zigzagged pattern of the street network was the dominant character during this period and particularly in this part of the city. Since the Abbasid Caliphate and throughout the Ottoman Empire, the level of the growth and development was restricted and only dealt with specific buildings, for example, mosques, schools and khans.

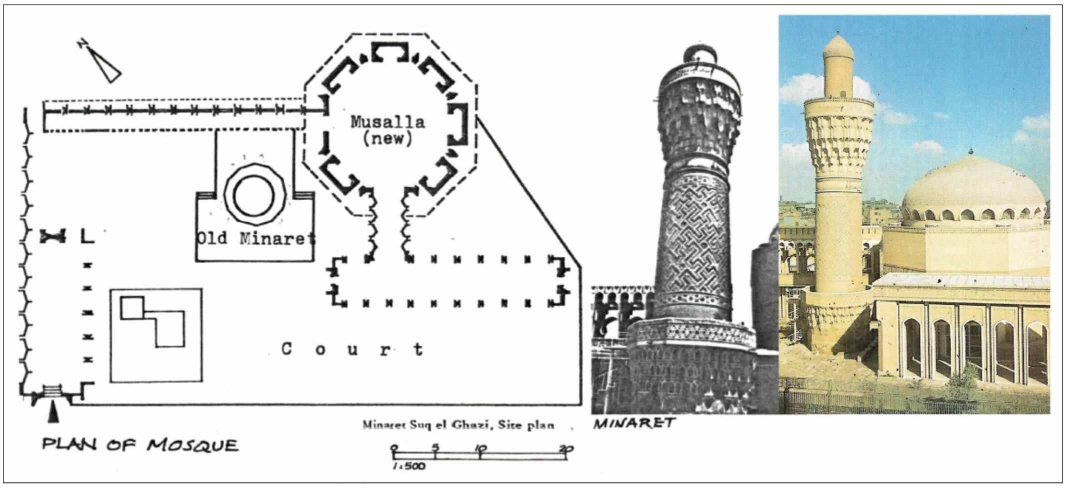


Figure 1.7. Caliph's Mosque (1289). Sources: Fethi (1977, p 350) and JCP (1984, p 23-24); Makiya (1990, p 48).

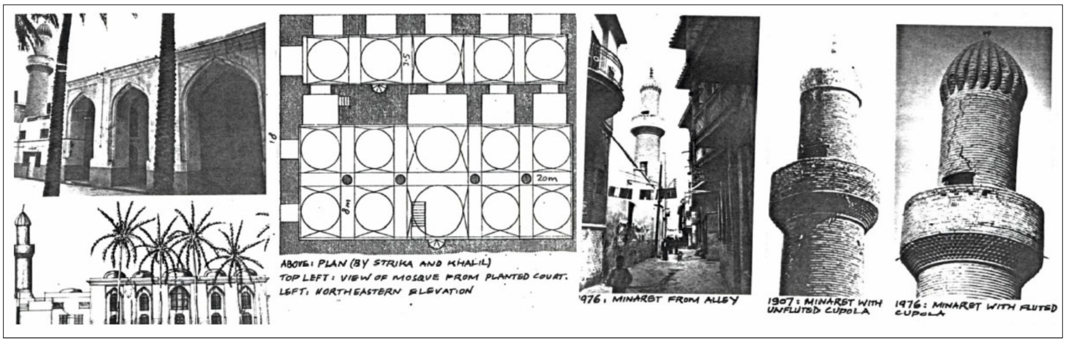


Figure 1.8. Aquli Mosque (1328). Source: Fethi (1977, p 188-189).

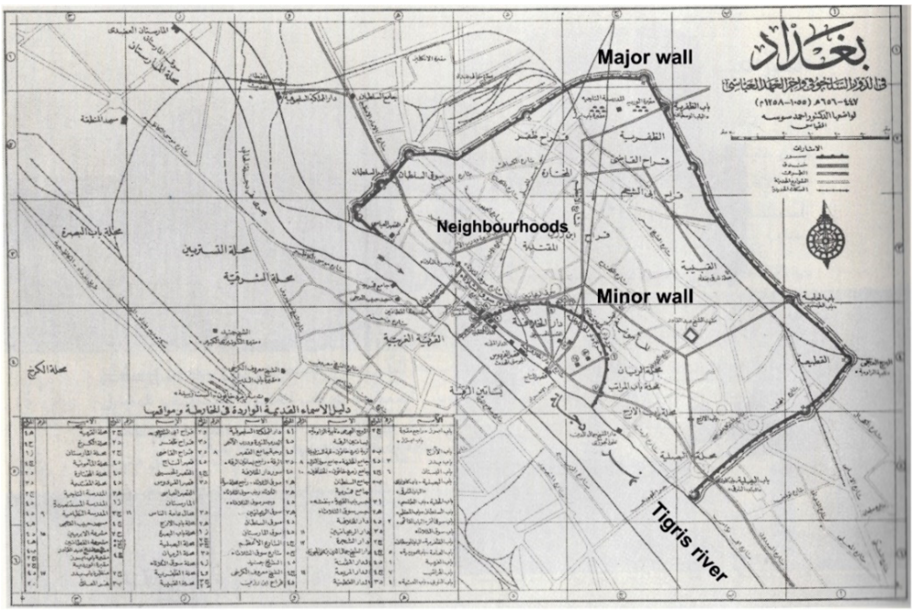


Figure 1.9. Baghdad at the end of the Abbasid Caliphate 1055-1258. Source: Makiya (2005, p 59). All rights reserved for Al Warrak Publishing Ltd, London, UK.

1.2.2.2 Jalayirid Period 1338-1411

Fathi (1979a) states that the next period was occupied by the Jalayirid era (1338-1411), which was responsible for constructing two significant buildings, the Mirjan Mosque (1356) and the Mirjan Khan (1359) (Figure 1.10). However, this period saw no drastic changes to the city's shape through its city planning and urban morphology.

Figure 1.10. Mirjan Mosque 1356 AD (left) and Mirjan Khan 1359 AD (right). Source: Fathi (1979a, p 40.41).

1.2.2.3 The Persian Safavids Period 1508-1638

The Persian Safavids had a more architectural influence on the city's fabric through the erection of buildings that were characterised by high craftsmanship and impressive monuments, such as the Golden Mosque of Kadhimain that was built in 1515 (Fathi 1979a). This holy shrine was the first development to the north of the walled city, and later became the most prominent settlement outside the oldest area of Baghdad. This era saw the same characteristic organic pattern that typified the surrounding neighbourhoods, besides the zigzagged network, which was analogous to the oldest part of Baghdad city (Figure 1.11).

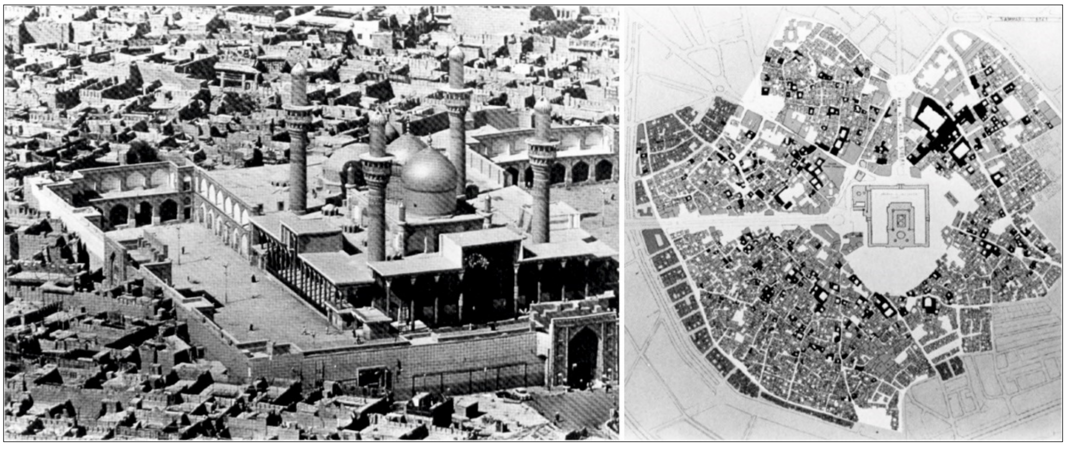


Figure 1.11. The Golden Mosque of Kadhimain that was built in 1515 AD. Source: Al-Rahmani (1986, p 148-149).

1.2.2.4 The Ottoman Period 1638-1917

The Ottoman period represented a long-term period of occupation by a foreign government that controlled both Iraq generally and Baghdad particularly. The period lasted about three centuries (1638-1917) and saw the neglect of the city; this led to a reduction in the value of its urban context and historical monuments. However, some significant features survived, such as: Gailani Mosque (1534-1638) (Figure 1.12); Imam al-Aadham Mosque (1681); Zurur Khan (1534); Khasaki Mosque (1658); Hussain Pasha Mosque (1684); Sarai Mosque (1704); Aliya Madrasa (1726); Ahmadiya Mosque (1796), and the Souk Area (1802) (Fathi 1979a); (Nooraddin 2004).

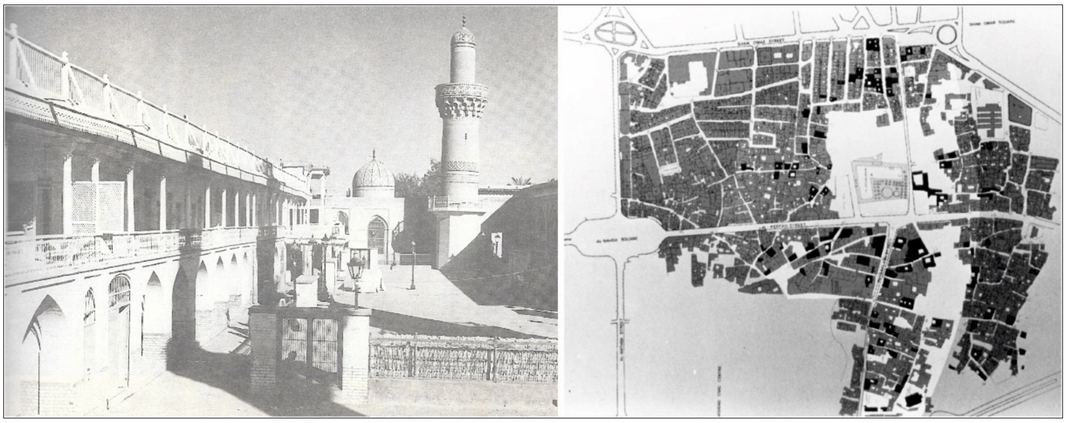


Figure 1.12. Gailani Mosque 1534-1638 AD. Source: Al-Rahmani (1986, p 150), Makiya (2005, p 318). All right reserved for Al Warrak Publishing Ltd, London, UK.

Like the earlier periods, the number of individual monuments increased during the Ottoman era; these features were built within the same area of the walled city and surrounded by traditional neighbourhoods (called *Mahallas*). At the level of the city planning, the central development during this period was to open a new street that cut through the city from the north to the south; this became known as Al-Rasheed Street. From the maps in Figure 1.13, it can be seen that the city was not subjected to any central shift in its neighbourhoods and street pattern, excepting Al-Rasheed Street. The neighbourhood, or Mahalla, could be defined as the primary unit in the development and orientation of the street network, which thus formulated significant integration between the two spatial entities; namely, spaces and buildings. According to Al-Ashab (1974, p 207), the “period 1869 - 1920 can be virtually considered as a forerunner of subsequent morphological phases. It is a transitional phase between the ‘medieval’ and ‘modern’ periods in the urban history of Mesopotamia. It is thus logical to begin the study of the structural evolution and a pattern of the present city with this period”.

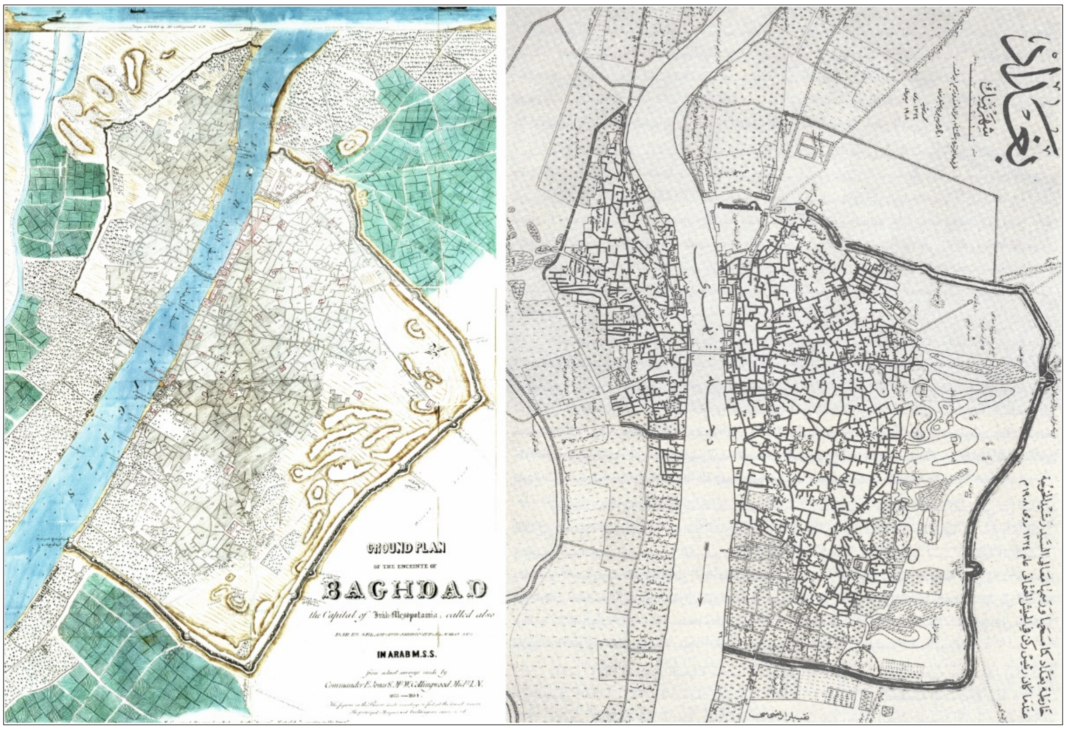


Figure 1.13. Baghdad 1854 AD (left) and 1908 AD (right). Source: Makiya (2005, p 88-430). All right reserved for Al Warrak Publishing Ltd, London, UK.

1.2.2.5 The British Period 1917-1932 and Monarchy System Until 1958

This period can be divided into two stages; the first is when Mesopotamia was occupied by Britain from 1917 to 1921 and then subjected to the British mandate from 1920 to 1932; it later became independent in 1932. From 1932 to 1958, the country was governed by a monarchy. Following these radical changes, 14 July 1958 saw the announcement of a new era for the Iraqi Republic, which formed the second stage. In 1918, the British contributed to the dramatic transformation of the style of buildings and introduced new functions to the urban design of Baghdad and other regions of Iraq. Although some public buildings affected the main character of Baghdad, they were considered a new feature among its old urban fabric, particularly with regard to their form and function. Nevertheless, there was an attempt to make these buildings sympathetic to the existing atmosphere by adopting local materials and local historical and cultural metaphors (Fathi 1979a). One noteworthy development in the vocabulary of this period was the use of new terms and classifications to study the structure of the city. Moreover, these new definitions were adopted in the planning and design of new neighbourhoods that were located outside the old town of Baghdad. Furthermore, Al-Ashab (1974) argues that the term 'function' cannot be used precisely as an urban definition in Iraq as the term was developed from studies on British towns and therefore signifies meanings that relate to a different context.

According to Al-Ashab (1974, p 82-83), "the definition of urban status in Iraq seems to lie in the acquisition of certain administrative, commercial and religious functions, embodied in the morphological features of al-Sarai (the main administrative complex), bazaar and Friday mosque". Furthermore, during the British period, a new system to number the city via Mahallas was introduced, when the house owner was given a unique number to denote an exact and unmistakable address. The central trend of development in this period was to shift from inward to outward, not only in terms of the typology of the traditional house, but also with regard to the city's pattern. One further fundamental transformation was to remove the city wall entirely (Figure 1.14).

This brief review of the critical stages of planning, urban and architecture in Baghdad aims to create a general picture of the emergence of the city. Throughout this history, most decision-making was subject to a top-down approach, issued from authorities and with limited consideration for community needs or social lives. Moreover, there were no sharp, separated lines between these periods of foreign occupation; instead, some continued by adopting similar themes and principles in managing the city. This characteristic also reflects the next phase of Baghdad.

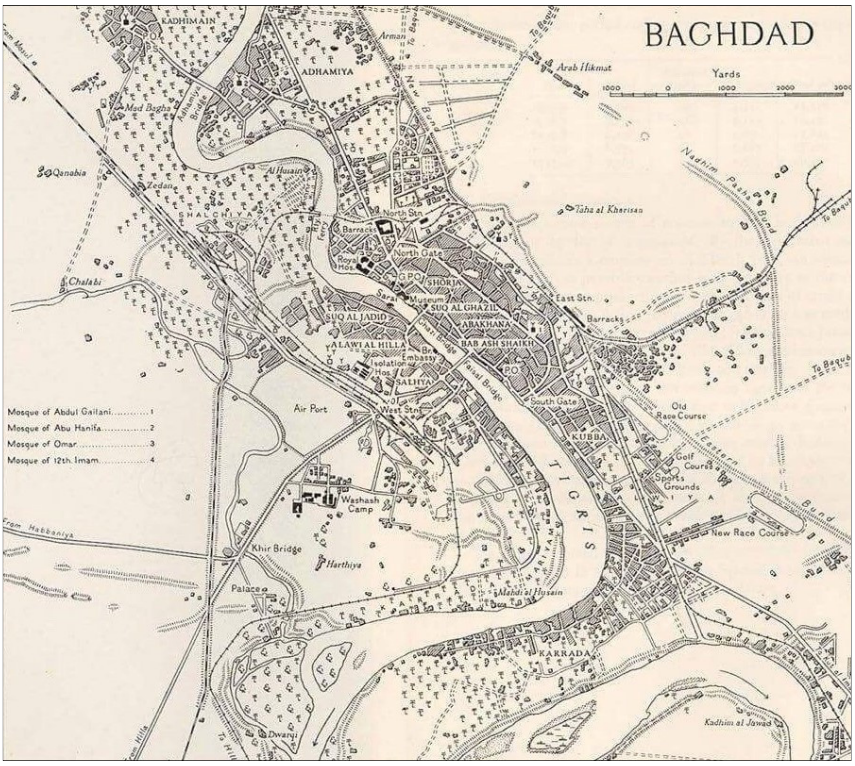


Figure 1.14. A plan of Baghdad during and after the British period. Source: Map authorized by R.S.GIS.U (2017).

1.2.3 Modern Period Since 1958

As the capital city of Iraq since 1958, Baghdad adopted significant comprehensive development, whether in the oldest parts or outside the remaining wall. Within the outer areas, and beyond the oldest district of the city, Baghdad extended widely in a semicircular shape, which considered the traditional zone as the centre and thus the starting base for expansion and development (Figure 1.15). The eight-year war between Iraq and Iran (1980-1988) clearly influenced the progress of development projects, particularly in Baghdad city. Although state-sponsored projects remained their progress slowed, particularly those related to Baghdad's city centre; for instance, this affected the substantial project to develop Haifa Street on the Karkh side (1981-1985) (Al-Akkam 2012). Baghdad's city centre could be characterised as a compact urban structure within the historic fabric, which has a predominantly organic pattern compared with other regions of the city, which seem less compact (Al-Akkam 2012).

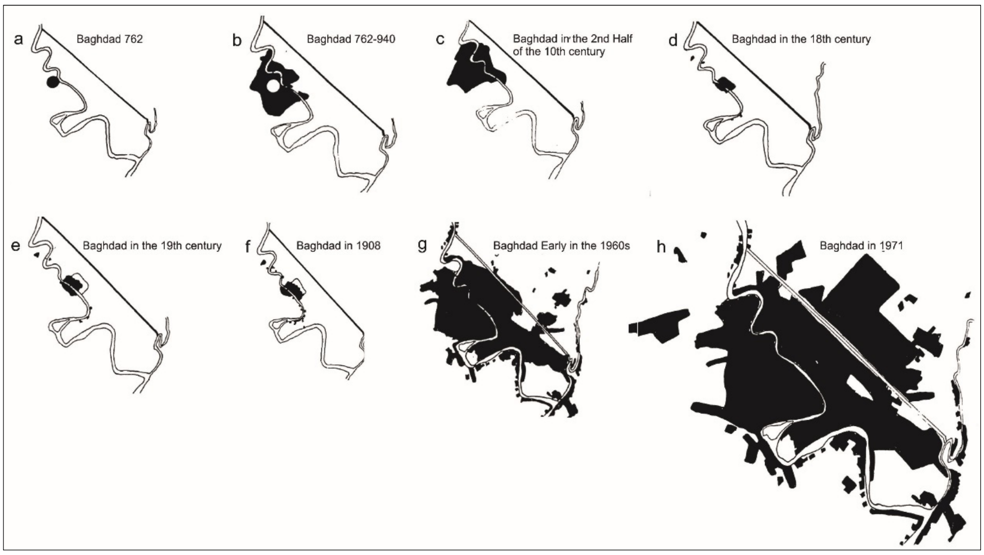


Figure 1.15. The growth of Baghdad. Source: Al-Ashab (1974, p 141).

Besides the accelerated horizontal expansion of the city, the transformation from the inward (courtyard) to the outward house is the second substantial change in the neighbourhood design prototype. In considering the traditional oldest pattern, the home is the smallest generative unit which cumulatively and spontaneously works with other houses to create al-Mahallas (quarters). In turn, this process leads to the generation of additional urban elements, such as streets and sahahs (squares). In the modern pattern, pre-planned schemes and use-based zoning were the primary tools in designing new neighbourhoods across Baghdad. In this regard, Marshall (2005a, p 112) confirms that the, "land use zones and roads, in a modernist urban structure, [are] represented separately as nodes and links, but in a traditional urban street network, the streets themselves are significant spatial entities". The primary concerns in the traditional area not only involve individual elements (historical and heritage monuments), but also the whole organic fabric of the old city of Baghdad.

1.3 Baghdad Development Plan

1.3.1 The Comprehensive Development Plan

A new era of understanding of the master planning arose in conjunction with the high speak out about the sustainability and reference to the primary assets of the city's emergence. For this meaning, Al Waer (2014) states that “[t]he traditional view was that master planning was a design-led activity concerned with the architectural form of buildings, spaces and infrastructures. This is outdated and inadequate for coordinating the plural processes of developing sustainable places that satisfy social, functional, economic and environmental requirements as well as realising visually pleasing townscapes” Al Waer (2014, p 25). Before the 1950’s, city planning in Iraq had never been well considered; however, in the 1950’s the planning firms of Doxiadis Associates (Greek), Minoprio and Spencely, and P. W. McFarlane (both British) prepared general master plans for Baghdad and several other cities in Iraq. Modernisation was therefore supported by a strong European influence; although these developments were slow, they were inescapable and, for many people, acceptable. However, they often led to the destruction of many elegant buildings, such as mosques and bazaars. Al-Rasheed street is an example of a path which cut its way remorselessly through an organic pattern and affected outstanding historic buildings. Thus, the emphasis of modern ideology and the adoption of use-based zoning was another concern for the existing urban area (Al-Ashab 1974).

In 1955, the Iraqi government, represented by the Iraq Development Board, asked Doxiadis firm to prepare a housing program for Baghdad city. Arguably, it was their first large-scale project outside of Greece and solidified the reputation of the firm in this period within the Middle East (Theodosis 2008). Based on the economic policy of Iraq, the National Housing Program was conceived as a long-term territorial plan in an attempt to shape the physical environment. The first phase was to address some urgent needs through a five-year plan, called “Basic Foundation Program”. Its aim was to: (1) satisfy the most urgent needs, (2) organise the public services concerned with housing and settlements, and (3) create a suitable framework for the further development of all complicated activities (Theodosis 2008).

The primary role for Doxiadis Company, as international experts on housing and urban development, was to provide a vital stepping stone for development (Pyla 2008). An essential motivation in studying the city is to develop a sound understanding of the background of the city life cycle. Since the beginning of the Twentieth Century, Baghdad has experienced dramatic transformation in its morphological and urban context by changing the rules from the Ottoman invasion to the British occupation. In 1921, during the period of the monarchy, Baghdad became the capital of the new nation; since then, the city has grown substantially in two dimensions, namely urbanisation and population. Iraq gained its independence in 1931, and since this date, the population of Baghdad has increased dramatically to approximately half a million, and the city has expanded out of the central areas, represented by Rusafa on the east bank of the Tigris river, Karkh on the west bank, and Kadhimiya and Adhamiya towards the north. Regarding the old Baghdad areas, the city has expanded widely in two directions namely, to the Adhamiya region in the northwest and toward Diyala in the southwest (Pyla 2008). Doxiadis's master plan of Baghdad was based on the concept of linear expansion, namely 'Dynapolis, its meaning is a dynamic city' (Figure 1.16).

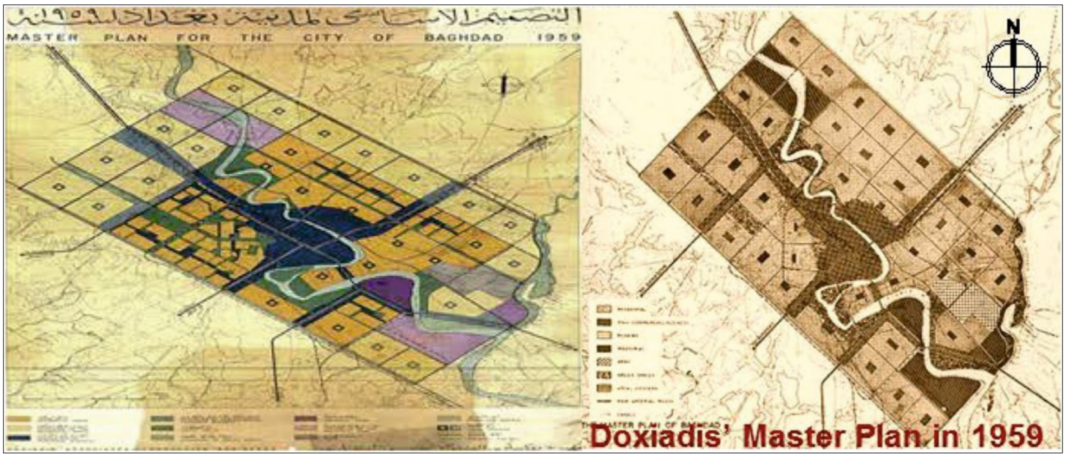


Figure 1.16. The Doxiadis' master plan of Baghdad in 1959. Source: Alobaydi (2017, p 4), referring to Mayoralty of Baghdad.

The Board supervised the construction of several vital projects, not only in Baghdad city but also in other regions of the country. This included dams, irrigation and drainage systems, bridges, roads, factories, power plants, housing, schools, hospitals, and public buildings (Pyla 2008). Moreover, Doxiadis's vision was embodied in its publication entitled *Ekistics*, which emphasised a stable and scientific version of urbanism, developed through apolitical authority; this defined human settlements under a scientific approach. Moreover, Ekistics can be understood as a multidisciplinary approach that involved various sciences, such as economics, geography, sociology, anthropology, and other disciplines. This represented an attempt to reduce the influence of designers' arbitrary self-expression and re-conceptualised architecture and planning as rational processes that accommodated human need (Pyla 2008). Within a modern ideology that coordinated the whole system of knowledge about the physical environment, Doxiadis's vision, through Ekistics's multidisciplinary approach, adopted two aims. The first was to emphasise basic human needs, non-functionalism and to further technological concerns. This would accommodate housing and resource shortages as well as other post-World War II urban impasses. It would achieve this by contributing to reform in earlier modernist urbanism through refusing the concept of the individual designer.

The second aim attempted to reinvent designers and planners as experts in urban development. This recognised the importance of the physical environment in promoting socioeconomic development, and that this could be achieved by advancing social restructure through applying the paradigm of the industrialised West through global urbanisation, industrialisation, and socioeconomic modernisation (Pyla 2008). Moreover, through adopting Doxiadis's aims, the intention of the Iraq Development Board was to establish the architectural symbols of a modern state by sharing the ideal of national identity and pride. When the Iraq Development Board assigned Doxiadis the task of preparing a new master plan for Baghdad city, Baghdad had an old centre, which was represented by its old urban fabric; this later became the location for new businesses. The master plan was supposed to provide a comprehensive framework within which various building projects would be integrated. However, in 1956, a British company, Minoprio & Spencely and P. W. Macfarlane, was also assigned by the Iraqi government to create a master plan. It had proposed a road system to connect the premodern urban fabric core with new river bridges and included outlined zoning principles (Figure 1.17). In this proposal, the historical area of Baghdad was given four colours classifying land use, and one of these was defined as commercial or business use. However, at that stage the city, its urban structure conditions were not competent to meet the requirements of the new era.

The city developed along the central axis of the Tigris River; this represented a natural feature in the city that emerged as a central spine in the evolution of Baghdad. The future city was expected to develop bi-directionally along the river axis, constituting a rectangular grid pattern (Theodosis 2008). However, the study of Baghdad's urban history highlights some key paradigms of modern planning and raises significant questions about the formation of the contemporary city. One of the strategies adopted by Doxiadis was 'self-contained urbanism', and this manifested in the planning of some residential areas and the cul-de-sac network in the city (Theodosis 2008). The Iraqi government dealt with the problems of population growth and mass immigration in Baghdad city by inviting other European companies, such as the British firm Minoprio, Spencely, and Macfarlane, to develop and prepare comprehensive development plans that considered the old area as a vital part of the city. In 1956, the plan by the British firm was completed; this referred to new land use, the clearance of slum areas, the construction of a rural belt, and the development of transportation systems (Theodosis 2008).

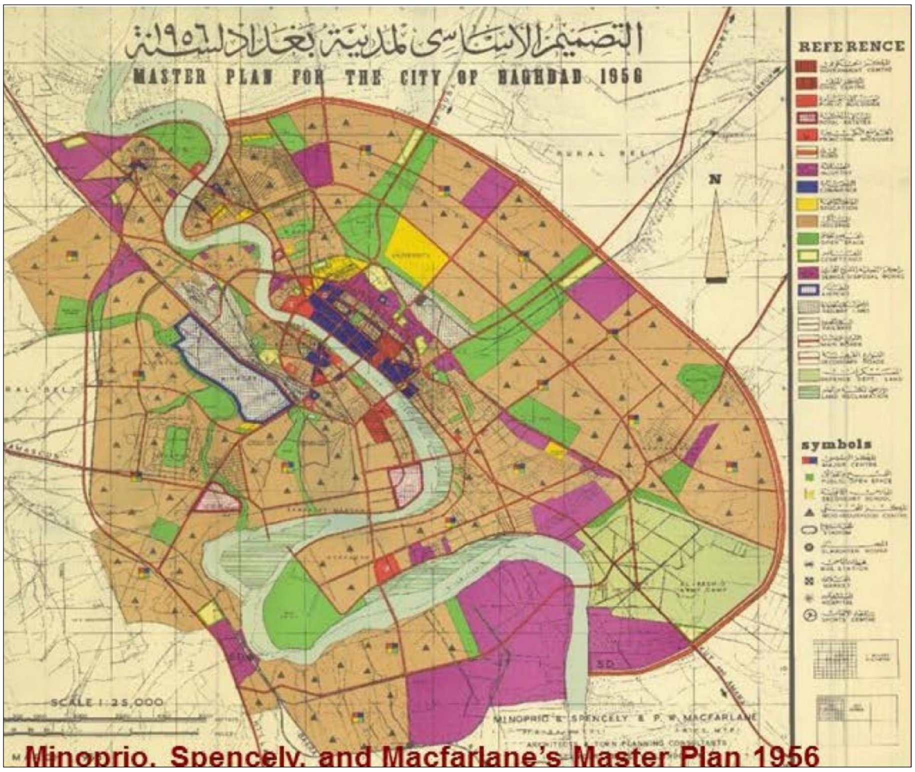


Figure 1.17. Minoprio & Spencely and P. W. Macfarlane's master plan of Baghdad in 1956. Source: Alobaydi (2017, p 4), referring to the Mayoralty of Baghdad.

The Tigris river has been a significant feature since the emergence of the original city, also functioning as a central axis of growth. Thus, the ideal population figure suggested by Doxiadis gives maximum limits for Baghdad's expansion, which is defined by an elongated rectangle oriented along the central northwest-southwest axis of the Tigris (Figure 1.16). Doxiadis's proposed master plan subdivided the existing main roads by using a system of road patterns, but also suggested the creation of new networks compatible with a rectilinear pattern. Residential areas were arranged by adopting the same concept of a rectangular grid system (Pyla 2008). Failing to recognise, and neglecting the public's critical role in the old urban dense areas meant the importance of the colourful souks and bazaars and other traditional and historical components were overlooked. However, these embodied the old important urban fabric of Baghdad. The city represented specific social values within its urban context that were characterised by its organic pattern; these aspects represented a big challenge for firms and any comprehensive development plan. Doxiadis Company prepared a detailed documentary study of the old urban fabric in the city centre that included numerous photos, sketches, and detailed analyses of past houses. In an attempt to sidestep much of the old street fabric of Rusafa and Karkh, Doxiadis stipulated that only the future expansion of the commercial and business areas should be recognised according to the rectilinear grid of master plan.

Theoretically, Doxiadis demonstrated greater sensitivity and interest in the old urban fabric than the actual plan that was implemented, which saw the opening of a different set of two main longitudinal thoroughfares, namely Al Jumhuriya and Haifa. Both modern streets produced a colossal loss when extensive areas of the historical and cultural environment, and irreplaceable features such as mosques, souks, schools, and houses, were destroyed (Pyla 2008). Baghdad was a rapidly growing city that gave considerable scope for the development of a physical environment that met people's needs and to promote the quality of living conditions. Road, rail, water and air transportation, were a fundamental aim in developing Baghdad, and were considered an appropriate advanced network system to further support urban development projects (Ghazoul 1983). The map of the master plan prepared by Doxiadis deliberately avoided extending and imposing the same rectilinear grid on the old city centre. This was a significant dimension in recognising the value of the old fabric and its vitality, and to retain these as essential features of Baghdad (Hammadi et al. 2008). On the one hand, greater sensitivity toward the old city centre and an attempt to optimise the relationship between the old core and its surroundings was needed, whilst, on the other hand, the relationship among the components of the old fabric itself was also essential.

Thus, the historical zone of Baghdad represented a serious urban issue that needed to be appropriately considered. Dealing with this type of urban fabric meant treating it with sensitivity, not only as an ancient area, but also in consideration of what it meant to many people. Therefore, the city's characteristics were reflected in its old context for both inhabitants and visitors, and bore witness to the city's and inhabitants' deep history and its multi-layered vision. In the mid 1960s, the Iraqi government asked Polservice, a Polish Planning Team, to re-plan the city and prepare a proposal for a Comprehensive Development Plan for Baghdad to be achieved by 2000. Accordingly, three zones were suggested: greater Baghdad, the inner city, and Baghdad's suburban zone. Also, Polservice organised the city centre by proposing eight secondary sub-centres. This attempted to reduce the pressure on the current city centre through the non-centralisation of activities and services. One of its accomplishments was the establishment of a hierarchy, from the residential quarter, to the district, and its neighbourhoods (Figure 1.18).

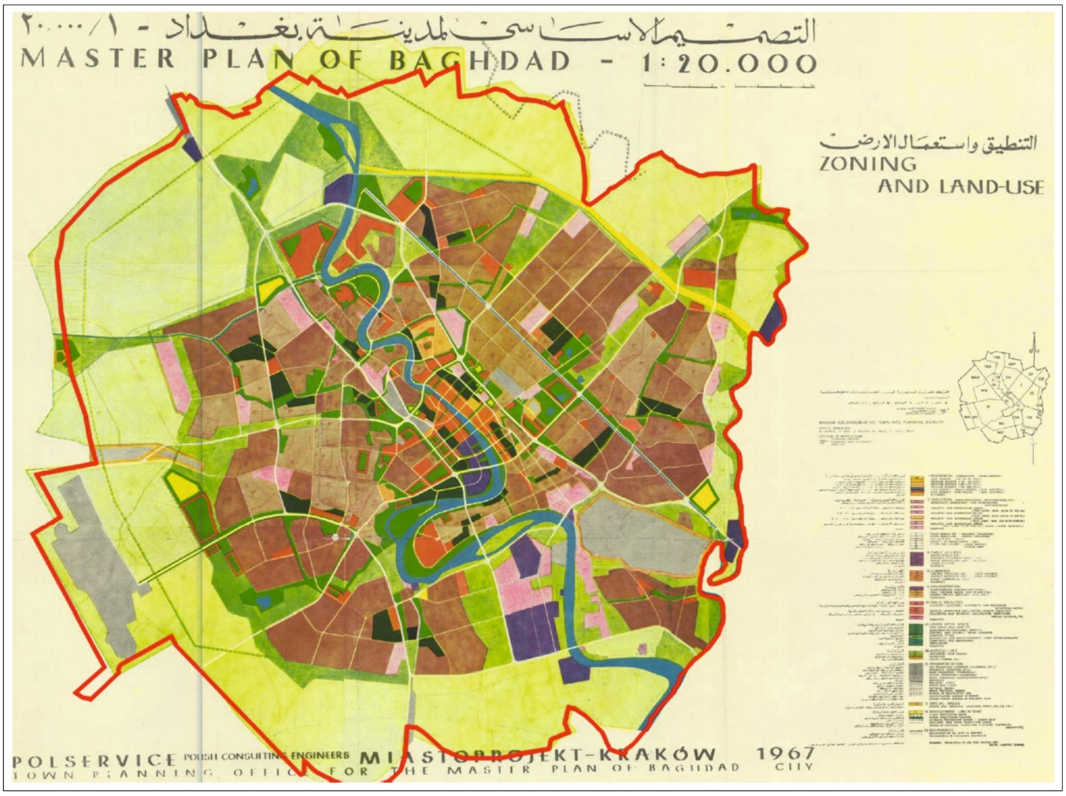


Figure 1.18. Polservice’s master plan of Baghdad in 1967. Source: Referring to the Mayoralty of Baghdad, Alobaydi (2017, p 5).

The company determined the area for the civic centre and offered a proposal to establish a space, situated between Khulafa Street to the west, King Ghazi to the east, Al-Kilani Street to the south and Al-Wathbah Square to the north. Also, the company suggested a new division for city centre by creating a central business district (CBD) and a central region. The developmental study offered the first ring road as the boundary of the city centre, which started from the north side of 14th July Road and the Muhammad Qasim Freeway. The study stated that the new centre of Baghdad would cover an area approximately 1.700 hectares. According to Al-Akkam (2012, p 61), “the proposals of the study (Comprehensive Development Plan of Polservice, 1973) pointed to complaints about the city centre regarding a lack of commercial, cultural and recreational opportunities”.

More recently, after 2003, several firms identified new opportunities when the Iraqi government launched a comprehensive program to prepare development plans for different Iraqi cities, including Baghdad. The big challenge in the capital was to fill the gap between the former master plan, in terms of what had already been implemented, and the new one.

Moreover, addressing important developments helped to establish whether they responded to the prior master plan. Khatib and Alami prepared the general master plan of Baghdad, which identified different aspects of the dramatic changes in city growth since 1967 (Figure 1.19). One of the primary concerns about the comprehensive development plan was, for example, the old part of Baghdad which was defined by use-based zoning. The origin of the traditional city arose spontaneously, rather than through the mechanism of land use or zoning. This represented a critical point within the urban development projects. The network pattern and layout of the buildings in the area were complicated; therefore, there was a need to prepare specific criteria and regulations to protect the identity of old Baghdad as well as recognise the contemporary ambitions of the new city.

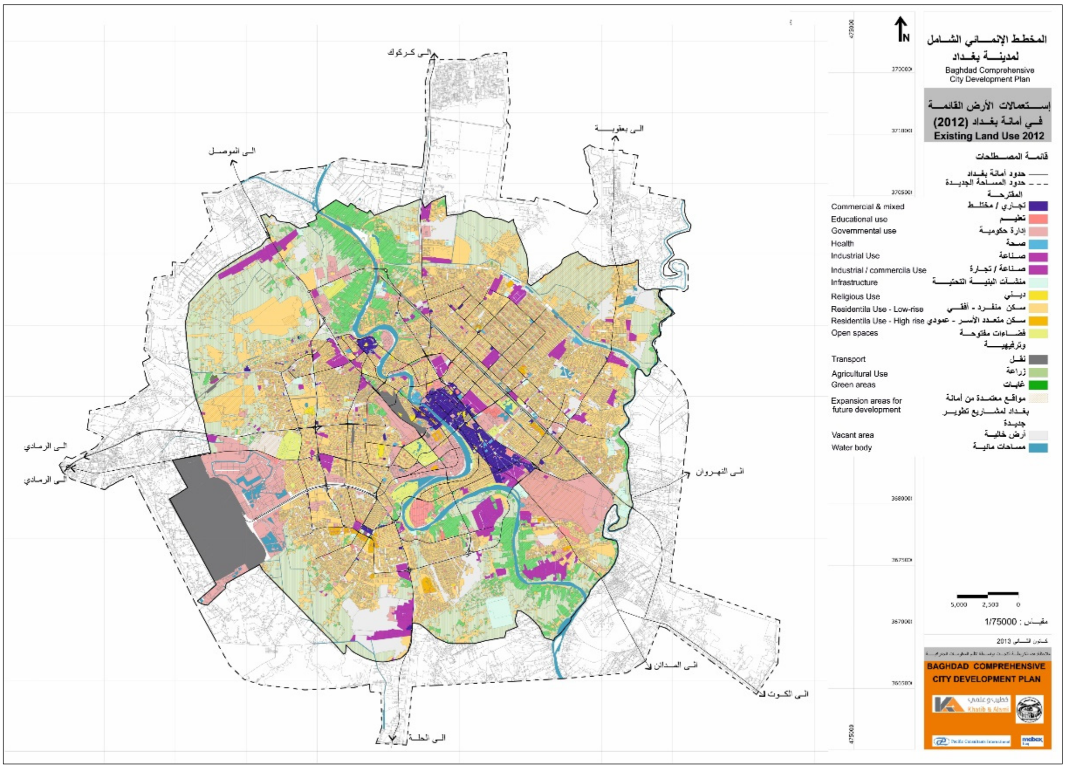


Figure 1.19. Khatib & Alami's master plan of Baghdad in 2012. Source: Referring to the Mayoralty of Baghdad.

The complexity of the network in the old part is not declared today, but many related studies and projects refer to it in different ways. In this respect, Al-Rahmani (1986) stated that land use was incompatible and inappropriate, due to the greater population in the old quarters. Moreover, there was no integration between old and new developments. Many old areas had been demolished and replaced by new developments on the pretext that they were modern and thus compatible with the needs of a contemporary era. However, the result was unsuccessful as far as functionality and compatibility were concerned.

1.3.2 The Sectional Development Project

Besides its comprehensive development plan, Baghdad also witnessed other development processes. These were related to the historical area of the city and included both Rusafa and Karkh. The first attempt to conserve and redevelop the historical centre of Rusafa started in 1983 by JCP Inc. from Japan and in association with a consultant group. The study was important because it dealt with different levels of development that covered comprehensive analyses, the urban structure, conservation plans, and urban design schemes. However, the implementation program unfortunately stumbled (Figure 1.20). This study focused on the street level and the key characteristics that formed both its opposite edges thus promoting the historical spines of the city and the traditional environment of Baghdadian people (Figure 1.21).

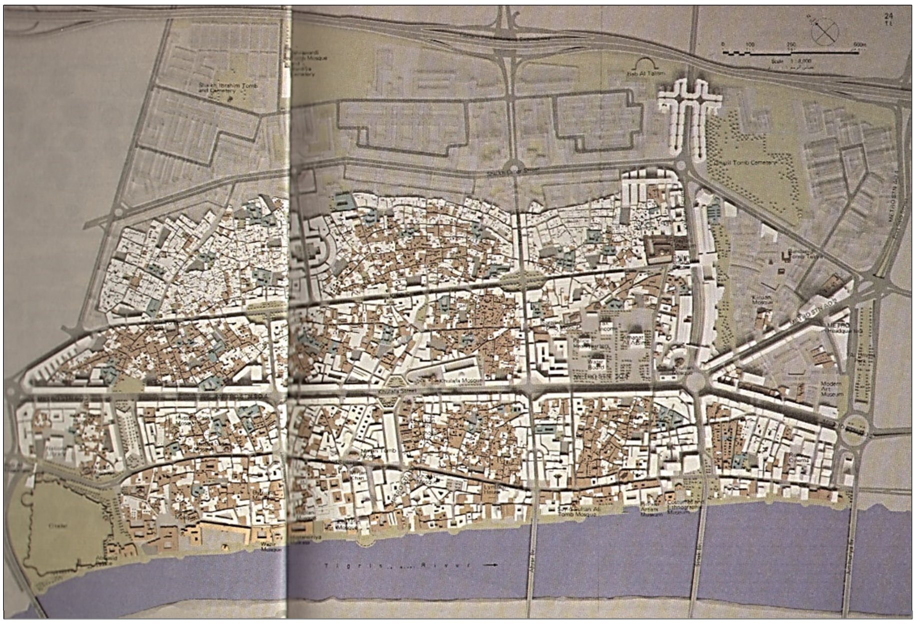


Figure 1.20. Study on the conservation and redevelopment of the historical centre of Baghdad city | Rusafa. Source: Mayoralty of Baghdad, JCP (1984, p 23-24).

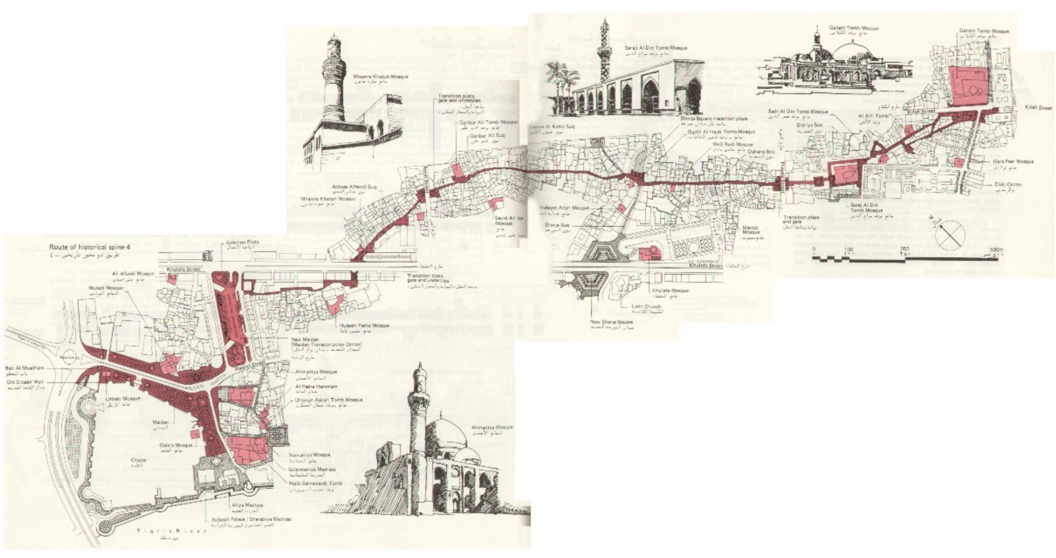


Figure 1.21. A historical route in the study on conservation and redevelopment of the historical centre of Baghdad city | Rusafa. Source: Mayoralty of Baghdad, JCP (1984, p 49-50).

The study presented the implementation of the proposed structure plan that consisted of three levels; primary action up to 1990, secondary action up to 1995, and tertiary action up to 2000. Despite a significant programme of implementation, none of the actions took place as recorded. Instead, historical parts are still suffering from neglect today, whilst individual monuments and the street network have similarly been ignored.

Al-Karkh region is the second historical area of Baghdad city; this saw a significant development plan in 1982 which was prepared by Alousi Associates and Reinick Consultants, who were from Dublin in Ireland, with Parsons Brown Consulting Engineers, from Bristol in England. Unlike the previous comprehensive plan, this study dealt with an existing traditional area where the street and plot pattern were complicated (Figure 1.22); thus, the study's aims were not pursued. Haifa Street saw one of the main changes where adjacent high-rise residential buildings were constructed on both sides of the street. Even though these projects were designed to address the historical areas of Baghdad city, none of their aims were fully achieved. After 2003, the Mayoralty of Baghdad contracted with local bureaux to study and analyse traditional parts of Baghdad city; Al-Rasheed street in the Al-Rusafa quarter and the Al-Karkh quarter were the main two renovation projects. The primary concerns about these urban renewal plans were the administrative policy and the implementation phases. In this study, two resources of maps will be used: Polservice, Geokart, Poland, Rectified by G.I.S.Department (2016) and satellite imagery that authorised by the Remote Sensing and GIS Unit in the Building and Construction Engineering Department at the University of Technology in Baghdad, 2017.

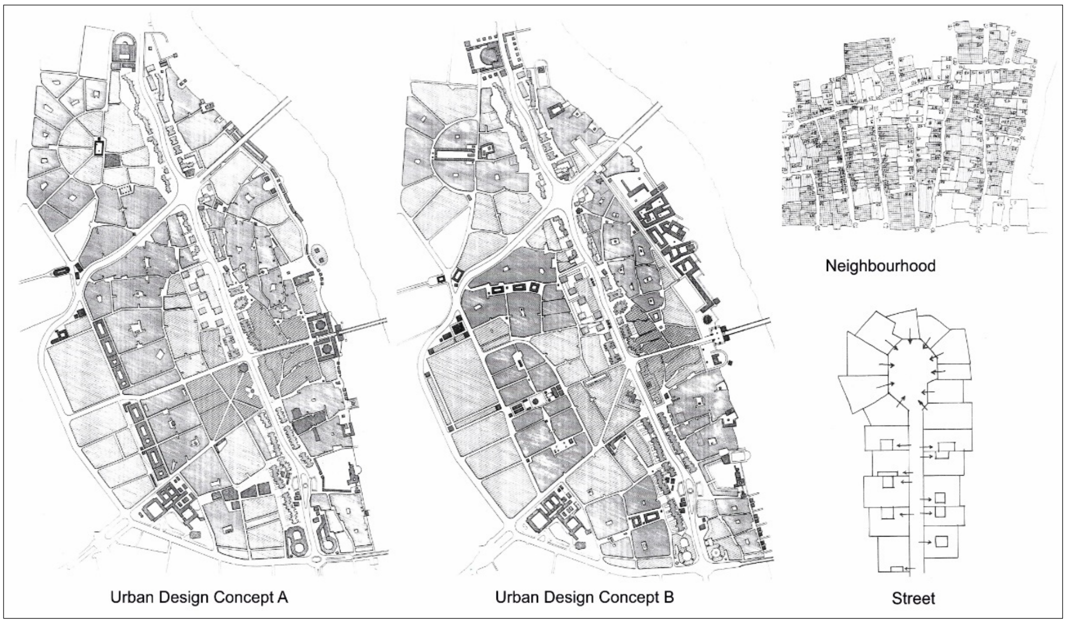


Figure 1.22. Al Karkh development. Source: Mayoralty of Baghdad, Alousi (1982, p 86, 101, 370-371).

1.4 The Essence of Baghdad City

The essential morphological pattern and structure of the old city in Rusafa remained, in general, unchanged until the first decade of the Twentieth Century (Fethi 1979b). The main architectural and urban context character of old Baghdad could be typified as a series of spatial patterns and a hierarchy that was based on introversion. The nature of the environment with its socio-religious and socio-climatic dimensions seemed to have experienced fewer typological changes than stylistic ones. This means that the typical scheme of traditional residential areas in Baghdad continued to depend on the concept of the internal courtyard and the inward-facing direction. The non-adoption of rigid space-use corroboration and the increasingly needed formal and aesthetic considerations meant that form, particularly in domestic architecture, was much more important than function, which was mostly stereotyped and multi-purpose (Fethi 1979b). In comparison, the modern design gave as much priority to its functional dimensions and use patterns. However, medieval Islamic cities, such as Baghdad, were defensive and inward-oriented in their overall design and through their organic urban fabric.

Moreover, the city was surrounded by a wall which held gates that lead to the heart of the city where many self-contained residential quarters, called *Mahallas*, were located; these faced the main routes into the countryside. The main character of the old city in Rusafa could be seen through the pedestrian labyrinth of narrow alleyways which amassed together and led to inward-looking courtyard houses. Meanwhile, the centre of the city was covered by significant buildings, such as the Friday Mosque, *souks*, *Khans*, *hammams*, and coffee-houses. The commercial *souks* sector was situated in the heart of the city, the '*Medina'*, and often included huge areas with complex networks which led to specific markets, *khans*, and workshops. Each type of work was situated according to a distinct functional hierarchy, which was based on the needs of merchants, guilds, artisans and crafts workers. Baghdad exhibited an atmosphere of spontaneity and informality which was represented by its old urban fabric, historic buildings, and some of its limited cultural activities (Fathi 1979a).

The essential element in the old urban fabric of this ultra-dense context was a local variant of a central courtyard *hosh*, meaning house. The traditional Baghdadi house was characterised by an introverted habitat with solid brick walls that directly faced the street with one access door. Furthermore, *shanashils* were the main feature of the street; these carved wood projections, with railings and windows, were used for lighting and viewing (Al-Azzawi 1996); (Pieri 2008b). During the Ottoman occupation, essential changes occurred in several major typological transformations. The housing regulations were issued following the Ottoman occupation of Baghdad and continue today; however, these rules were subjected to three phases. The first phase began in 1869 and continued until the First World War; this was initiated by the Ottoman period under the Tanzimat reforms in Iraq. The second phase started with the monarchy of Iraq and continued throughout the colonial and independent period. The final stage commenced with the revolution of 1958, which saw Iraq shift from a monarchy to a republic. It is important to note that the third phase has also passed through several transitions since 1958.

The first phase witnessed the Ottoman invasion and its urban and physical form reflected the typical characteristics of Islamic cities through quarters, mosques, bazaars and other several public institutions. This was also echoed in the character of the traditional house with its courtyard and inward direction (Raouf 1984). Moreover, the first modernisation that took place in Baghdad occurred during the reign of Midhat Pasha, who was a governor of the Baghdad Vilayet. He ordered the demolishment of the wall of Rusafa and invested its materials in the construction of many significant public buildings. He also prompted the introduction of modern municipal services besides new roads. In 1915, during the same Ottoman period, German engineers established the first railway line, which connected Baghdad and Europe. This coincided with the use of new materials, such as steel and was later adopted by local masons (Fethi 1979b). The successive occupation of Baghdad city finally included the British in 1918; this marked a significant turning point in Iraq's modern history, not only in Baghdad but also in other Iraqi cities. At this stage, a considerable number of public buildings were constructed that affected the main character of Baghdad city and its urban context.

In the mid 1950s, the Development Board of Iraq government invited well-known architects to contribute to set of projects that aimed to develop the urban structure of the city and to meet a new standard of function. These architects included Frank Lloyd Wright, Le Corbusier, Alvar Aalto, Walter Gropius, and Doxiadis Associates, as well as Captain Philip Hirst, Ellen Jawdat, Hans Muller, Platinov, and Adler and partners (Fethi 1979b). The value of historical detail lies in its importance in sustaining a national architecture; such detail occupies a wide area in the city centre of Baghdad. Traditional detail is not limited to houses, but also includes various urban components and networks. The benefit of such features are that historical buildings can not only be saved but also invested in through their housing of different types of activities, not just as museums (Goodwin 1985). Allen (1984) states that traditional areas aim to educate the public about the importance of the historical regions (as an endangered urban area) of Baghdad, including its residential zones. This attempts to activate the conservation of ancient and irreplaceable architecture.

The modern city of Baghdad includes four historical areas, namely; Rusafa, Karkh, Adhamiya, and Kadhimiya (Figure 1.14). These areas stand in the remains of four interspace townships and are surrounded by contemporary urban features that include modern buildings, extensive public squares, and an orthogonal network. The four inherent sectors are a vital resource of expression of a past traditional period, and provide a cultural and historical chain that could be continued for future generations (Fathi 1979a). Between 1869 and 1872, governor Midhat Pasha attempted to implement a transport system in the old urban fabric. The city wall was partially demolished to open the first entrance at Karkh for a horse-drawn tram. However, urban expansion remained within the same range of the historical city. Between 1915 and 1917, German engineers established a new street to reach between the North Door (Bab Al Mu'adham) and the South Door (Bab Kulwadha), namely New Street and the present-day Al-Rasheed Street. However, the modern machinery of urban development, generally endured sluggish progress when dealing with Baghdad city (Pieri 2008b).

The existing old fabric, which included a network system, historical neighbourhoods, and heritage buildings, faced the ideology of modernisation, which led to the creation of a new urban morphology within a current traditional structure. This was achieved either by reconfiguration or by removing old structures. Self-organisation was the central concept in the configuration of the old fabric; in contrast, the new urban context relied on planning. Consequently, the two different patterns occurred and led to an interrupted urban pattern which reflected a lack of continuity, coherence, and integration with the surrounding environment (Al-Hasani 2012). The characteristics embodied in the urban context of Baghdad were: (1) the quality of use and the nature of urban space, which was based on different spatial concepts, urban patterns and building typologies; (2) specified markets along with public buildings and the river frontage which provided defined and active public spaces (Al-Hasani 2012).

According to Al-Hasani (2012), Baghdad's urban space can be classified under two typologies based on its accessibility and the relationship between privacy and publicity. These two topologies are; traditional-surviving spaces and modern-emerging spaces, the latter of which is divided into hybrid urban spaces and entire modern urban spaces. In the same context, Al-Hasani (2012) states that urban space revitalisation strategies could be based on space hierarchies and could focus on managing the integration between urban morphologies and contemporary needs. In the past, Baghdad integrated its various urban patterns in order to reduce ambivalence toward the transformation process which historically tended to be continuous and subject to self-organised acts. It was achieved by creating the smallest urban form cells that dealt with hierarchy, land use, and building rules, and enhanced human activities by concentrating more on the hierarchy space and accessibility (Al-Hasani 2012).

1.4.1 Street Characteristics

Its contemporary streets represent one of the components of the comprehensive plan of Baghdad. However, the street basically follows the same principles of new urbanism under the term of modernity. New roads are wide and long in comparison with traditional ones; they tend to span more than three kilometres with tall buildings on both sides and are far removed from the human scale. In addition to this, these new streets replaced the demolished previous, irreplaceable traditional fabric, which included souks, houses, and mosques. Moreover, the massive gap that emerged between the old urban structure and the new urban context under the same terms, westernisation and modernization, cannot be readily ignored (Pieri 2008b). Rasheed Street is one of the oldest streets that cut through the historic central areas to link the north and south of ancient Baghdad and runs parallel to the Tigris River. It was begun by the Turks in 1915 but was completed by the British in 1918. Its width is varied where the maximum is about forty metres, including ten metres of commercial development on either side. It is almost 3.8 kilometres in length (Al-Akkam 2011). The importance of Al-Rasheed Street comes from the characteristics of the adjacent buildings and their distinctive architectural style. Porticos, with various facade styles, constitute Al-Rasheed Street; it adopts human-scale dimensions and has an integrated, harmonious architectural unity. Such environmental elements give enough protection for pedestrians against undesirable climates.

The street reflects a cohesive alignment of buildings which contains the highest diversity in elevation, and its characteristics represent different types of architecture (Al-Haidary 2009). Therefore, Al-Rasheed street reflects a panorama that vividly portrays the long history of buildings and the evolution of architectural patterns. Although crucial events occurred throughout the life of Al-Rasheed Street, each event tells its own story (Al-Haidary 2009). Al-Haidary (2009) states that there is a lack of important construction legislation and conservation monitor programs for planning and urban design, and a similar lack of commitment to restrict initiatives to ensure they adapt to traditional patterns. Concentrating more on the maintenance and restoration of significant heritage buildings within their urban context can be considered an essential factor that positively affects the old urban fabric. For example, Kifah Street, which, in 1936, was orientated through Rusafa. Its width is fifty metres, which includes fifteen metres for commercial development on both sides, while its length is about 3.2 kilometres. Unfortunately, this new route also caused severe damage in the traditional urban area of Rusafa. The third street was Al-Jumhouriya Street, which in 1954 passed through Rusafa (Al-Akkam 2011) (Figure 1.23). The drastic changes in the urban spatial structure of the city affected the streetscape in terms of the street's edges. It developed a new definition of the relationship between private and public, whilst priority was given to the motorised-based scale rather than the human scale. To a large extent, this newly defined relationship led to the adoption of new behaviours and social interactions that responded to the street's edge (Figure 1.24).

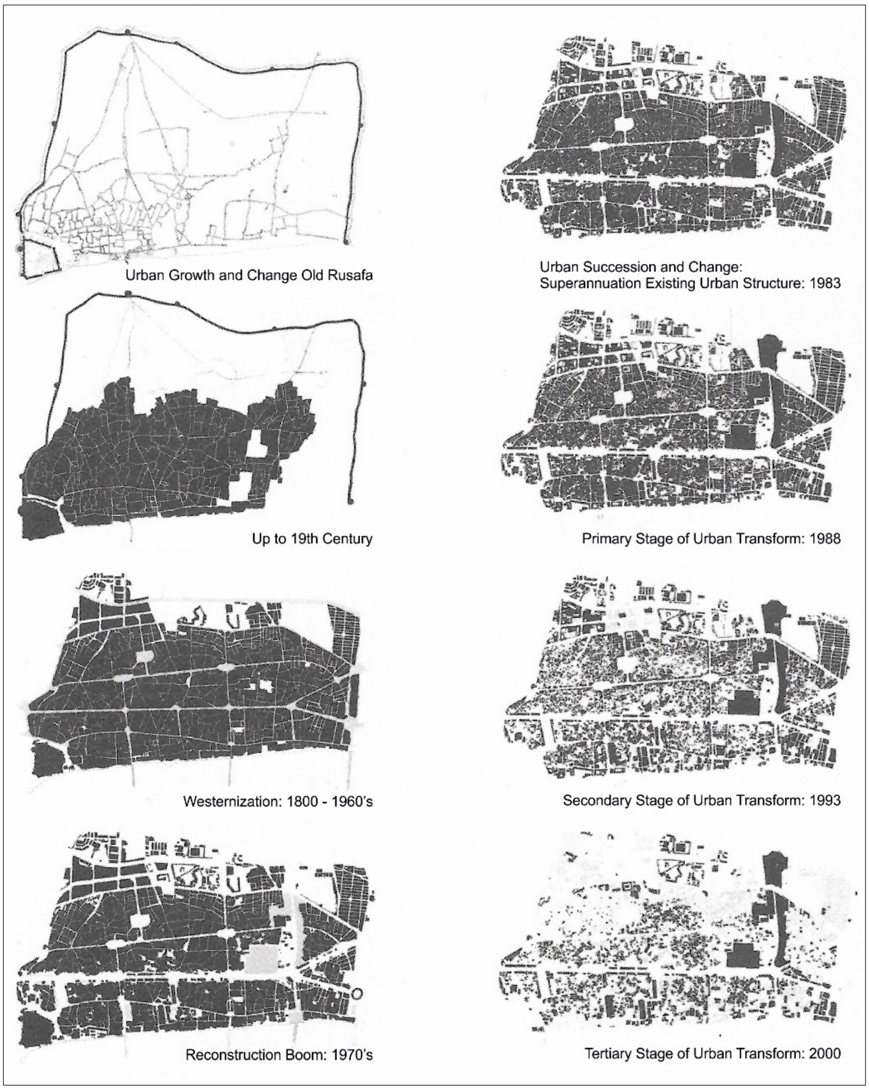


Figure 1.23. Urban space transformation in Baghdad. Source: Al Chalabi (2016, p 107) based on JCP (1984).

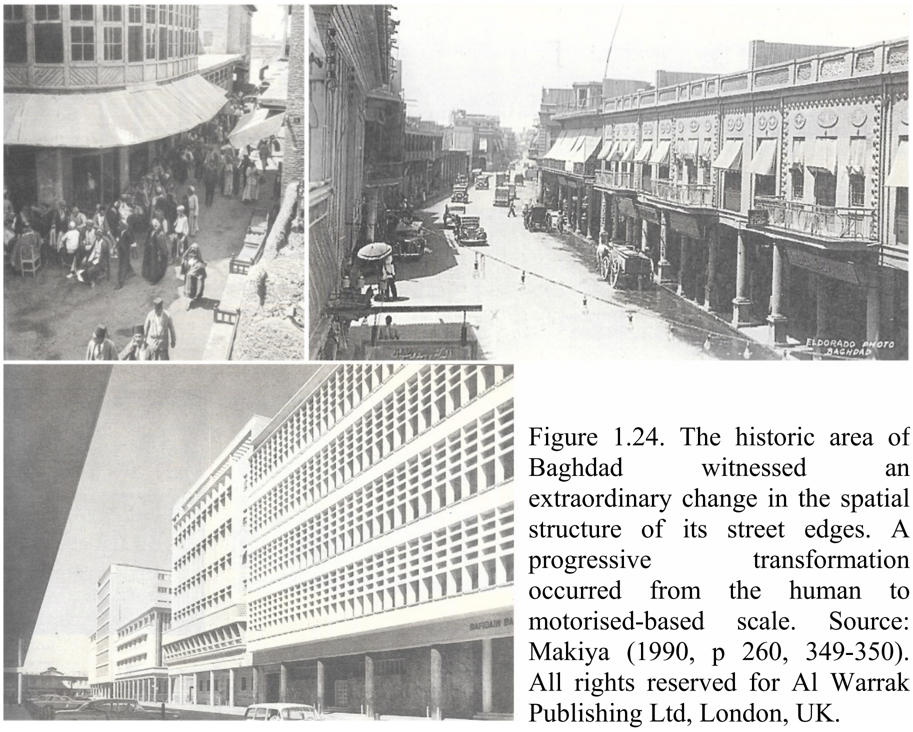


Figure 1.24. The historic area of Baghdad witnessed an extraordinary change in the spatial structure of its street edges. A progressive transformation occurred from the human to motorised-based scale. Source: Makiya (1990, p 260, 349-350). All rights reserved for Al Warrak Publishing Ltd, London, UK.

Adopting a fine-scale classification by analysing the street pattern seems to be a more efficient means of recognising the urban characteristics of streets over large-scale classifications. There is a definite pattern of activity about the classification process of compound parameters, which increase in an area or within defined spatial dimensions. In contrast, large-scale classification is affected by minimum or single parameters, and this can refer to the comprehensive analysis method of streets, which are likely to be irrelevant in creating distinctive urban characteristics for the whole city. The entire spectrum when distinguishing the urban attributes of streets tends to seek difference rather than similarity (Al-Akkam 2011). Overall, in terms of its morphological dimensions, the main characteristics of the Baghdad street would be the level of difference and disparity between the original and modern streets. Both types, historical and modern, are subject to two different generative systems: spontaneous (bottom-up approach) and pre-planned (top-down procedure).

1.4.2 The Old Fabric and the Modern Trend

Hillier (1993b) argues that there is apparently a fear of doing anything in a historical part of a city, except to retain the old street system. However, the old street network emerged by incremental dynamic processes over time that reflected the growth and change through different generations. Each generation tended to partially modify street networks to better meet their needs (Hillier 1993b). Al-Haidary (2009, p 57) highlights that, “the city for man, and in the city’s philosophy the general should precede the individual, that is, the society’s requirements should come before the personal desire, and the city's identity has to be preserved, and it can be expanded via green and red veins". Regarding the old urban fabric in Baghdad, Alobaydi et al. (2015) state that, since its establishment as the capital of the Abbasid Empire to the end of Ottoman occupation in 1917, the city was characterised by spontaneous urban growth. Their key findings at the diachronic level are that the core of the old city of Baghdad manifested a robust correlation with its commercial centre until the 1940s, when modernist developments were undertaken throughout the city. Also, before the 1940s, the nature of the relationship between the social dimensions and economic factors in the old patterns of Baghdad city expressed a mutual correlation. Later, the relationship was subjected to a considerable number of modifications that were instigated by comprehensive and modern development projects.

Apart from the degree of implementation and quality, a considerable number of plans were conducted to maintain the old areas and the historical urban form of the city. However, serious practical steps were needed, such as: setting laws, regulations, guidelines, and financial resources, and raising the level of awareness amongst communities about their own heritage. Moreover, where existing buildings from the modern era become part of the urban context of the city, any attempt to deal with these buildings is achieved by composing a bridge between modernisation and heritage via a thoughtful conversion with the old environment. This enables such initiatives to be viable, dynamic and resilient; they have the potential to involve development process with remaining historic essences that have heritage value (Al-Haidary 2009). The prevalent character of Baghdad becomes the scope of neglect for the old fabric, whether as an individual building or as a network system. The deficiency of infrastructure and unhygienic conditions, irregularity and the lack of maintenance can lead to the exploitation of an area for various unregulated purposes.

In Baghdad, this resulted in chaos and the loss of priority in sustaining the meaning of civilised life, particularly in the old regions of the city, such as Rusafa and Karkh. Thus, the importance of preservation and maintenance should be considered, not only for individual units, such as houses or public buildings, but also for the urban fabric in general which represents a vital network system (Al-Haidary 2009). The old urban fabric and its morphologies were, formally or informally, influenced by the wave of modernism and replaced later by the new urban context, which resulted in the loss of relationship between built forms and streets (Can et al. 2015). The urban renewal operation that took place as a part of a comprehensive development plan in Baghdad critically recognised the old urban fabric and determined an efficient process to preserve this vital sector of the city. Two dimensions identify any attempt to develop old areas: firstly, the entirely or partially neglected area of the old urban fabric, and secondly, the direct or indirect reliance on foreign technicians to deal with national heritage and historical, cultural dimensions that shaped the urban context of the old sector of Baghdad (Al-Haidary 2009). Most of the traditional urban areas have modest conditions and qualities but are still considered an attractive destination. However, the main concern is for functional transformation, which leads to topological depth alteration and can change morphological patterns in an old urban structure. The revolution against what humanity has produced through its long-rooted history has led to unpredictable and unsatisfactory results, with modernism at the forefront of such results (Gehl 2010a).

Hall (1966) argues for maintaining beneficial, comforting old buildings and communities from ‘the bomb’ of urban renewal, where not all new ideas and objects are necessarily desirable nor all old thoughts and developments substandard. Cities, however, have many places and sometimes only a few historic buildings or a cluster of outstanding features which merit preservation. These buildings and elements within their own context afford continuity with the past and lend diversity to cities. Kropf (1996a, p 721) argues that, “the degradation of neglect is reinforced by the active effacement caused by the replacement of old by new buildings which share few of the characteristics of the former. The cumulative effect is that the historical and regional character of the town is being eroded”. According to Cullen (1961), the history of a city involves several historical layers, where most cities are constructed on old foundations, and their fabric exhibits evidence of different periods in their architectural and urban patterns and in the diverse accidents which are recorded and conserved by various layers of history.

The relationship between the old fabric and the trends of modern urbanism in Baghdad is the foremost priority in defining spatial affiliation and in dealing with the city’s significant cultural and historical heritage. It is possible to identify two essential perspectives that determine the relationship of the oldest urban area of Baghdad to the contemporary urban progress of the city. The first is the vertical perspective, which stands for the modernisation of the city centre itself and its adoption of the modern ideology. The second is the horizontal perspective, which addresses the extended urban areas that are adjacent to the traditional centre of Baghdad. This relationship, however, could include the fine scale of the city in examining the ability of the street to promote social interaction as a public space for people. Furthermore, different interfacing patterns could also be performed in the street.

1.4.3 The Dialectic between Traditional and Modern Thoughts

Since the end of the Second World War, the rapid growth of Baghdad city was partially uncontrolled, whether in the oldest zone or the surrounding regions. The built-up area increased from a mere six square kilometres in the first decade of the Nineteenth Century to about 240 square kilometres in 1970; this will be extended in the future unless there will is more thoughtful planning. This has since been achieved since starting the study. The more significant diffusion of Western ideas and the concept of modernity and technology coincided with the colonial and independent phases of Iraq that attempted to instil reform and development. The aim was to open up Iraq to the capitalist global economy through adopting Western patterns of society and their physical environments. In this respect, giving more attention to the central region of Baghdad is needed, meaning that the management of these traditional areas must be thoughtful and methodical in order to improve inhabitants' quality of life and to promote urban sustainability (Raouf 1984).

The influence of such rapid growth on the old fabric was overwhelming during the last three decades of the Twentieth Century. The growth of urbanisation generally led to an increase in demand for more physical environments, which severely damaged the old urban fabric of the Rusafa area. In contrast to Baghdad, a considerable number of other countries with ancient regions intentionally affected urban expansion outside the boundary of their historical regions (Fathi 1979a). The debate between modernity and identity in the scope of architecture has always been raised, whether by specialists or the public. To a large extent, the concept of Westernisation is evidenced by modernisation and modernity (Pieri 2008a). Thus, historical debates between the two sides (modernisation/Westernisation and traditional/East) should be reviewed in view of their conflict and their influence on the loss of Iraqi identity. The concept of cross-cultural references would be a more efficient way to drive an active role in reshaping and configuring both imported concepts and local objectives in the interaction between different cultures and counties or societies. This could be considered a healthier transformation in the interrelationship and exchange of experiences among communities (Pieri 2008a).

Reviewing the brief archaeology of firms that worked in Iraq, Doxiadis prepared the development plan for Baghdad city in 1958; the concept adopted was to keep the compact pattern of the traditional central area and to construct new adjacent streets. However, these plans were not largely realised although some housing projects and an Army Canal were carried out (Pieri 2008a). Despite the storming of the Middle East by modernity, particularly in relation to lifestyle, architecture, urban design, and planning, the traditional themes still gave a sense of balance with their socio-climatic traditional components. However, in the 1970s, Polservice designed traffic networks for Baghdad that disregarded the old urban fabric in the city centre (Pieri 2008a). A significant disadvantage in urban space is caused by the intersection between the historic fabric and the power of market orientation. Also, the tendency toward augmentation regardless of the historical and cultural environment, generally leads to the creation of a vacant area, which mediates between two contradictory contexts in terms of history, culture, and urban structure. The old fabric of the city splits into different sectors through creating new urban spaces that unfortunately work as segregation perimeters. The loss of system regulation, control and monitors on urban development plans, besides the level of bureaucracy and administrative systems, collectively lead to more devastation for traditional buildings and street patterns (Al-Hasani 2012).

Re-shaping the city to reflect the Iraqi identity entails a major preliminary survey and the first administrative framing of its heritage. However, a considerable number of architects tended to pervert such legacies by using modern techniques in design, materials and construction within the framework of traditional Arab architecture. This procedure has been adopted many times by architects trying to gain acceptance for their designs (Pieri 2008a). Accordingly, some attempts have been made to employ a local, traditional vocabulary in decorating new buildings in order to reduce the disparity and develop a new iconographical strategy. However, according to Pieri (2008a, p 36), "public architecture neglected the fact that identity is a matter of sedimentation and not of decision: under the pretext of reviving the past Arab and Mesopotamian grandeur as the foundation of a newly built collective identity". The Iraqi identity, in general, belongs to the history of ancient civilisations where part of its artefacts emerged as a fertile and fundamental basis for the nation that is undergoing a revival in the modern era.

Considering the old area in Baghdad, urban public space can be described through monuments, which include emblematic statements that carry a new iconography through the synthesis of a national repertory with a modern style. The notion of value in the old fabric of the city seems to be on the opposite side to high-rise buildings, which demonstrate inconsistency with the surrounding horizontal environment, particularly around the central area of Baghdad. The moment that the new European style emerged under the terms modernisation and Westernisation, Baghdad no longer remained a typical Arab-Islamic city. Al-Haidary (2009) asserts that modernisation and the implementation of rapid, dramatic changes by increasing economic growth and population sizes, resulted in unregulated buildings in the old urban fabric of Baghdad. Pieri (2008a) refers to urban identity as a language with a syntax that is composed of both built and natural, and tangible and intangible realities. Thus, architectural themes have their own exclusive urban character. Despite the paradox that the old urban fabric and its characteristics belong to its historical roots, its ability to survive within new urban developments is considered significant in so many countries. The old structure in a city offers unique opportunities to deal with its urban components to promote and develop an urban environment that meets human need throughout its social, economic and environmental qualities (Voisey et al. 1996 cited in Al-Akkam 2012).

Moreover, Pieri (2005, p 20) states that, “to preserve a balance between material layouts and collective memory, urban form and content, it becomes imperative to study the materiality of the built environment or urban design in its various contexts. Architecture and urban planning belong to cultural systems of representation and are part of long-term durability. Tradition should be a laboratory of collective memory so that it becomes easier to conceive of architecture and urban planning as societal choices”. The urban and architectural history of Baghdad should be taken into consideration as part of global urban heritage. From this point of view, Baghdad faces a significant challenge to the reconstruction of the old part of the city. According to Pieri (2005), this challenge must be settled for the long-term, not only for urban and architectural patterns, but also for the people who live in the city. Mohammed Makiya calls this a micro-vision which plays a significant role in softening the aggressiveness of large-scale developments, where the ideology of the human scale provides a guiding route.

The debate of the modern movement has often taken place in architectural reviews as one of the crucial transformation points in the history of architecture. The theme of reductionism is a modern ideology; nostalgia for the city’s past and the characteristics of humanity has become one of the most critical issues in contemporary architectural writings, conservation projects, and the maintenance of the architectural history of the city, both on the level of structural scope or urban design. Therefore, there is a need to move from “the rationalised modernist views that deconstructed so many towns and cities in the 20th Century” to meet the desire and “need to unpack and reconstitute the synoptic art of city-making that was substantially lost during the so-called machine age of the 20th Century” (Evans et al. 2011, p 8).

1.5 Deriving the Research Gap | Listing Similar Studies

A cross-reading of the literature concerning the emergence and development of Baghdad to the present-day helps to outline the research gap. The awareness of the value of heritage and history, particularly in the oldest sector of the city, has increasingly become an essential kernel for the emergence and diversity of ideas, which help to maintain and develop this part of the city. The characteristics of the old area reflect a considerable number of criteria, such as limited travel distances, lower car dependence, and greater opportunities for people to walk. These encourage community life with better surveillance that enhances public safety (Chen et al. 2008). Thus, these characteristics, particularly in the old fabric of the city, underpin the quality of social life by reducing motorised-based use, minimising external pollution, concentrating activities, adopting multimodal street networks, mixing land use, enabling high occupancy rates and highlighting the value of heritage and cultural elements. Another incentive is to help forge a relationship between the old centre and the city that reflects the concept of a Living Museum, based on real, coexisting life. A Living Museum explicitly offers positive opportunities at all levels, such as entertainment, culture and historical experiences, economic support, and social activities; it provides an attractive location for people, and helps to underpin tourism (Blunkett 1998); (Lynch 1984, p 368).

The city centre of Baghdad is a ‘mosaic of memory’ that contains unique features, whether related to its physical dimensions or collective memory. The traditional core has varied characteristics, which consist of many activities and ancient architectural components as well as a complex urban fabric (Al-Akkam 2012). The functional definition of the street is subject to the top-down approach to authority, even in the historical area of Baghdad that originally came from a long established bottom-up approach. Shamsuddin et al. (2008) state that streets in an urban context are places of economic and social significance; great cities are often identified by their main streets, and the nature of these street reflects the image of the city. Furthermore, one of the key functions of the street is to convey the main characteristics of a city and its particular identity. A street can represent the general perception of a city’s character, identity, and its image due to its bonding with individual experiences (Shamsuddin et al. 2008).

For fine-scale approaches, particularly in historic towns, the priority is the human scale, which is typified by the enclosure of spaces that are shaped by the boundary of buildings. The thoroughness of the building pattern combined with the design of the spaces are essential to give a sense of identity. In contrast, isolationism and introversion become the main features of modernist buildings. The influence of the modern wave was not only witnessed on the public space but also on the social and cultural meaning of space, where human aspects were not fully considered. Four objectives were identified by Gehl (2010a) with respect to the human dimension and these are: firstly, “lively, safe, sustainable, and healthy cities”; secondly, a city’s ability to invite individuals to walk through as the sign of a coherent structure; thirdly, a “short walking distance, attractive public spaces, and a variety of urban functions” and finally, the city offers an invitation to walk and cycle which form a natural and integrated element of daily routines, and part of a non-negotiable part of a unified health policy (Gehl 2010a, p 6-7).

Therefore, transformations in the behavioural system can occur rapidly in comparison to alterations in buildings and the urban context. Although this does not deny the role of the built environment and its influence on the community, the rate of change seems more explicit in human behaviour than in physical surroundings. For example, specific historical areas or buildings continue to exist as before, while each generation has their own experiences in an urban environment. Gehl et al. (2013) pose many questions about public life in a city. These questions are based on the relationship of people to urban spaces and their interactions with the surrounding environment and other people. The fundamental questions posed are; ‘how many’ regarding quantitative data related to people and their activities. The second question is ‘who’, which gathers knowledge about people's behaviours in the public space. ‘Where’ is the third question that addresses ‘where people are expected to go and to stay’. The final question concerns whether the city can generally provide specific knowledge of the type of activities undertaken (Gehl et al. 2013).

Regarding the similar studies that dealt with the urban form and urban life, there is a considerable number of scholars who achieved different approaches to addressing the connection between the physical environment and people’s response. An attempt to cover all these studies could be out of the scope of the current research, but highlighting the more significant ones would contribute effectively to enrich the research and enhance its conceptual framework. From Table 1.1, one can recognise four titled columns: behavioural patterns, spatial patterns, activity patterns and outcomes. Those authors, some of them, have been considered as the primary references of the current study.

Table 1.1. Listing similar studies. It highlights the main objectives of the previous studies in dealing with three different patterns: Behavioural pattern, Spatial pattern and Activity pattern besides the significant outcomes of these studies.

Title of Study	**Year**	**Behavioural Patterns**	**Spatial Patterns**	**Activity Patterns**	**Outcomes**
Good Cities, Better Lives. (Hall 2014)	2014		• Intelligent Spatial Planning • Linking People and Places	• Good People, Good Team Work	• Good Neighbourhood Management • Good Urban Design
Alterations in scale: Patterns of change in main street networks across time and space. (Porta et al. 2014)	2014		• Main Street networks as dynamic vessels for a human movement that are intimately linked throughout time to both physical and intangible elements of places • Main street networks connect local urban areas with their regional context and have constituted the commercial and service backbone of cities for many centuries • Main streets are a center in the spatial organisation of urban areas throughout time across significant social, economic and environmental changes		• Better understanding the critical relationships between urban streets and plots, urban designers can begin to repair and develop more adaptable urban tissues, capable of adjusting to changing demographics, economies and cultures over time • Historic cities • Informal settlement • Learning from the past: Toward urban sustainability • Response to the physical manifestations of modernist principles • Responses to industrialization • The Concept of Main Street • The essential logic and principles of what generates a more adaptable, hence resilient, urban fabric • The main street in historic cities has long been established according to 400-meter rule

How to Study Public Life. (Gehl et al. 2013)	2013	• Sense and Scale in Practice	• Active or Passive Facades • Center of Public space Research • Focus on Public Space and Public Life as City Policy • Public Space as a Stage for Demonstrations and Public Assembly • Public Space Qualities	• Necessary and Optional Activities	• 100-Meter Square • 100-Meter Street • Adoption of a New Technology • Public Life pioneers are Finally Heard • Public Life Studies Become Mainstream
Integrating Human and Natural Systems in Community Psychology: An Ecological Model of Stewardship Behavior. (Moskell et al. 2013)	2013	• Behaviour Settings	• Physical attributes		• Cognitive Map – Mental Models • Environmental Mental • Social attributes • Support motivate a certain behaviour
Urban street networks, a comparative analysis of ten European cities. (Strano et al. 2013)	2013				• Heterogeneous • Homogeneous • Power-law behaviour • Power-law function • Power-law region • The distribution of street lengths follows universal power-law behaviour in the long tail of the dataset • Urban morphology
Socially restorative urbanism: the theory, process and practice of Experiemics. (Thwaites et al. 2013)	2013	• The effect of transitional edges on people's behaviour	• Socio-spatial factor in the urban fabric • Therefor transitional edge can be regarded as a spatial and sociological line • Transitional edges thus become the visible socio-spatial form of	• Transitional edges, directly related to territorial activity through occupation and the expression of that occupation in the material world • Social activity • Social activity: capacity to hold	• Social activity: capacity to hold and encourage stationary activity • Public-private gradient: the experience of a smooth gradient from private to public realms

			built environments • In spatial terms, this begins to suggest that an edge's lateral dimension and qualities may have a direct bearing on its social functioning	and encourage stationary activity •	• Social interaction: an interaction between, rather than an abrupt division of, private, semi-private, semi-public realms • Hide and reveal: the localised capacity to facilitate choosing private retreat or social interaction • Spatial expansion: socially absorbent spaces formed from the overlap of adjacent realms • Enclosure: localised enclosure along the generally coherent edge • Permeability: the capacity for connection to other realms • Transparency: physical and sensory accessibility to adjacent realms • Territoriality: the capacity for occupation, appropriation and expression • Looseness: the capacity for ambiguity, flexibility and evolution
Human behaviour and sustainability. (Fischer et al. 2012)	2012	• Sustainability demands changes in human behaviour			• Curbing consumption and population growth • Engaging the community in a stronger civil society • Value and belief systems

Urban Environment and Human Behaviour: Learning from History and Local Wisdom. (Widodo 2012)	2012				• Architecturing rather than Architecture is as a Process rather than Product • Beauty Radiates from Truth – Examining our Conscience • Harmonious coexistence: order, hybridity, and cultural sustainability • Historical layers in the old city • Local wisdom, culture, and norms, and building typologies, climate conditions, building materials • Modernity, contextualization, modernization, and innovation • The harmonious relationships among three aspects, human, nature, and the spirit
Street centrality and the location of economic activities in Barcelona. (Porta et al. 2012)	2012			• Live activities • Primary activities • Secondary activities	• Cities have increasingly become an edgeless city where central city seem to be lost its priority, and the primacy has become to the suburbia of regions • In urban planning, central urban arterials should be conceived as the cores, not the border, of neighbourhoods • Monocentric model in emphasis on the access to the centre at the central business

					district (CBD) • Natural movement • Polycentric. It can be described when urban dwellers they have the ability to access to all or some of the centres or they can access to major centre • Primary activities are attractive enough—mainly because of their function to draw people as final destinations, while secondary activities live solely on passers-by, therefore on their location • Secondary economic activities show rather a higher correlation with street centrality than primary ones
Space, place, life: learning from place 1. (Evans et al. 2011)	2011		• Urban Space-Making • Nostalgia for the city's past and the characteristics of humanity		• Reductionism and the Image of the City • The Fundamental Components of Urban Fabric • Multi-layers of the history • Changes in technology and the potential impact on the city identity are recognized
Street centrality and land use intensity in Baton Rouge, Louisiana. (Wang et al. 2011)	2011			• Urban land use intensity, in terms of population and employment densities, is shaped by the street network instead of proximity to the city centre	• Monocentric. Monocentricity • Polycentric. Polycentricity • Urban location is well captured by centrality metrics • The set of centrality indices captures the very essence of the location in terms of

					place's accessibility, intermediacy and directness among others
Cities for people. (Gehl 2010a)	2010a	• Behaviour and City Pattern • The Communication in Milieu • The Scope of Sensory	• Human Dimension • The City as Meeting Space • The Factors Influencing the Sensory Apparatus • The Quality and Quantity of City Space • The scale of buildings in the city • The scale of the urban context in the city • The Scope of Visibility • The Transformations in City Scale • The Value of the City in the Representation of the Human Dimensions	• Classification of Activities • The Value of the City to Meet the Humanitarian Needs • Three Aspects of the Human Dimension in Twelve Quality Criteria	• The perspective of City in Developing Countries • Sustainability of City toward Green Transport • The Challenge with Limitations and Opportunities • The City as an Integral Process • The Concept of Sustainable City • The Density of City Space • The Perception as a Coexistence Factor with Space • The Perspective of Safety and Security in a City • The Perspective of the Value of the City • The Principles of Planning City • The Processing of Perception • The Safe City • The Soft Edge is as a Convergence of Surfaces • The Spirit of Traditional City • The Sustainable Society • Traffic Flow Stream
Life between buildings: using public space. (Gehl 2010b)	2010b		• Existential Dimensions of Urban Space • Opportunities and Possibilities as a Two Targets of Urban	• Classification of Urban Space Activities /Behaviours • The Image of Urban Space Activities	• Comparative Qualitative Dimension to the Emergence of Urban Space Activities

			Space • The Binary Aspects in Strengthening and Weakening of Urban Space • The Pattern of Urban Space of City • The Quality of Urban Space • The Sense of Space • The Vital Aspects of Space	• The Transformation in Social Structure	
Public Places Urban Spaces. (Carmona et al. 2010)	2010		• The perceptual dimension • The social dimension • The visual dimension	• The functional dimension • The temporal dimension	• The morphological dimension
Challenges of human behaviour understanding. (Salah et al. 2010)	2010	• Nonverbal behavioural cues • The spatio-temporal scale of human behaviour • Verbal, behavioural cues.	• Geometrical scene properties • Objects in the scene • Persons in the scene • Scene type • Temporal context • The Meaning of Context	• Recognizing social signals	
Street centrality and densities of retail and services in Bologna, Italy. (Porta et al. 2009)	2009		• Centrality captures the essence of location advantage in an urban area, and its values should be reflected in the intensity of land uses	• Accessibility • Correlating street centrality and commercial or service activities • Street centrality plays a crucial role in shaping the formation of urban structure and land uses	• Edge effect • Global measure • Local measure • Retail and service activities tend to concentrate on the areas that enjoy better centralities. • The multiple centrality assessment models be an effective tool for mapping street centrality as a fundamental property in a city • What is the location? • Why does it matter?

Behaviour and conservation: a bridge too far. (Caro 2007)	2007	• Human behaviour	• The built environment in an urban context	• Activities	• Influences of activities in urban context on human behaviour • Influences of the built environment in urban context on human behaviour • Influences of human behaviour in urban context on the urban spatial
Human Behavior and Environmental Sustainability: Problems, Driving Forces, and Research Topics. (Vlek et al. 2007)	2007	• Behavioural Processes and Environmental Motivations • Environment Behavioural Change and Technology	• Human response to the physical environment		• Evaluation of Urban Environment and Nature Experiences • Multidisciplinary research and the Future of Environmental Psychology
Behaviour, Preferences and Cities- Urban Theory-Urban Resurgence. (Storper et al. 2006)	2006	• Urban Transformations is as a Behavioural Transformation			• Deterioration of Urban Architecture in Old City • Diversity and Tolerance • The old design is more pleasing to the eye than new • Urban Resurgence
Centrality Measure in Spatial Network of Urban Streets. (Crucitti et al. 2006a)	2006				• Heterogeneous city • Homogeneous city • Planned city (Geometric City) • Self-organized city (Organic City)
Structural properties of the planar graph of the urban street pattern.	2006				• Geometric City • Organic city • Planned city

(Cardillo et al. 2006)					• Self-organized city
The network analysis of urban streets: a primal approach. (Porta et al. 2006a)	2006				• A new approach to the network analysis of centralities in geographic systems is therefore appearing. Its three pillars are (1) primal graphs; (2) metric distance; (3) many different indices of centrality • Generalized versus direct graph representation • Matric versus step distance • Primal versus dual • Support the primal approach as a more comprehensive, objective, realistic, and feasible method-ology for the network analysis of geographic systems such as those of streets and intersections • The 1-square-mile research
Human movement behaviour in urban spaces: implications for the design and modelling of effective pedestrian environments. (Willis et al. 2004)	2004	• Spacing behaviour	• Environmental factors	• Pedestrian flow • Personal factors • Situational factors • Walking speed	• Agent-based simulation model • Interpersonal spacing • Microscopic position • Mimic route-choice • The importance of empirical analysis • Video-based observational study • What factors attract or repel pedestrian to or from a particular location

Approaches to Managing Urban Transformation for Historic Cities. (Stovel 2002)	2002			• Intangible human activities in relation to the reinforcing physical environment, particularly, in the old fabric of a city	• Conditions of integrity • Continuity • Qualifying Conditions • Test of authenticity
Urban open space in the 21st century. (Thompson 2002)	2002		• Loose-fit-places • The urban open space network as social space		• Green networks • Growing things in town • Memorabilia • Open space and information age • Reminiscences • The need for a refuge and contact with nature • The role of public open space in a democratic society
Human Information behaviour. (Wilson 2000)	2000	• The importance of focusing on the individual as a user		• Person-centred" approach, rather than a "system-centred	
The Ethological Approach to the Study of Human Behavior. (Klein 2000)	2000	• Behaviour innate • Behaviour learned • Behaviour actualized		• Communication interspecific • Communication intraspecific • Fixed-action pattern • Human nonverbal communication • Human verbal communication	• Cultural anthropology • Social anthropology
Modelling and Prediction of Human Behavior. (Pentland et al. 1999)	1999				• Human-machine system
The Theory of Planned Behavior. (Ajzen 1991)	1991	• Antecedents of attitudes • The Role of Past Behaviour			• Belief-based measures • Normative Beliefs and Subjective Norms

					• Optimal scaling • Personal or Moral Norms • Salient beliefs or Beliefs Salience
The meaning of the built environment a nonverbal communication approach. (Rapoport 1990)	1990			• The activity proper • The specific way of doing it • Additional, adjust, or associated activities that become part of the activity system • The meaning of the activity	• Meaning in the environment • Communication environment – people • Social communication in an urban context • Vernacular design
Public Place and Space. (Altman 1989)	1989	• Loose Life in the Street	• Intrusions of the Public into the Private Realm • Intrusions of the Public into the Private Realm • Public Space • Street	• Control Form on Public Space	• Loss of Categorical Distinctions between Public and Private Realm
Good City Form. (Lynch 1984)	1984	• Purposeful Behaviour • Sense. Identity, Orientation, and structure	• Access • Control • Efficiency • Fit • Social and Spatial Structure • The Physical Environment		• A language of City Patterns • Functional Theory • Normative Models: Cosmic model, Machine model, and Organism model • Normative Theory • Planning Theory • Reading Place • Strong, wishful, weak, hidden, and neglected values
Cities for People – Practical Measures for Improving Urban Environments.	1981		• Destruction of Space • Positive Qualities of Historic Spaces • Strength a Unique Sense of	• Attract People Through Pleasant Stimulation • Conserve Existing Resources • Encourage a Variety of	• Anti-pedestrianism • Cities for Cars, Not for People • Compromise with the

(Wiedenhoeft 1981)			Place • Use Traditional Scale • A sense of containment	Activities • Encourage Social Interaction • Encourage Use by People • Encourage Walking • Increase Leisure – Time Activities • Maintain Attractive Environment • Provide a Public Forum • Sociocultural Concerns • Sufficient place for social activities and human needs	Present • Contributions of Old Buildings • Enforce Existing Regulations • Enhance Environmental Quality, Improve Infrastructure • Excessive Transfer of Land Uses • Low Density • Mall versus Routes for Pedestrians • Problems of the Urban Environment: environmental, economic, and socio-cultural • Recapturing Traditional Qualities • Revitalize Cities Through Better Planning • Speculative Development and the debasement of Older Buildings • Urban Renewal versus Urban Removal
The social life of small urban spaces. (Whyte 1980)	1980		• Encouraging Factors and Debilitating Factors in Using Urban space • Factors Influencing the Use of Urban Space • The Value of the City as Much as the Value of Urban Spaces • Transitional Spaces between Urban Spaces		• The Properties of Sitting Requirement
Meaning and Behaviour in the Built Environment. (Broadbent 1980)	1980	• Coding Behaviour as a Synchronic Adaptive Mechanism	• Evaluation and Physical Attributes • Physical Components –	• Activities and Physical Attributes • Classification of Activities	• Attributes of Physical Form • Attributes of Use and Significance

		• Cultural Components – Meaning • Space-related behaviour	Appearance • Physical Components – Location	• Social life • Social Space • Placemaking activity	• Visibility Attributes • Physical Differences • Social differences • Temporal differences
A pattern language: towns, buildings, construction. (Alexander 1977)	1977		• Hierarchy of open space • Identifiable Spatial Unit	• Activity Pockets • Pedestrian density	• Building edge • Building front • Community Facilities • Opening to the street • Path and goals • Path shape • Street windows • The System of Public Transportation
Human Aspects of Urban Form. (Rapoport 1977)	1977	• Behaviour Setting System • Cultural Behaviour • Environmental Perception • How do people shape their environment? • Human characteristics • Non-Verbal Communication • Push and Pull Factors • Social Differences • Environmental Determinism • Environmental Possibilism • Environmental Probabilism	• How and to what extent does the physical environment affect people? • Organization of Space • Physical Differences • Physical Settings • Space	• Activity • Environment as Communication • Networks, Activity Patterns • What are the mechanisms which link people and environment in this two-way interaction?	• People shape their environment • The physical environment affects people • The mechanisms which link people and environment • Cities, Symbolic, Accessible • City centre • Culture, Symbolism and Form as Ways of Coping with Overload • Effects of Scale and Speed of Movement • Homogeneity and Clustering • Homogeneity and Heterogeneity • Islamic city • Neighbourhood • Networks • Norms, Roles, Status • Ottoman Period • Public and Private Domains

					• Social and Spatial Structure and Norms • Socio-Cultural Aspects of the City • Subjective Urban Morphology • Symbolism and the Urban Environment • The City in Terms of Social, Cultural and Territorial Variables • Urban Morphology versus Urban Phenomenology • Values
Designing for human behaviour: architecture and the behavioural sciences. (Lang 1974)	1974	• Spatial Behaviour • The Architectural Concept System and Human Behaviour • The Behavioural System • The Patterns of Behaviour • The Potential Components of Behavioural System	• The Concept of Integral System • The Patterns of Space • Space is as a Communication Channel between Individuals		• Architectural-Environmental Determinism • Cultural Differences • Physical Environment as an Embracing and Generating of Human Behaviour
The Emerging Discipline of Environmental Psychology	1970	• Admittedly that behaviour can occur naturally in an environmental context particularly • Behaviour is a different way activated and emerged by the characteristics of the environment and its attributes	• Attributes of the physical environment		• The degree of quality of the environment
Activity Systems and Urban Structure: A Working Schema. (Chapin 1968)	1968	• Behavioural constructs • Moving behaviour • Pull factors • Push factors	• Physical constructs	• An activity component • The choice mechanism • Value-prescribed needs	• A value system component • Communication theory • Market-oriented theory • What are the energizing phenomena behind the

		• social scheme			human activity that promote man to behave in certain ways in his social system • What are the underlying forces that regulate the functioning of urban life as a social system
Science and Human Behaviour. (Skinner 1965)	1965	• Law of effect • Pleasant and Satisfying • Pre-current behaviour • Superstitious Behaviour • Trial and error	• Primitive forms		
The Image of the City. (Lynch 1960)	1960		• Space as a boundary for Lynch's elements • Space as containment for Lynches elements • Lynch's elements constitute the urban space		• Three are components that are required to shape a meaningful image for people; identity, structure, and meaning • There are five elements in reading city image; paths, edges, district, nodes, and landmarks

1.6 Conclusion

This chapter addressed the emergence of Baghdad city and the stages of its morphology and transformation. The oldest periods began with the Round City; this created the first nucleus that later formed Baghdad. The city then moved from the west to the east riverbank of the Tigris. Moreover, the main historical characteristics of the urban structure survived until the British occupation in 1917. The physical environment was typified by two fundamental urban components: its street network and Mahallas (traditional neighbourhoods). These two elements have a close interrelationship and an overlapping pattern. Spontaneity follows the bottom-up approach, where the community manages its own built environment; this is derived from the order and regulation that informed the norms and values of inhabitants and their beliefs.

Morphologically, the historical region of Baghdad was distinguished by an organic pattern for both the street network and its built units. Moreover, the street pattern was also subject to a series of definitions according to the degree of privacy and other functions. This chapter highlighted the main points that differentiate the historical pattern of the city and the modern era. Those points were considered under four main headings: (1) the essence of Baghdad city, (2) its streets' characteristics, (3) the old fabric and modern trends, and (4) the dialectic between traditional and modern concepts. Modern areas in Baghdad follow the top-down approach to generate neighbourhoods that are distinct from the fine-scale or micro level of street life. However, this mainly depends on the expectations of future programs through pre-determined land use.

Due to the new strategies and regulations introduced by master plans, the urban structure of Baghdad drastically changed, not only in the centre but also in the surrounding regions. One of the main aspects of these transformations in the urban structure is its street life and how might people respond to the street edge and the ways in which their social interactions are influenced. Furthermore, this impacts the underlying system in terms of its street pattern and the network characteristics, including the centrality value. Additionally, this chapter highlighted the research gap and how that informed the research questions and objectives in Chapter Two. Hence, this chapter considered the general socio-cultural dimensions, whereas the next chapter will explain the relationship between the main goals of the study and how to address human behaviour.

Chapter Two

Research Problem and Methodology

2.1 Introduction

One of the goals of this chapter is to understand significant problems in the urban structure of Baghdad and how this affects other aspects. It is essential to outline a feasible research problem for the next steps of this study, as this will determine the scope of the research. This chapter will define the research problem and formulate the research questions. Accordingly, the primary objectives will be identified to meet the aim of the study. Procedurally, the method will be designed to address the pre-determined problem and to answer the key research questions. Designing the research methodology means covering different aspects of the study's purpose and its goals. This will entail a combination of several techniques and procedures, such as dealing with software programmes alongside the conduct of a field study. Principally, the research will adopt a quantitative method to measure the selected variables that derive from two primary sources: previous studies and observations. Furthermore, this chapter will refer to the authorisation of the street observations and identify the research obstacles. Regardless of the research method and technologies used in the study, the chapter also outlines the necessary boundary that defines the research scope to ensure its feasibility and focus.

2.2 Research Problem

2.2.1 The Primary Problem: The Historical City as an Asset

Despite having a remarkably long and rich heritage with deep historical roots, the individual units and the inventory policies of Baghdad's buildings, climate and unique characteristics have not been satisfactorily examined. Neither has its street life and social interactions been satisfactorily investigated. Furthermore, knowledge of the relationship between its urban elements and people, as interactive agents, beneficiaries and occupiers of the space, is still limited. Since the mid-Twentieth Century, Iraqi scholars and researchers have been educated in Western universities. They have tended to pursue one of two directions when considering Iraqi heritage; firstly, there were those who entirely neglected the historical and cultural aspects of Iraq for the new era of architecture, which adopted the concepts of modernisation and its ideology when designing and shaping the urban space. Secondly, other scholars tended to accommodate the city's heritage and historical values by using different methods and strategies. Most often, studies and academic researchers focused on the formal characteristics of the urban components within the old urban fabric in Baghdad and disregarded the whole context of the urban environment. In doing so, they missed an essential layer of built units and a pattern of key networks.

Focusing on the rehabilitation or conservation of an individual unit (building or group of buildings) without considering its context does not consider the entire vision or the coherent interrelationships between its individual entities. Thus, an ongoing concern for the urban fabric is the understanding and examination of a network of connections among components where individual units are involved. Recently, environmental and sustainable issues have become increasingly popular foci for study. However, a relevant documentation system regarding old and historical areas and local heritage in Iraq is not available to fully explore this area. Also, much of the old fabric, and its buildings were demolished or removed by official order without any documentary record. Different scholars have determined the factors of urban change, analysed relevant regulations and policies, exploring the transformations of the old urban fabric, and developed an inventory of heritage buildings. Most of these studies and policies have remained within a theoretical framework, with the exception of some modest attempts to develop a few historic buildings. Arguably, the bulk of these previous studies have not focused on urban activities, and behavioural dimensions within the old urban fabric in Baghdad, but instead dealt with urban renewal policies under different terms of conservation.

There is a need to transform the rigid image of the old urban fabric into a vital concept that processes the urban context of the city. Highlighting the nature of activities and behavioural aspects within the old urban fabric can help to extract significant indices. These can enable a re-examination of the traditional urban context and its policies regarding its existing components and a potential relationship with new developments. Since the second half of the Nineteenth Century, the importance of the old city emerged, not merely as a landmark that contained historical buildings but also as a valuable part of the cultural wealth of the nation. This consciousness of heritage and history is still growing amongst Baghdad’s communities. However, such awareness cannot mature in a cultural vacuum, but needs to grow alongside existing values in the midst of cultural traditions and forms that are still alive and thriving.

2.2.2 The Secondary Problem: Historical Value from Individual Monuments to the Urban Fabric

The old urban structure has been replaced by new elements that communicate a modernist identity; thus, the impression of historical urban components is likely to be old-fashioned. Regardless of the cultural and historical character embodied in traditional buildings, newer buildings can signify a new lifestyle, a healthier urban environment, and accessible facilities, whilst the historic areas are less likely to be associated with these qualities. Consequently, the historic urban fabric is vulnerable to complete obliteration; this would mean the incremental loss of the identity of the city for future generations, which could lack a sense of belonging or at least forget the original roots of the city. This fundamental alteration could be avoided by shifting the concept of conservation to focus on a singular monument, or a "targeted preservation" (Chen 2009). Thus, the old urban fabric could be recognised as a significant ambient element of the urban setting. From this understanding, the primary and secondary elements of the research problem, and the research questions are designed to develop the main framework of the study.

2.3 Research Questions

Based on the research problem, key questions are raised and procedurally selected in order to examine the indices and variables determined for the study. These questions are:

1. Can we detect objective differences in the urban form of the old town, compared to the newer areas?
2. Is the old town more vital than the newer areas?
3. Can we establish a correlation between different types of urban form and their degree of vitality?
4. What are precisely the features of the urban form that appear to best explain the degree of vitality?

2.4 Research Objectives

To answer the research questions, the following research objectives are provided:

1- To understand the underlying system in the old pattern of Baghdad city and to compare this with the other selected samples.

2- To explore the relationship between the indices and variables and establish their level of correlation.

3- To examine the variables which could influence the quality of Baghdad's street life, and to determine the diversity of such variables across the four cases.

4- To understand the three different scales of the analysis: neighbourhood, street and block, and the degree of coherence among them.

5- To illustrate the transformation of the morphology and the relationship between the plot, block and street network, and the reciprocal relationship between the public and private realms.

2.5 Research Method

2.5.1 Mixed Approach

A mixed method combines and integrates two approaches; quantitative and qualitative; the current study incorporates these two methods. The mixed method includes six designs; convergent, explanatory sequential, exploratory sequential, embedded, transformative, and multiphase. Moreover, it is worth mentioning that qualitative and quantitative approaches are not rigid opposites, or dichotomies, but rather represent various ways of dealing with the components of research. Mostly, qualitative data tend[s] to be open-ended without predetermined responses, whereas quantitative data includes closed-ended responses such as found on questionnaires (Creswell 2014). According to Creswell (2014), there are three aspects of the mixed approach. Firstly, a convergent parallel mixed method means when the researcher tends to converge or merge quantitative and qualitative data to provide a comprehensive analysis of the research problem. Secondly, within explanatory sequential mixed methods, a researcher conducts quantitative research, analyses the results and then builds on the results to explain them by through qualitative research. Finally, in exploratory sequential mixed methods, a researcher adopts a qualitative research approach to determine the views of participants, and then analyses and builds knowledge by using quantitative analysis.

In a qualitative approach, there are a considerable number of designs: narrative research, grounded theory, phenomenological research, ethnological research and case study research (Creswell 2014). The latter three types are adopted within the current study due to their varying levels of research, which are:

- Phenomenological research is often adopted as a design when the researcher wants to describe a phenomenon that is experienced by individuals or by themselves.
- Ethnographic research deals with anthropology and sociology, when the researcher tries to understand the shared pattern of behaviours, language, and culture within a group in a natural setting over a prolonged period of time. This approach tends to adopt ethnography and interviews.

- Case study research is increasingly a necessary method for many disciplines, and entails the researcher developing an analysis of a case by examining a program, event, activity, or process. The case study should be boundaried through time and activity.

2.5.2 Defining the Case Study

According to Sommer (2002), a case study is an in-depth investigation that examines and analyses a certain event or a phenomenon through the application of multiple methods and approaches to obtain appropriate findings. Baghdad continues to experience a dramatic transformation at different levels of its urban space. Urban morphology, activity patterns and even the perception of the surrounding environment are subject to various negative or positive changes, and this includes the boundary of the relationship amongst human activity, human behaviour, and the context of the old urban fabric. As an urban study has a broad context that is relevant to other fields of knowledge, this enables various interventions. Thus, human dimensions related to cultural and social aspects, and norms are an essential consideration in urban studies as well as the for physical aspects of the built environment.

2.5.2.1 Features

- **Phenomenal Features**

This is related to the physical components that appear in a specific urban structure and encompass a broad spectrum of situations and variables that belong to different sources of the evidence within the physical environment (Lang 1974). This also considers the understandings gathered from work undertaken by other scholars, and "benefits from the prior development of theoretical propositions to guide [the] data collection and analysis" (Yin 2014, p 17). In Baghdad city, the phenomenological features mainly relate to the old part of the city; for example, traditional buildings and neighbourhoods aside from the old urban fabric. However, the primary aim of this research is to focus on the features of the urban structure through selected samples, rather than on an individual unit (building).

- **Symbolic Features**

Tracing non-materialistic characteristics in an urban environment requires an understanding of the intangible aspects of human behaviour within a given environment. Norms, culture, religion, and attitudes shape meaning and involve feeling, thinking, remembering, learning, and mental development (Lang 1974). One of the research objectives is to examine and analyse the nature of activity patterns and its colouration of behavioural patterns in the urban space across the four selected cases in Baghdad.

2.5.2.2 Scope

- **Boundary**

According to Yin (2014), the scope entails the investigation of a contemporary phenomenon within a defined boundary between the event and its context. Researchers can examine such a phenomenon within its surroundings or separate the phenomenon from its context. In this regard, an urban investigation that conducts a holistic analysis to examine all dimensions of an indefinite area would be challenging and potentially unfocused. Therefore, a more appropriate approach would determine an area of analysis to consider a number of criteria, which are based on the nature of the research and its aims. The research is likely to have number of variables and multiple sources of evidence. Most often, variables oscillate between the quantitative and qualitative approach: nevertheless, variables tend to deal with more quantitative than qualitative methods.

Bourdic et al. (2012) suggested two scales to determine the boundary of a case study area; this will be subject to the measurement of urban indicators. The first scale involves the selection of a chosen field of 200m x 200m or 400m x 400m, while the second scale is based on blocks, and spans from one to four blocks. These dimensions, however, maintain the coherence and consistency of the urban fabric, where the "morphological parameters are particularly increasing on the block scale and in urban configurations consisting of adjoining or homogenous buildings" (Salat 2009 cited in Bourdic, Salat et al. 2012, p 594). For this study, the boundaries of the four case studies are defined by a circle with a 400m radius. This is based on the frequently cited acceptable walking distance, and indicates the threshold range of a five-minute walk (Aultman-Hall et al. 1997); (Mehaffy et al. 2010); (Randall et al. 2001) (Remali 2014) (Tal et al. 2012).

- **Purpose**

The main aim of the case study is to obtain an environmental and detailed contextual analysis of a given phenomenon. Adopting a contextual parameter for a limited number of objects, events, and activities help to understand and analyse a complex problem and then determine the grounds for establishing reliable findings (Chen 2009) (Rogers 1995). In addition, the goal of the case study is to elicit some responses to the research questions. Moreover, the case study can be used as a platform to examine some variables or constructs that have already been extracted from other research. This is particularly useful when there is an interrelationship between behaviour patterns and activity patterns, and when it is important to establish their role in reshaping the urban environment.

- **Criteria**

The criteria of the case study can be described as the set of conditions that are necessary to successfully launch the research. This requires the definition of the research problem and its objectives to examine the following three aspects; the built environment, the street network, and its activities. The case study should be typical for all the selected areas in the city of Baghdad. Therefore, the chosen domains have the same criteria, whether they are based in the historical region or other newer parts of the city.

1. Criterion One

The primary criterion of the chosen cases is that the samples are located in four different regions of Baghdad city, which includes the network that simultaneously links them. This criterion is recognised by the Mayoralty of Baghdad through earlier studies and documentation. The age of the traditional urban fabric and its components besides its history is undoubtedly a significant consideration for this study. Furthermore, the existing Law of Antiquities of 1936 aims to protect an individual building constructed before 1700 A.D., regardless of its urban surroundings or urban context. The historical interest does not only relate to old buildings, but also the traditional urban fabric, and considers its spatial, activity, and behavioural patterns. At the end of the Ottoman rule and from the arrival of the British in 1917, Baghdad was subject to a great number of urban and architectural changes, which continued until the end of the British Mandate of Iraq in 1932. One of the four cases presents the traditional fabric, while two samples represent a modern pattern of planning. It is intended that, using these examples will enable a comparison of the selected indicators. One of the main aims of the study is to define the traditional area of Baghdad from another perspective by comparing it with other selected neighbourhoods. The whole urban fabric of the historical area is identical in terms of its morphology and activities, meaning that extracting any sample is likely to be, to a large extent, similar. Regarding the rest, samples are close to each other in terms of, for example, land use.

2. Criterion Two

As previously discussed, the old urban fabric situated in the centre of Baghdad has been subjected to serious encroachment and destruction to meet the modern demands and purposes for urban land. Thus, the second criterion adopted in this research addresses the urbanisation and globalisation of Baghdad through examining any new activity patterns and behaviours that occur in the old urban fabric of Baghdad city. Although there can be a partial or complete loss on a day-to-day basis within the historical and traditional case study, this is likely to be less influential for the other case studies. As the research aims to address the urban form and urban life and how the urban elements could constitute not only the street space but also people's lives, land use is a critical factor. Land use, in this respect, will be considered a weighting value to understand how the diverse use of the street contributes to improvements in the interaction between the street users and its edge. The street can be recognised by either monofunctional and homogeneous, or multifunctional and heterogeneous uses, and how that probably affects the street life and the social interaction with other variables.

3. Criterion Three

The third criterion relates to the potential for the case study area to be considered under one of three classifications. The first classification is the complete separation of the case study from its surrounding areas regarding the urban morphological form and its activities. The second classification is where the case study is partially connected with another context of the city, whether through activity or/and morphological patterns. The final classification is when the case study is completely fusible within the new modernisation of the city, which would potentially affect the activity and behaviour patterns and in turn, could lead to the reshaping of urban components in the old urban fabric.

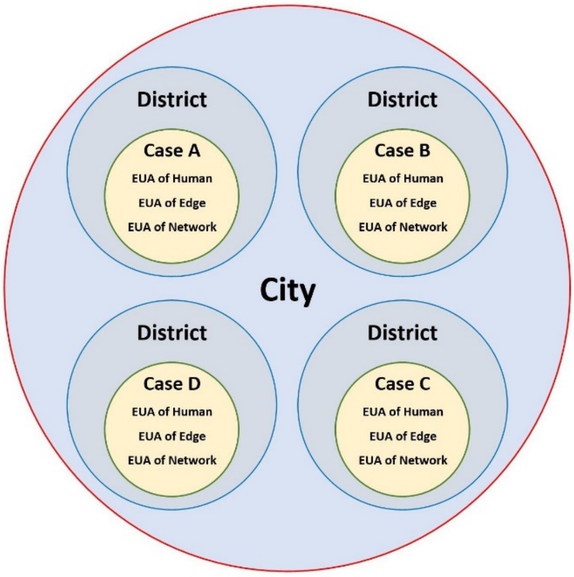
2.5.2.3 Type

There are three types of a case study that can be adopted as a part of a research methodology: firstly, an exploratory case study defines the questions and hypothesis of study or determines the feasibility of the desired research procedure. The main step is that the information-gathering from field and data collections are undertaken before the final definition of study questions and hypothesis (Yin 2003). Secondly, an explanatory case study is designed to deal with causal problems following the development of the research questions. Finally, a descriptive case study refers to "the scope and depth of the case that [is] being described" (Yin 2003, p 23). The selection depends on the nature of the research in terms of its field, problem and goals. However, according to Yin (2014), each case study might be related to a particular 'Question', such as: 'What, How, and Why'.

The research question can be considered the kernel of the methodology and characterises all research approaches . The term 'What' can be described as a sign of exploratory research. In comparison, 'Why' and 'How' refer to explanatory research (Yin 2014). For this research problem and objectives, it would be useful to adopt both explanatory and exploratory research in analysing the selected case of Baghdad city, which allows for the examination of both activity and behaviour patterns.

2.5.2.4 Design

Yin (2014) defines the four models of a case study design; these depend on the research question, its purpose and aim. The traditional design begins with a single-case and includes; holistic (a single-unit of analysis) and embedded (multiple-units of analysis). The second concerns multiple-case design and can be holistic or embedded when considering multiple units of analysis (Figure 2.1).



EUA: Embedded unit of analysis

Figure 2.1. Adopting multiple-case designs with embedded (multiple units of analysis). Source: Drawn by the author.

This research employs two phases in its case studies; the first phase examines the old urban fabric sample and compares this to the other three samples. It analyses the street network by adopting software designed for this purpose. The second phase involves the choice of three other cases within the same boundary, where each case will involve an embedded number of variables that are shared with the other cases (Figure 2.2).

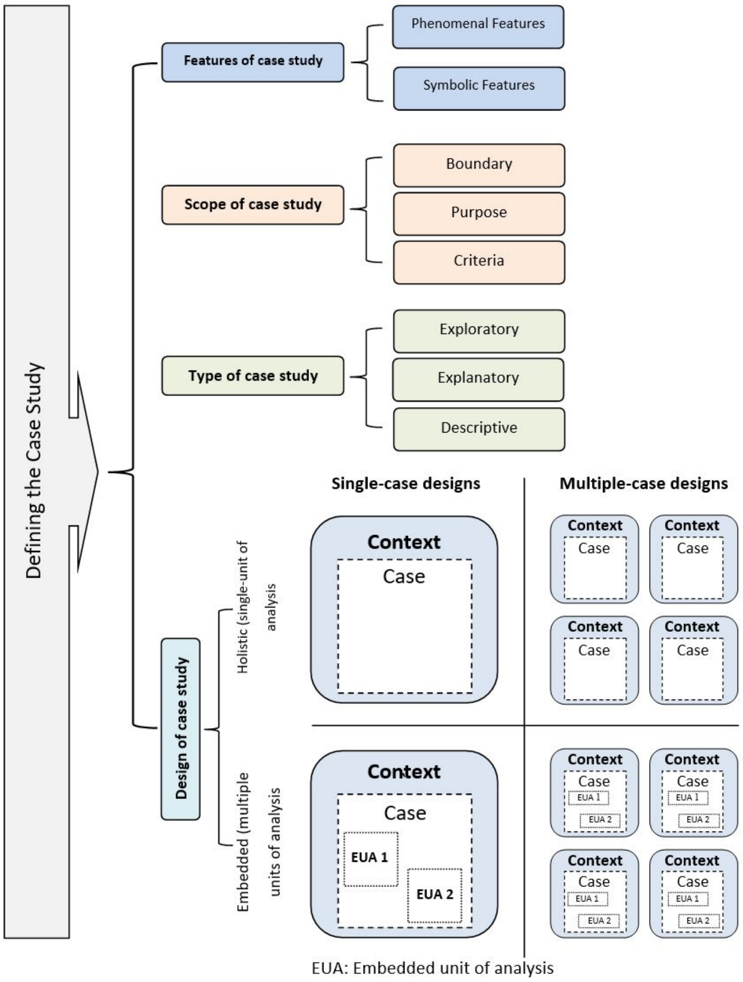


Figure 2.2. Case study approach based on Yin (2014, p 50) and Creswell (2014). Source: Drawn by the author.

In this study, there will be four research samples, which are designed according to the criteria above. Each case study represents an urban area with a different street network pattern; these cases represent a range of phases throughout the growth of Baghdad city. Sample A represents an organic pattern and is from the oldest part of the city; sample B is a hybrid pattern, whilst sample C is a parallel pattern. Finally, sample D is a loop-grid pattern and is more modern than the other samples. More detail will be given about the progress of the research for each individual case study.

2.5.3 Urban Morphology Analysis

2.5.3.1 Multiple Centrality Assessment MCA

The first attempt to adopt the concept of a network emerged in social studies and anthropology and envisaged that, “each person as a node [is] linked with others to form a network to quantify both the interactional attribute of the linkages and to overall morphological attribute of a network” (Rogers 1995, p: 15). One of the fundamental issues in urban research is the extent to which tools that measure spatial configurations can elicit precise and meaningful findings. The spatial network is considered an underlying layer in the urban form and helps to shape the whole image of the urban context by linking urban features and maintaining continuous movement in harmony with other city components (Crucitti et al. 2006a). Recently, the concept of centrality has increasingly become one of the most important measures in urban studies, particularly when analysing urban networks on their own properties. Centrality can reflect a considerable number of human behaviour indices concerning urban space (Crucitti et al. 2006b). According to Porta et al. (2009), there are three main characteristics of Multiple Centrality Assessment, which are: (1) to adopt a standard primal format in representing the street network; (2) to ensure all centrality measures deal with the real street network as a metric computation, and (3) to measure centrality by using multiple peer indices. Furthermore, centrality can play a significant role in forming its city growth, aside from impacting on how the city works.

2.5.3.2 Urban Form Indicators

The study seeks to adopt two types of indicator, the first of which has been tested by different scholars. Plot, block and street cover a significant number of indicators that determine the physical characteristics of each element. These characteristics play a key role in measuring connectivity and accessibility and enable people to move from one place to another. The second type is based on its constitutedness (permeability and intervisibility). In this research, this mainly derives from employing the metric dimensions of the relationship between the public and private domain both horizontally and vertically.

2.5.4 Urban Ethnography Analysis

Ethnography is an important method in the conduct of behavioural research; it particularly concerns people and their behaviour toward a specific activity. There are two types of ethnography, which are casual and systematic ethnography. Casual ethnography deals with an event independent of any prearranged categories or scoring systems; instead, it depends on an inspection of what occurred in the observed field. In systematic ethnography, the researcher tends to employ a scoring system and prearranged categories when examining a particular event or phenomenon (Sommer 2002). Although Sommer outlined two types of ethnography (casual and systematic), in urban research, there are a further two types to consider, namely active and passive observation (Gehl, 2010b). Passive and active observation refers to the researcher and whether they are part of an event or activity. For example, a passive observer simply monitors without participation (Sommer 2002); (Gehl 2010b).

When applying the terminology of ethnography to people's behaviours within a certain space, it is necessary to understand the interface between people and the built environment. To develop a database of human behaviour in the built environment, two digital cameras with their tripods were used. Each camera was responsible for recording pedestrian influx, non-pedestrian flow (considered for future studies), such as motorised movement (cars, vehicles, motorcycle etc.) and non-motorised movement (bikes, human-powered carts), and other observed activities (Figure 2.3). Two cameras were run synchronically as the width of the street slightly affected the scope of the scene. Thus, a wide street allowed the camera to cover a long vista while a narrow street reduced the scope of the scene. Both cameras functioned for three periods over each day (morning, noon and afternoon), during the weekday and weekend, and each recording captured about fifteen minutes. The distance between the two cameras was one hundred metres, which was based on a number of significant urban studies addressed during this research.

Figure 2.3. Camera 1 and 2 which represent station one and two. Source: Photographed by the author.

2.5.5 Software Applications and Digital Programmes

In this research, three types of computer program were used; the first was the software applied to examine and analyse specific data. For this, Multiple Centrality Assessment (MCA)

Software was implemented to determine the street's centrality and its indices. The second type of software was the range of graphics programmes designed to process and analyse the data; this included GIS-ArcMap 10.2.2, QGIS 2.18.3 and AutoCAD Map 3D 2017. The third type was the image processing software; this dealt with digital images and included Corel-DRAW and Adobe Photoshop. Windows Media Player was the fourth type, which was used to count the footfall in the streets. A digital map of Bagdad city was not available; therefore, two basic maps have been applied to generate georeferencing digital maps and the street network. The first map was the Baghdad Base Map; this was the Traditional Area of Baghdad based on the work of Polservice, Geokart, Poland, (rectified by the Department of Geographic Information System (GIS), and the Mayoralty of Baghdad). This was authorised according to the official letter, No.: O.P.U 420, dated 24/10/2016 and issued by the University of Technology, Office of the President. The second was the Georeferencing Aerial Imagery that was authorised by the Remote Sensing and GIS Unit, and the Building and Construction Engineering Department at the University of Technology in Baghdad in accordance with the official letter, No.: 1578, dated 01/11/2017.

2.5.6 Authorisations of the Street Observation and the Research Obstacles

Before conducting the street observations, field survey, and data collection, three official documents needed to be authorised by the University of Strathclyde. These were: a General Risk Assessment (S20), the Ethics Application Form, and the Health and Safety Measures Relating to Working Off-Campus (Higher Risk – Overseas). Officially, these three documents are required and authorised by the Head of the Department of Architecture and by the researcher's supervisor. In addition, and due to the critical security issue within the study area of Baghdad, there was the need to secure permission to conduct the study. Therefore, several official letters that facilitated and proffered assistance were issued (Table 2.1). There were two visit periods to the study area; the first was conducted between 21 March 2015 and 23 April 2015, and the second between 20 October 2016 and 20 January 2017. Besides the official documents and letters, some difficulties and inconvenience arose concerning whether to obtaining official letters, as there were bureaucratic procedures to consider for site surveys and observations.

Table 2.1. The official letters required for the data collection, and the permission to conduct the field survey and observation in the four case study areas in Baghdad.

Official letter	**To**	**Reference**	**Issued by**
1	Iraqi Cultural Attaché	Researcher	Supervisor, 5 March 2015
2	Iraqi Cultural Attaché	Researcher	Supervisor, 4 October 2016
3	- Mayoralty of Baghdad - Ministry of Municipalities and Public Works - Ministry of Culture, Tourism and Antiquities - Ministry of Planning - Ministry of Construction & Housing - Iraqi Universities - Iraq National Library and Archive	Researcher	Iraqi Cultural Attaché No.: 905/2015 – 1089, Date: 18/03/2015
4	- Mayoralty of Baghdad - Ministry of Municipalities and Public Works - Ministry of Culture, Tourism and Antiquities - Ministry of Planning - Ministry of Construction & Housing - Iraqi Universities - Iraq National Library and Archive	Researcher	Iraqi Cultural Attaché No.: 2714/2016 – 1089, Date: 18/10/2016
5	- Ministry of Culture, Tourism and Antiquities - Ministry of Planning - Ministry of Construction & Housing - Mayoralty of Baghdad - Iraq National Library and Archive - University of Baghdad - Nahrain University	Researcher	University of Technology – Office of the President No.: O.P.U/103, Date: 31/03/2015
6	- Baghdad Operations Command - Ministry of Culture, Tourism and Antiquities - Ministry of Planning - Ministry of Construction & Housing - Mayoralty of Baghdad - Iraq National Library and Archive - University of Baghdad - Nahrain University	Researcher	University of Technology – Office of the President No.: O.P.U/103, Date: 24/10/2016
7	University of Technology – Office of the President	Researcher	Department of Architectural Engineering – University of Technology No.: E.A/ 566, Date: 31/03/2015
8	University of Technology – Office of the President	Researcher	Department of Architectural Engineering – University of Technology No.: E.A/ 1794, Date: 24/10/2016
9	Baghdad Operations Command	Researcher	Security and Defence Committee - House of Iraqi Parliament No.: C.D/9/809, Date: 01/11/2016
10	Remote Sensing and GIS Unit – Building and Construction Engineering Department – University of Technology	Researcher	Department of Architectural Engineering – University of Technology No.: E.A/ 1747, Date: 10/10/2017
11	Department of Architectural Engineering – University of Technology	Researcher	Remote Sensing and GIS Unit – Building and Construction Engineering Department – University of Technology No.: 1578, Date: 01/11/2017

The task was not limited to gathering information from the relevant departments and institutions, but also required the necessary security approval to conduct the field survey and to take pictures in the four study areas. These procedures led to:

- A substantial delay in obtaining authorisation, due to the sensitivity of the current situation in the city of Baghdad.
- The need to introduce the team and equipment every time to the security unit in each study area.
- Frequent inquiries by pedestrians and house owners at the site during the field survey and observation.
- An occasion disruption to the work because of the security situation, and, at times, due to the climatic conditions that affected the work of staff.
- A significant difficulty for one team to cover all four cases; in fact, it was only possible to secure two architects, which affected the times of the observation and photography.
- A lack of (and difficult) access to the digital maps of Baghdad. This created the need for the researcher to prepare digital maps by relying upon two basic georeferencing maps authorised by (G.I.S.Department 2016) and (R.S.GIS.U 2017).
- The requirement for greater caution, even though there was official permission. In particular this impacted on the taking of photos; for this reason, some of the pictures of buildings were taken as a perspective scene rather than a front view.

The seven points above detail the main difficulties that accompanied the research process from inception to completion. The bureaucratic and administrative steps required to obtain the official letters, documents and paper map particularly impacted the process.

2.6 Research Process Map

In the research process map, the study includes four types of interface extracted from the literature review and research problem and its objectives. These interfaces are; Human-Edge, Link-Node, Edge-Edge, and Human-Human. Each type is divided into a set of levels that lead to a number of variables. The study will follow the sequence of these interfaces regardless of the order of the research chapters; this means that one interface, for example, will share more than one chapter (Figure 2.4).

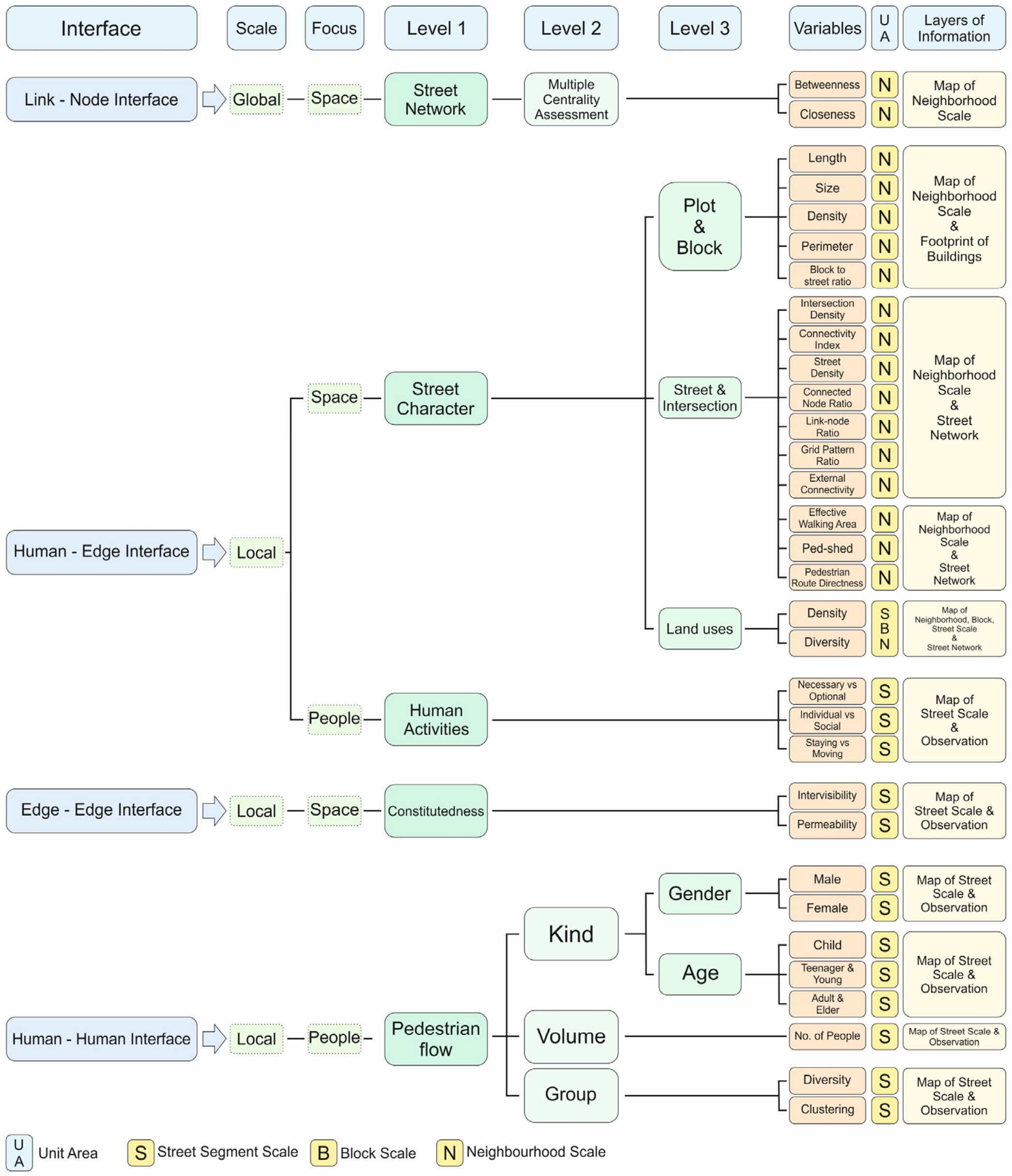


Figure 2.4. The research process map includes four types of interface: Human-Edge Interface, Link-Node Interface, Edge-Edge Interface, and Human-Human Interface.

One of the main concerns about these four interfaces is their verbatim meaning and their procedural application within this study. Therefore, providing an interpretation of the term (interface) will contribute to a reduction in this ambiguity. The study will address these interfaces in detail during the research process. Hence, the summary of the structure of the research map aims to define the constitutional and procedural meaning for each type of interface. Nevertheless, the chapters will include the related subsequences and the variables, which are designed to answer the research questions.

The Human-Edge Interface deals with two key sets of factors; firstly, the street characteristics are an independent element (including the plot, block, street and intersection measures, and land use). Secondly, human activities are a dependent factor (covering the necessary versus the optional, individual versus social, and staying versus moving). Thus, each consists of a number of variables. It describes the interface between people as perceivers and the street edge as the perceived. Street edges are examined through the four selected urban areas in Baghdad city. The Link-Node Interface defines the form of the street network through two substantial constituents, the link and node, where the former represents the street, and the latter denotes the intersection. This pattern is crucial in determining the centrality of streets within the selected network. MCA software helped to define the centrality (betweenness and closeness) not only for the entire chosen network of the four samples but also for the individual streets. It thus enabled an examination of the other variables regarding human activities and their constitutedness.

The Edge-Edge Interface denotes the street edge in terms of the two primary variables: intervisibility and permeability. Each variable involves a number of sub-variables that are used in an equation to measure the constitutedness of the selected streets. This micropattern at the street level refers to the interrelationship between people who use the street and the street's edge characteristic. The elected streets in this interface are chosen according to their centrality value, which yields three ranges: low (blue), medium (yellow) and high (red). The Human-Human Interface is the fourth pattern in analysing the people's behaviour; it is associated with centrality measurement through the choice of the monitored street, and is related to human activities. This pattern includes the structured form used to classify the people flow (movement in and movement through) the observed streets. Also, this interface involves five kinds of pattern, which describe pedestrians while they use the street. These are the: movement, activity, gender, age, and group patterns. Furthermore, these four types of interface express the high level of genuine and overlapping relationships, where there is no sharp separating line.

2.7 Research Structure and Theoretical Framework

The research consists of four sections based across eleven chapters; each section will address a specific purpose of the study. Section one will consider the fundamentality of the research and relates to three chapters. Chapter One provides the introduction and historical perspective of the city of Baghdad and the research gap. Chapter Two (the current chapter) defines the research problem, research questions and the main objectives; it also includes a description of the methodology. The relationship between urban morphology and street life are outlined in Chapter Three.

Section two will address the quantification of urban form elements; this section includes Chapters Four to Six. In Chapter Four, the street network is measured, and the centrality of the street network determined by adopting the Multiple Centrality Assessment (MCA). Chapter Five outlines the study of the plot and block of the urban fabric and quantifies the characteristics of the urban elements. This chapter will also quantify the street system and its two components (street and intersection), consider related measures, and define this network pattern. Furthermore, Chapter Five examines the significance of the land use analysis in terms of the two main trends, density and diversity, and how this could impact the configuration of the fine-functional use in reading the street edges. In Chapter Six, three measurements of the street edge, namely its constitutedness, intervisibility and permeability, will be applied and investigated to evaluate the relationship between private and public realms, and how this constitutes the entire street edge and controls people's behaviours in response.

Section three includes two chapters; Chapter Seven highlights the urban life of the street, and its social life by focusing on human activities and their conceptual framework. Meanwhile, Chapter Eight quantifies human activity in the four selected urban areas in Baghdad; these are classified as: A - organic; B - hybrid; C - paralleled, and D - loop-grid. Section four consists of three chapters. Chapter Nine provides a comparison of the four case studies by addressing the street network in terms of the betweenness (C^B) and closeness (C^C) centrality. It also addresses the plot, block, and quantifies the street's connectivity, land use, constitutedness and permeability. Chapter Ten provides comparisons between human activities and street centrality (MCA) and relates the urban form (constitutedness and permeability) to human activities. The final chapter (eleven) will refer to the four aspects of the research outcomes, namely: the research objectives and the significance of the findings; the research significance and the contribution to knowledge; the limitations of the research, and trends for future research. Additionally, there are three Appendices namely: Appendix One deals with street observation and related data of human activities, Appendix Two outlines the value of street centrality in terms of links ID, length, betweenness and closeness. Appendix Three addresses the statistic of blocks and plots in the selected areas.

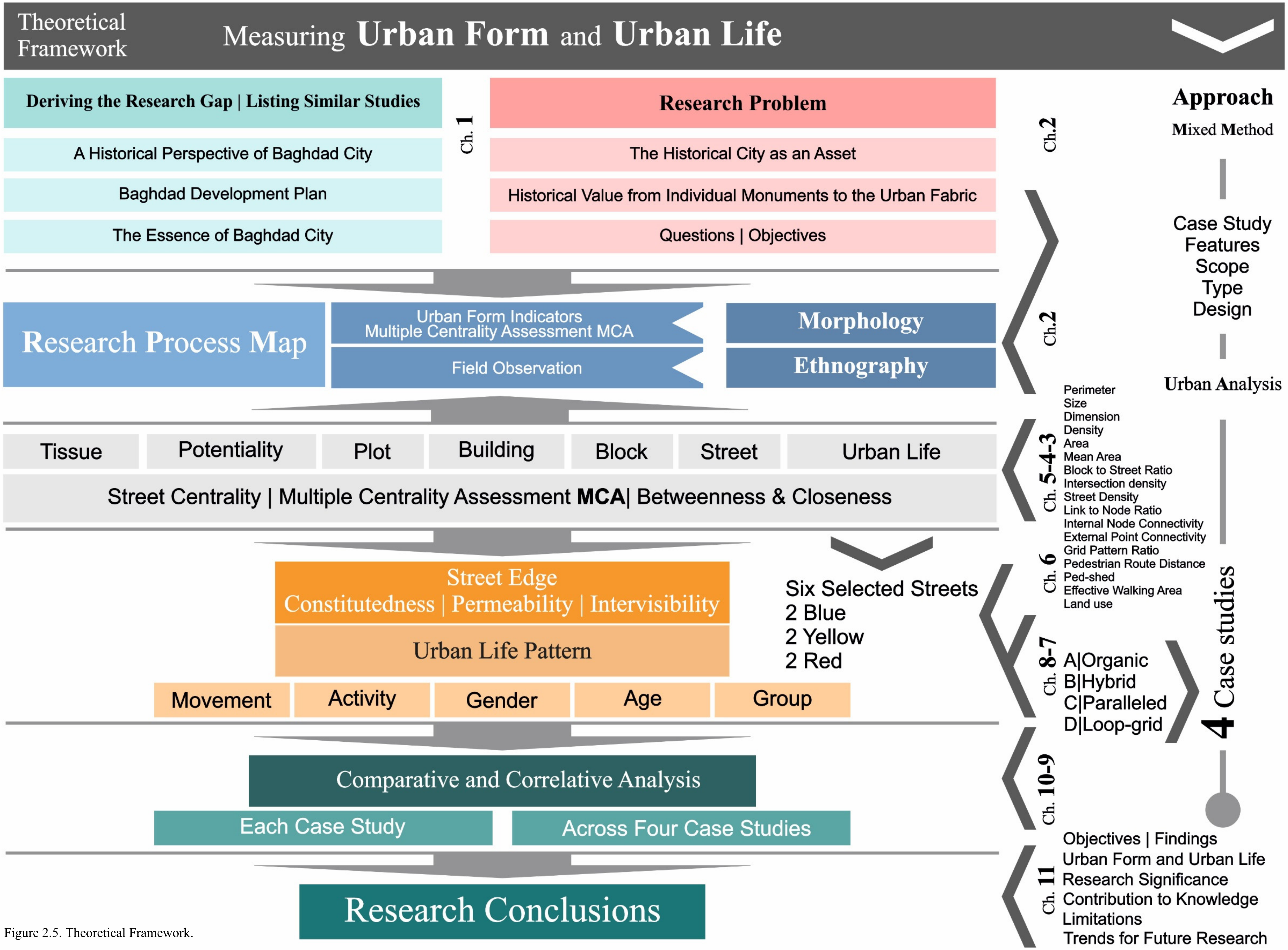


Figure 2.5. Theoretical Framework.

2.8 Conclusion

The headings within this chapter build a platform to launch the research progress. The initial focus was the research problem, which deals with the primary and secondary problem, namely the historical city as an asset, and the historical value from individual monuments for the urban fabric. The morphological transformation and urban changes are significant considerations in examining and analysing the selected cases. This involves both the historical and the modern regions of Baghdad. Moreover, street life and social interactions are the second substantial research area within the urban structure. Both the physical environment and people play a crucial role in shaping each other by accessing the opportunities that could be offered by the street's edge. The chapter refers to the main objectives of the study, which were developed from the research problem, whilst the methodology is designed to achieve the main aim of the study. A mixed method approach is adopted that includes a case study, ethnographic-based observations, and a Multiple Centrality Assessment (MCA). Furthermore, software and computer applications were used for different purposes in the study.

The authorisation of street observations was one of the main considerations that faced the researcher and his team in the field study, and these brought some notable difficulties to the research process. The research process map explained the four types of interface, namely; Human-Edge, Link-Node, Edge-Edge, and Human-Human. These shaped the conceptual framework of the study. The variables that typified the four interfaces also pointed to the nature and scope of the information for each element (street, block and neighbourhood). This chapter has drawn the fundamental datum of the research process in dealing with the next chapter in order to highlight the theory of urban morphology. Besides, urban form and its elements followed by urban life in terms of street life and social life.

Chapter Three

Urban Morphology and Street Life

3.1 Introduction

There is increasing awareness of the morphological principles of the city form and the types of processes and methods that are adopted, not only as physical entities, but also as inherent powers. All these dimensions have become a significant factor in managing both the city's urban form and the people who benefit from the city at different levels. Tracking the assets of a city to understand the nature of the built environment has led to several types of approach and seen the development of three leading schools of urban morphology, namely the British, Italian, and French. The study of the urban morphology aims to create a platform to comprehend the central transformations that occurred in the city over time. The urban morphology can be addressed in two dimensions: vertically, when an old part of a city is subjected to a new era of comprehensive urban development plans, and horizontally, when where new neighbourhoods are located beyond the old boundary of the traditional part of the city. The hierarchy defines the scope of morphological studies; furthermore, addressing the urban form at different scales of a city is a critical point in determining the range of this current research, which lies within a considerable selected boundary but is embedded within the four types of urban morphology. Moreover, this chapter will address urban life and how that could be fundamentally affected by the built environment.

3.2 Urban Morphology: Defining the Disciplinary Areas

The term '*Morphology*' emerged as a distinct sub-branch within the discipline of linguistics. It represents an explanatory and intermediary approach and studies both form and internal structure. Booij (2005, p 34) states that, "morphology [does] not only deal with the analysis of existing words into their constituent pieces. The language user is able to make new word or forms of words ... [as] … morphological operation". Historically, the term was first used in 1859 by the German linguist, August Schleicher (Booij 2007). However, according to (Anderson year), "by the 1980s and 1990s, as a result of developments …, morphology had emerged from under the waters of syntax and phonology and once again taken place as a legitimate - and substantive - domain of inquiry within grammatical theory". Furthermore, the Oxford English Dictionary (1993) defines the term as, "The structure, form, or variation in the form (including formation, change, and inflection) of a word or words in a language; the branch of linguistics that deals with this".

Morphology within different disciplines deals with the relationship between entities that give the final form to an object, and the rules that govern this formation. According to Whitehand

(2007), it first originated from the work of German-speaking geographers, and it might be argued that the father of urban morphology was the geographer, Otto Schlüter, who conceived that the city could be realised as part of a more extensive landscape (Whitehand 2007cited from Schlüter 1899). In the first three decades of the Twentieth Century and due to Schlüter's inspiration, the urban landscape took a central place within human geography. However, in belonging to the field of geography, urban morphology, dealt with the urban landscape in terms of its distinction, characterisation and explanation (Whitehand 2007).

Linguistically, the origin of the word 'morphology' comes from the Latin word that is represented by two words morph and logos. Morph denotes form, while logos stands for logic or description. As a result, the term 'morphology' means the form in terms of its shape and its internal structure. Lexically, the Oxford English Dictionary (1993) defines the term as the "shape, form, external structure or arrangement, esp. as an object of study or classification. Also: a particular shape, form, or external structure, esp. of (a part of) an organism, landform, etc." (Brown 1993). The consideration of morphology in planning, urban and architectural disciplines has increased considerably over the past two to three decades. There has been significant growth in the number of publications in this area. However, scholars aspire to address the hiatus between morphology as an objective method and other aspects of the urban field that involve different scales. The primary definition could be derived from other fields of knowledge, which stipulate that it is the study of the formation of an object and its internal structure and the determination of the mechanism that governs its relationship with other objects.

The city can be experienced as a complicated entity that combines different embedded elements, both natural and artificial. Also, transformative progressing within the city over time is an essential consideration in morphological studies. The morphology of a city, however, is not isolated from other aspects of city life, whether tangible or intangible. As the city emerged to serve humans and has been produced by people themselves, it is in a continuous process of meeting people's demands. Moreover, the static and dynamic interrelationship between the city components, in terms of the shape of the built forms and are shaped by the open spaces and streets. This dynamic state of the city and the ruling relationship between its components has encouraged scholars and morphologist to adopt the term *urban morphology* (Moudon 1997).

3.2.1 Three Schools of Urban Morphology Studies

3.2.1.1 The British School

Within the United Kingdom, the term morphology is employed in different kinds of studies. Despite this, they tend to address the physical forms of the urban context. The Conzenian school of morphological analysis originated by M.R.G. Conzen at the end of the Nineteenth Century (Whitehand 2001). Conzen was considered the father of urban morphology in the Twentieth Century; however, Schlüter began to use the term 50 years earlier, and was considered the fundamental instigator of the field. He was a German geographer who migrated to England before the Second World War, where he studied and practised urban planning (Moudon 1997). Conzen (1960) conducted a town-plan analysis on Alnwick, Northumberland. Whitehand (2007, p 1) praised Conzen's approach by stating that, "Conzenian thinking has, in recent years, begun to influence urban landscape management and has been one of the principal stimuli in the origin and growth of an international, interdisciplinary group of urban morphologists, the International Seminar on Urban Form (ISUF)".

In Conzen's terminology, there are three levels of urban form. The first is the ground plan that includes the street pattern, plots and block plan of buildings. The second level is the building or building fabric and thus deals with three-dimensional forms, such as building types and their spreading patterns. The third level is the land utilisation pattern, which is a phenomenon that links morphology and functional realisation (Conzen 1960; 2004). A further key contribution is Conzen's conceptualisation of the process of urban development, which analyses the burgage cycle (Whitehand 2007). In 1974, J.W.R Whitehand formed the Urban Morphology Research Group (UMRG) at the University of Birmingham to develop a new research base with greater concentration on morphological studies and the ability to attract different scholars from various disciplines under the same umbrella. The UMRG became later an active centre involving various urban morphology researchers, including T.R Slater, Peter Larkham, Karl Kropf and Keith Lilley (Moudon 1997). In the British School, the main aim of studying urban morphology was for explanatory and descriptive purposes. By summarising Conzen's method of dealing with morphological analysis, there are some patterns (plot, block, street, building types, and land use) that represent the main ingredients of morphological analysis. These include transformative processes in terms of the burgage cycle and the fringe-belt. These urban elements can be addressed in terms of how they are constituted and reconstituted.

3.2.1.2 The Italian School

Saverio Muratori (1910-73) was an Italian architect who devised the term '*operational histories*' which has subsequently shaped the theoretical basis of the architectural design studio. He played a leading role in developing the fundamental concept of type, fabric and the idea of the organism by highlighting the spatial arrangement of the form as a synthetic unit of material, structure and compositional plan. He was devoted to promoting urban themes through concentrating on the organism's order as a mechanism for growing the city (Cataldi et al. 2002; Cataldi 2003) (Moudon 1997). According to Cataldi (2003), the concept of typology requires the adoption within new buildings so they are not conceived as isolated features but rather as parts of an entire historic and linguistic context, and a kind of topological leitmotif. The form-structure binary shaped the crucial character of Muratori's sights between 1950 and 1960 within his four-major works, churches in Pisa and Rome, the office building (ENPAS) in Bologna, and the Christian Democrats' seat in the Esposizione Universal di Roma (EUR).

Moreover, the concept of the architectural organism was also adopted by Muratori, which he defined as the "formal unity of cooperating, cohesive and conspiring structures, subject to transformation in space-time", and considered a transformative process (Cataldi 2003, p 23). According to Muratori, the 'organicity' was based on four degrees: *s* – occasionally serial; *S* – systematically serial; *o* – episodically organic, and *O* – totally organic (Cataldi 2003, p 27). Thus, this could be conceived as the spontaneous culture within designers' minds that shapes their experiences towards the built environment through the collective unconscious. Muratori's rejected the understanding of typology as scientific objectivism and instead advocated the reliance on historical building processes as spontaneous data for development in a certain cultural context. Thus, precedence was given to context as well as individual buildings (Cataldi 2003). Muratori also considered territory as a cyclical process of man-made organisms, which was represented within time and space and produced by humans (Cataldi 2003).

Later, Gianfranco Caniggia (1933- 87) adopted Muratori's concept in his study of the city of Como. He continued the Muratorian legacy by using what he called '*procedural typology*', which focused on the building type as the elemental origin of the urban form. From this point, a number of scholars and academics continued Muratorian concepts, including; Giancarlo Cataldi, Gian Luigi Maffei, Maria Grazia Corsini, Paolo Maretto, and Giuseppe Strappa (Moudon 1997). For example, Caniggia examined and developed Muratori's thoughts about the type, typology, structure, tissue, series and seriality. Furthermore, he produced a new concept called 'processual typology' which considered the type, leading type, and synchronic and diachronic transformative typological patterns. Caniggia also developed the concept 'spontaneous utilisation procedures of planned structures', which explored the relationship between an urbanism's history and its typological processes (Cataldi 2003). Cataldi highlights the distinction between the two leaders of the Italian School, shown in Table 3.1.

Table 3.1. Comparison between two Italian architects' thoughts about urban morphology. Source: Cataldi (2003, p 31).

Muratori	**Caniggia**
Theory	Method
Organism	Structure
Organic	Serial
Architectural organism	Building type
Architecture	Building
Territory	Town

In the 1980s Aldo Rossi's became notable for promoting a return to traditional building types; he adopted another term '*Typo-morphology*'. It became a stimulus for others in renewing the historic city and created further interest in urban design. From this point, both Rossi and Aymonino excluded the concept of urban morphology; instead, their vision considered that morphological concepts could distract from current urban problems and modern architectural issues (Moudon 1997). Focusing on how the city could be built, besides the prescriptive design, was the main target of the Italian School, particularly within the historical city.

3.2.1.3 The French School

In the late 1960s, two architects, Philippe Panerai and Jean Castex, and the sociologist, Jean-Charles DePaule, established the school of Architecture in Versailles. Similar to Muratori, they took a stand against modernist architecture and its rejection of history and tradition (Moudon 1997). The criticism between the theory of design, as an ideal approach, and the philosophy of design, as a practical approach, play a key role in comparing what should be built and what has been built in the real human sphere. However, the French School adopted a morphological analysis to capture the roots of modernism in urban design. Like the Italian School, the French School appeared to contradict the ideological base of the modern movement and its main opposing trend for the historical and traditional inheritance of the city. According to Moudon (1997, p 5), the French School "benefited at the time from the vibrant intellectual discourse on urban life which surpassed architecture and engaged such powerful critics as sociologist Henri Lefebvre and architectural historians Françoise Bourdon and Andre Chastel". The second generation of morphologists in France built on the earlier contributions from Castex and Panerai; their detailed publications addressed the city of Versailles, the French bastides, and the city of Cairo (Moudon 1997).

Unlike the Italian and the British School, which benefited from architects and geographers, respectively, in France, the morphological umbrella covered specialists from various disciplines, such as sociology, history, geography, and planning. They worked with architects to enhance the overall understanding of the city. Thus, the French School expanded the morphological perspective to involve both design and geography, as well as literature and social science. In this respect, the French School can be considered an intermediate between the Italian and the British School in addressing issues that relate to design and the city-building process. Therefore, the French contributions are broader than the Muratorian and the Conzenean schools in terms of their subjects and methods (Moudon 1994). Furthermore, the French approach was also driven by the need to typify the main constituents of good city design. According to the Versailles School, there are two categories of the building; the first is consecrated buildings (archetypes and the traditional urban types) that can be seen in different eras of the city's history, such as Roman Villas and cathedrals. The second is typical plans (prototypes) that relate to the fabric of the city, whereas the consecrated types tend to incorporate monumental elements (Moudon 1994).

Finally, the Versailles School created a separate discipline to study the built environment; this enabled the evaluation of design theory by discussing both methods and philosophy in a multidisciplinary framework. Likewise, according to Moudon (1994), the School's contribution dominated both design application and analysis by using typological and morphological studies to examine the built environment. In this respect "the Versailles work has taken solid roots in both design practice and research" (Moudon 1994, p 307).

3.2.2 A Reflective Comparison between the Three Schools

To consider the city and its entities, it is necessary to develop one platform for morphological studies from the three different orientations. This helps to create a more complete picture of the transformation and urban changes of the city over time. Three schools adopted a specific theoretical base when analysing and classifying the city's form and generated a practical approach by applying these thoughts and principles. Each school differs from the others, and has its own conceptual framework; therefore, the outcomes are likely to be distinct. Nevertheless, the three approaches are not that dissimilar in terms of their primary materials. The plot, building, block, and street are the original elements that together constitute the urban structure of the city in different spatial configuration patterns. Moudon (1994) highlights significant critical points among the three schools, which note the primary trend for each on how to read the urban structure of the city. According to Moudon, the Italian School adopts typomorphology and design theory and the relationship between them, while the French tend to consider the history of design theory. Also, French scholars identify many different patterns of traditional but not modernist cities, which are subject to a new set of design rules. Based on the view of the Versailles School, "the present is not [a] complete break from the past, and the past offers several different models for the future" (Moudon 1994, p 306).

In the Italian School, two types can be distinguished; posteriori and a priori, where the former denotes the traditional method of forming the city and the second refers to a set of designers who formulate the future. Thus, the French consider that existing types represent posteriori, while the original represents are a priori. According to Moudon (1994), the principle of studying the history of design theory or urban design is based on two procedures. The first considers history as ideas and the building could be examined along with the history of design theory; this is the Italian School's view. The second considers the history of design theory as practise, where history can be an operational and critical process to read and design the city. In terms of their respective contributions, Moudon (1994) states that, the Italian School established a theoretical basis for planning and design, particularly for old and traditional buildings in the city. The British School advocated an examination of how the built environment is produced. Meanwhile, the French School launched a new discipline that brought the study of the built environment together with a critical valuation of design theory. In the same context, those tripartite approaches refer to the three programs that include research, planning and design. These embed the relationship between space, time, habitat, and culture (Moudon 1994).

Time, form, and scale are three aspects on which to analyse the built environment. The three trends of investigating the city, in addition to the examination and analysis of an existing physical environment, have been processed as tools to monitor the emergence of new types.

In this regard, the three schools, British, Italian, and French, establish a robust foundation for a mega-database of forms and form-making processes. Furthermore, considering the origins of these three morphological schools can help to formulate the trend of this study in terms of how to address the city entities and the elements of the urban structure.

3.2.3 An Emerging Theoretical Frame

The city, its elements and their relationship to each other have shaped the platform for academics and researchers from various disciplines. However, a difference arises is the method they adopt to analyse these elements and the scope of their studies. Whilst some tend to address the city as a physical form apart from other aspects, such as human behaviour, social considerations and intangible values, others study the meaning of the built environment and how that works to shape our reflections. Moreover, there is a significant challenge to incorporate more than one urban factor and forge a link between the different variables in order to extract the value of the links' relationships. For contemporary urban studies, it is crucial to understand the relationship between urban forms and the relevance to other aspects, such as people and their demands. Moudon (1997) summarises morphological analysis by considering the following three principles: firstly, it is an urban form that is identified by three elemental physical features: namely, buildings, and their relationship to the street and plots. Secondly, it is an urban form that should be realised and comprehended at different levels of reading depending on the scale and scope of the analysis and by responding to the plot/building, street/block, and city/region. Thirdly, it is an urban form that needs to be understood historically, and its elements should be subject to a continuous transformation and replacement.

These three notions work to constitute most urban morphological research, whether by geographers, planners, urbanists or architects. The attributes of the urban form reflect not only a certain diachronic or synchronic period but also the socio-economic factor and its connection with, for example, culture and economy (Moudon 1997). Levy (1999) summarises the fundamental elements of the urban fabric in Table 3.2. Morphological analysis continuously examines a plot (P), street (S), constructed space (CS), and open space (OS), whereas an urban form/fabric is constituted by the reciprocal relationships between these four main elements.

Table 3.2. Comparison of two Italian architects' thoughts about urban morphology. Source: Levy (1999, p 80).

Urban element	**Plot (P)**	**Street (S)**	**Constructed space (CS)**	**Open space (OS)**
Plot (P)	P/OS	S/OS	CS/OS	OS/OS
Street (S)	P/CS	S/CS	CS/CS	OS/CS
Constructed space (CS)	P/S	S/S	CS/S	OS/S
Open space (OS)	P/P	S/P	CS/P	OS/P

In morphological analysis, the theoretical frame represents an active step in studying the urban form. This step defines the scope and scale (micro, meso and macro) of a morphological study, and the urban form elements that should be subjected to the examination. Morphological analysis is not only limited to the physical form and its components, but also includes other factors, such as social, ecological, and economic considerations. Moreover, it could also address the correlations between these factors. However, it is important to realise that morphological studies aim to explore and explain the mechanism of bilateral form; space (plot, street, open space) and form (structured space, buildings) synchronically and/or diachronically. Considering the historical processes when studying urban morphology is another fundamental step to understand the transformative operations of the urban form that axiomatically take place over time.

3.3 Urban Form Elements

Morphological theories shape the leading platform to theoretically and practically consider the assets connected with the emergence of the city, and its growth and development over time. In this study, six elements of the urban form are typified: urban structure/tissue, potentiality, plot, building, block, and street pattern. Marshall (2005b) classifies the urban pattern within six entities; the urban form, urban structure, settlement form, development pattern, built form, and urban fabric. The urban form is the physical form of the urban areas in three dimensions with different scales. Urban structure refers to the diversity in patterns and spatial distributions in a city. It can be "equated with the two-dimensional organisation of the ground plan of an urban area, such as the street pattern or the structure of land parcels" (Marshall 2005b, p 14-15). A settlement form tends to be more specific than an urban form as it embodies the form of separate settlement units, for instance, cities and towns. In comparison, the urban form can be understood as a portion of urbanities, such as constituent parts or other urban growth.

A development pattern is “an urban area in deliberate formations – as opposed to emergent accretions. In other words, a development pattern is one that is consciously conceived” (Marshall 2005b, p 14-15). The built form “typically implies [the] urban form in three dimensions, at the scale of individual buildings. Like development pattern, [the] built form has the connotation of the representation or construction of a preconceived artefact rather than an emergent accretion of independently assembled parts” (Marshall 2005b, p 14-15). Urban fabric, “has the connotation of being a continuous surface, often a pre-existing form that may be ‘torn’ by new interventions, or ‘repaired’. It is suggested that the urban fabric has a fractal dimension lying between two and three. Like a garment fabric, it is composed of surfaces, with a variety of tucks and folds, laying out a configuration of adjacency and accessibility, without necessarily including the solid three-dimensional material of which it is made” (Marshall 2005b, p 14-15).

3.3.1 The Urban Structure | Tissue

The morphological aspect of cities is experienced as an entity, which is formed by various elements that emerge synchronically and diachronically. However, these elements have two types of relationship; the first is the relationship between their parts that give the final form to the object, while the second is the rules that govern the relationship between these elements and that draws the entire picture of the city. Moreover, these elements and their parts are organised in a hierarchical way, regarding their function, shape or position. Conzen calls this the ‘plan unit’ whereas Italians use the term *tessuto*. Plan units, or tissues, are groups of buildings, spaces, plots and streets (Figure 3.1) (Moudon 1997).

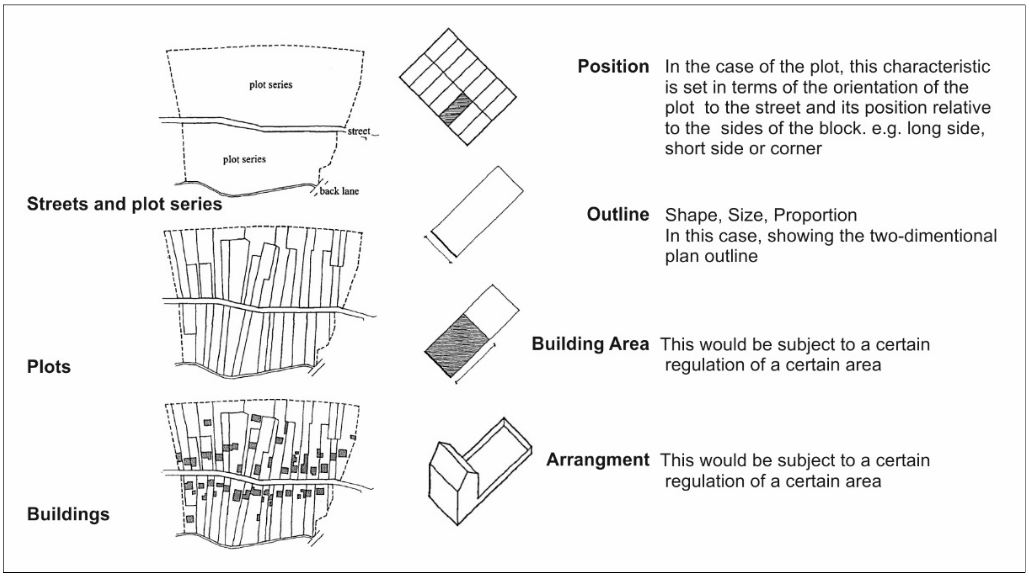


Figure 3.1. The elements of urban tissue according to Kropf’s views. Source: Kropf (1996a, p 727, 728, 731).

Kropf (1996b) defines the urban tissue as hierarchical and organic with different levels that primarily synthesise all components. These various levels correspond to the different primary elements, where a higher-level resolution presents more detail, including the building materials. However, streets and blocks signify what Kropf calls the low level. From this perspective, a city could be experienced as an arrangement of streets and blocks within a general level that might be used to recognise cities by considering the relationship between mass and space. Due to its increasing specificity, the volume of the description will be profound as it includes the components of plots, plots series, building structure and materials (Kropf 1996b). The hierarchy classification could start from the smallest unit of the urban tissue and then zoom in to involve the entire tissue of the city.

From a typomorphological perspective, Kropf (1996a, p 724) addresses the urban tissue components and their relationship to each other by suggesting that "typomorphological analysis systematically distinguishes these different elements and element patterns in the fabric of a town and brings them together in the concept of urban tissue … [and] the notion of urban tissue is a fundamental element in typomorphological studies. It is also the key to realizing the principles of typomorphology within a system of form-based zoning. As a tool in analysis and explanation, it helps us to understand both the physical structure and historical development of urban areas and the relation between urban areas and individual buildings". However, Kropf adopted six elements based on Conzen's and Caniggia's conceptions, which are: (a) streets and blocks (or plot series), (b) plots, (c) buildings, (d) rooms or spaces, (e) structures, such as walls or roofs (encompassing the details of construction) and, (f) materials (Kropf 1996a, p 725-726) (Figure 3.1). Moreover, Kropf (1996a, p 726) emphasises the outline of elements as a primary definition; "the outline of an element is specified by describing its external boundaries in terms of its shape, size and proportions."

In some instances, either for convenience or because of a lack of information, this is limited to the plan outline, namely the two-dimensional outline on the ground plan. The arrangement is described in terms of the type of component parts, the number of parts and their relative positions. In turn, the component parts are distinguished by their outline (Kropf 1996a) (Figure 3.1). Thus, Kropf (1996b, p 262) concludes that, "urban tissue can aid in the task of identifying and describing the character of towns. Tissue offers a clear and explicit means of specifying the physical characteristics of towns that together provide, in turn, a framework for a more rigorous account of character". Regardless of their location and historical emergence, cities share the same urban tissue components; plots-buildings, block-street, neighbourhoods-quarter, and so on. Thus, each city is characterised by how these components are arranged in order to shape the specific identity of the city, which distinguishes it from other cities (Figure 3.2). This differentiation according to its urban structure (which includes different spatial configuration patterns) enables people to recognise it.

Figure 3.2. Urban tissues of eight different cities, at approximately the same scale: Brasilia, Djenna, Venice, New York, Barcelona, Paris, Rome and Sana'a. Source: Oliveira (2016, p 9).

In their practical understanding, Porta et al. (2014) state that urban tissue could be the starting point in dealing with urban morphology. This can be achieved by understanding the crucial relationships between street networks, plots, and, blocks where these components could be invested to promote and develop an adaptable urban tissue (Porta et al. 2014). In addition, Kropf (1996a, p 723) alludes that, "there are other, larger-scale objects which we identify when describing towns, most obviously entire buildings but also plots, blocks and streets. Similarly, there are patterns of these objects, all of which contribute to the character of a town. Differences in street and block patterns, plot patterns as well as in arrangements of buildings within plots and shapes of buildings can create very different environments".

3.3.2 Potentiality

A city does not emerge independently; rather, there are substantial factors that contribute, collectively and gradually, to propagate its vitality. The first factor could be the natural resources and ecological considerations. Another classification relates to the main reason for its existence, such as for politics, defence, trade, and so on. For analytical purposes, scholars mainly use this classification to refer to the old cities in history. However, even cities with these classifications are based on potential factors, which make the performance of a city enough immensely. Terminologically, this could be called *Pre-emergence*. Furthermore, Stewart (1947p, 180) suggests that "cities are anchored in place by special often topographic" features. However, the scope of this research instead focuses on the existing city. In dealing with an existing city this is called *Post-emergence*.

Hillier et al. (1993a, p 32) write descriptively about the natural movement and the potentiality of using space by stating that "urban grids seem to be structured in order to create, by the generation and channelling of movement, a kind of probabilistic field of potential encounter and avoidance". Hillier addresses the potential pattern and its determination of the relationship between the private and public by stating that, "it is very difficult for more than one person to use a single sequence of spaces. It offers little in the way of community or privacy, but much in the way of potential intrusion" (Hillier 1996a, p 31-32). According to Hillier (1996a, p 31-32, 154), "the branched pattern, on the other hand, offers a definite set of potential relations between community and privacy, and many more resources against intrusion. These differences are inherent in the spatial patterns and would apply to whole classes of human activities patterns … [and the] … space is given to us as a set of potentials, and that we exploit these potentials as individuals and collectivities in using space".

Carmona et al. (2010, p 207) argues that, "the basic movement patterns suggest potential movement and activity within a location." In this regard, "if a space is poorly located within the local movement pattern, it matters little how well it is designed as it is unlikely to ever be well-used unless there are changes in the wider area - either greater density of uses or changes to the movement network that increase connectivity and/or reduce severance (i.e. through better quality connections or by new connections … Conversely, if space is well-located within the local movement system, then upgrading the space and environmental improvements is likely to have a major impact on the density of its use". Engwicht (1999) distinguishes two types of space in a city; exchange place and movement space. The relationship between these two types help to make cities exciting and attractive places as long as there is a diversity and density of potential exchange, where "the more diluted and scattered the exchange opportunities, the more the city begins to lose the very thing that make it a city: concentration of exchange opportunities" (Engwicht 1999, p 19).

Oliveira (2016) discusses the meaning of the natural context that plays a significant role in forming a city and its elements. Ecologically, natural resources are termed geomorphology, and should be preserved to ensure a growing city's sustainability. Moreover, the terrain quality and suitability of the land, the climate (wind, solar and natural elements, such as trees, rivers and other water bodies) could be classified as potential influences on how a settlement emerges and grows (Oliveira 2016). These features are considered *pre-emergence*. In the city, the natural elements work in combination with physical features which are produced humans; thus, the challenges and rivalries will trigger a new age for a city including how to strike a sustainable balance between the natural elements and the built environment. Oliveira (2016, p 11) states "… from the first paths and streets (and, subsequently, from all the infrastructures that will be built in the streets) to the way land is subdivided into a number of different parts, to the various buildings that are built in these plots, and even to the materials that … will give expression and surface to all these forms".

The meaning of *Pre-emergence* and *Post-emergence* accord with Marcus (2000, p 19) description of the city as, "an edifice in its own right with a high degree of actuality, as opposed to potentiality, that is the city, or parts of the city, as a realised architectural composition, rather than a continuous process of building". Throughout its progress, the city tends to deal with its synthetic elements more than the natural setting. Thus, the urban inventions produced by humans within the built environment, with their own components in terms of space, building, street network and the other related details, will govern the trend of the city's growth.

3.3.3 Plot

Starting with "Plot-based Urbanism [PbU]" where PbU "is the set of spatial principles conducive to urban spaces that are adaptable over time and therefore fit the agenda of Urban Seeding … [PbU] owes its denomination to the acknowledgement of the fundamental importance of the plot in the spatial structure of ordinary urban fabrics" (Porta et al. 2010b, p 14), (Tarbatt 2012). Another concept of a plot that is released by Al Waer et al. (2017) when he refers to the strategy of designing a new master planning in adopting the concept of plot based master planning. A plot might be the smallest unit within the urban forms, and this plays a crucial role in shaping the street edge and dominates the main realms: public, semi-public, semi-private, and private. Because the primary focus is on the building that occupies the plot rather than the plot itself, the plot is entirely neglected by urbanists and developers (Oliveira 2016). According to Oliveira (2016, p 23), "the definition of the plots system in a given territory is an essential element of its urbanisation process and has considerable stability over time. The decision on what would be the new structure of private ownership in a territory might involve the subdivision of a set of large plots". Moreover, Oliveira (2016) states that the plot's characteristics could govern the relationship to the street in terms of the distance between the adjacent edge of a plot and the street, the location of the plot within the plot pattern (block) and the geometrical dimensions of the plot (Porta et al. 2010b).

The plot boundary that constitutes the street edge has a significant long-term influence and tends to survive relatively unchanged. For this reason, plots mainly have an impact on the future form and the historical processes of a city. The plot, however, can be understood from the micro-morphological perspective; therefore, the need for analytical studies of the plot at this scale of a morphological investigation might be required (Whitehand 2001). Morphologically, Thwaites et al. (2013) proved a new perspective, namely the transitional edge in relation to the plot rather than the block. This helps, "to examine more clearly the social relevance of the relationship of plot to the streetscape and how this can support a wide diversity of experiential and functional opportunity. The interface of a plot to the public realm is manageable in this respect because it is more conducive to an informal interaction scale which larger units overshadow, inhibitor simply do not encourage in humans because they do not afford sufficient variety" (Thwaites et al. 2013, p 41).

Plots are liable to enable differentiation between wide or narrow frontage plots and between those with long or short sides on the edge of the block (Kropf 1996a). In order to improve or develop and even add a new building in an existing urban context, Kropf (1996a, p 729, 731) suggests that, "for a new building to be approved within a given zone, first the dimensions and proportions of the plot on which it is to be built must fall within the range specified in one of the plot types". Marshall (2007) tends to use '*street syntax*' which refers to the way that the constituent elements of streets connect. Marshall defines four relationships between the street network and the adjacent buildings of the street itself. Firstly, the street pattern forms a continuous system. Secondly, plots of land are accessed from the route network. Thirdly, buildings connect directly to the outdoor space, or may relate to each other without the need to go outside. Finally, all buildings plug into a plot on the ground (Marshall 2007, p 74-75).

3.3.4 Building

The first interaction between people and street life might start at the edge of the building. The edges of buildings, however, express the main character of the street, and organise the relationship between two domains (public and private) with other median spaces. Even though the buildings are, morphologically, less stable than the street and plot, they play a key role in attracting people and shaping the activity whether inside or outside the building. Oliveira (2016) tends to use the system of the building in the introduction of buildings and their role in forming the street system; this is because they consider the most visible element in comparison with other urban elements. Oliveira (2016) mentions two different types of building, ordinary and exceptional. Aside from the utilisation, the form is most significant when differentiating between these two types. Kropf (1996ap, 729, 731) states that, "the arrangement of buildings and the type of component building must correspond to one of the range set out in the prescriptions… Since the goal of the plan was primarily to maintain the existing character of the town, the zone boundaries and regulations correspond for the most part to the tissues identified in analysis".

Hillier et al. (1984, p 183, 197) state that, "a building type may be defined in general as a characteristic genotypical transformation of the underlying abstract model of a building, realised in, and identifiable through, a certain arrangement and parameterisation of the basic syntactic dimensions". In a related development, "there are no principles by which it can be said that in any conditions whatsoever a particular relationship has a certain social reference. Yet buildings are analysable, provided they are approached with a model that looks first for the global genotype, then for the fine-tuning of particular relationships in particular locations". Hillier offers a description of the urban grid in relation to a building pattern, where it is "the of groups of contiguous buildings in outward-facing, fairly regular clumps, amongst which is defined a continuous system of space in the form of intersecting rings, with a greater or lesser degree of overall regularity" (Hillier 1996b, p 59). Van Nes et al. (2007) state that the pattern encompasses buildings where their entrances directly face the street.

The entries in the second pattern tend to be located relatively apart from the street by creating new spaces, such as semi-private and semi-public. The same mechanism can be seen in traditional shopping streets in terms of the high density of shopping units with a direct connection to the street compared with modern shopping centres. The edge of buildings can be considered interactional interfaces and play an essential role in identifying the relationship between the inside and outside, private and public, and residents and visitors. Moreover, people seek in-between spaces or the street in order to interact with others, the place and the surrounding environment. People, however, tend to develop their experiences toward space and its occupants (Can et al. 2015).

Hillier (1996b) mentions the physical and functional city as the location of the most significant and complex artefacts that humans make. Physically, cities seem like assets of buildings that are linked by space and infrastructure. As their primary purpose, they support economic, social, cultural, and environmental processes. Ordinary buildings mostly constitute the city. They reflect the resemblances in terms of, for example, the regulations, function and utilisation, such as residential buildings, commercial buildings or mixed use. Meanwhile, the second type represents a few buildings within a city; because of their form and function, these are designed for people to notice them, and they eventually, they become distinguishable from the entire structure of the city that they are an element of (Oliveira 2016). Two interfaces define the relationship between buildings and open spaces: firstly, there is a close relationship between occupiers within the building and those who are outside. Secondly, there is a natural merge between people who are utilising the space outside the buildings, and those who are moving through the street (Hillier 1996b). Nooraddin (1998, p 7) states that, “the relation between the indoor space of buildings and outdoor public open space has continued to have importance in ensuring human contact with nature and community. The wall which divided the two spaces served also as a mediator with entrances and widows”.

The character of the street might be discussed in relation to the location of the building within its plot. Aligning the edges of the different buildings contributes, to a large extent, to the designation of the street form. The street width and how the building stands within its plot also operate together to identify the street pattern and its own function. Moreover, a building’s height and proportion to the street width, also contributes to the regulation of the street form. Reduced value of containment will be conceived when the building height is less than the street width and vice versa. The façade of a building and its detail is another essential factor that should be considered (Oliveira 2016). Also, the location of the building with the street pattern is a critical point in formulating the street edge where the position in an urban grid tends to have higher densities of development to take advantage of, and higher frequencies will, in turn, have a multiplier effect by attracting new growth, new buildings and new uses of land (Hillier 1996b).

According to Thwaites et al. (2013, p 112), "the academics produced a streetscape with a continuous building line whereas the users produced a much more crenulated building edge, comprised of varying levels of setbacks and projections. The study suggests that although both the academic and professional perspective is that building lines should be continuous, the evidence is that users may prefer a more varied building line, as it is perceived to be more open to opportunities for social activity". Jacobs (1961, p 388) states that, "an importance in city appearance out of all proportion to the physical space they occupy … some eye-catchers are eye-catcher just by virtue of what they are, rather than because of precisely where they are: an odd building for instance, or a little group of differing buildings standing out, because of themselves, in the wide-angle view across a park space". Jacobs calls eye-catchers features to attract attention that are highly visible; they relate to the location but appear as an exception to the surrounding environment. Such a city "where there is mixture in building ages and types, and where there are opportunity[ies] and [a]welcome for many people's plans and tastes, eye-catchers of this kind always turn up, and they are more surprising, various and interesting than anyone, aiming primarily at city design, could deliberately plan" (Jacobs 1961, p 388).

Jacobs (1961) suggests that districts and streets have mingled types of buildings, which vary in age and condition to serve different economic purposes. All these conditions, according to Jacobs, must be sufficiently dense and in turn lead to a concentration of people. Furthermore, even though Cantacuzino (1994) concentrates on individual buildings, he distinguishes six criteria in order to ensure a 'good building': order and unity, expression, integrity, plan and section, detail, and integration. Carmona et al. (2010, p 192) state that, "Although the height of buildings is not necessarily of significance in achieving human scale, the articulation of facades and the visual interest at pedestrian level is. As noted previously, a building can be understood to be of a human scale or not and, separately, to be in or out of scale with its surroundings. Certain scale-giving elements, such as windows, doors and construction materials, are particularly important because we have a clear perception of their size relative to that of our own bodies".

Hillier (1996a) defines buildings as a persistent object with a primordial purpose; this was the original reason for buildings and therefore constitutes a kind of continuing essence. He launches a considerable number of descriptions to distinguish between a building and public spaces and the interactions between them socially and functionally. He states that, "at the most elementary level, a building is a construction of physical elements or materials into a stable form, because of which a space is created which is distinct from the ambient space. At the very least, then a building is both a physical and a spatial transformation of the situation that existed before the building was built" (Hillier 1996a, p 21-22). According to Hillier (1996a, p 21), "buildings are normally multifunctional: they provide shelter from the elements, they provide some kind of spatial scheme for ordering social relations and activities, they provide a framework for the arrangement of objects, they provide a diversity of internal and external opportunities for aesthetic and cultural expression, and so on". He refers to two interfaces; the inside and outside of a building, and comments on the nature of the relationship between them. Hillier (1996a, p 158) argues that, "the effect of apparent rules about how buildings relate to open space is to create two 'interfaces'. First, there is a close relation between those within the building, and those outside. Second, there is a natural mingling between those who are using the space outside the buildings, and those who are passing through". For this reason, the location of the building tends to be chosen when it has "higher densities of development to take advantage of this, and higher densities will in turn have a multiplier effect. This will in turn attract new buildings and uses, to take advantage of the multiplier effect" (Hillier 1996a, p 169).

Kostof (1992, p 214) states that, "this concern for a decorous street entailed a long-term program of defining the street space within [a] firm, continuous street walls and, to the extent possible, controlling the overall design of these walls. At the crux of the matter is the relation of the street line to the building line. When the two are congruent, the structure of the public space is unequivocal. As abutting buildings arbitrarily, pushback from the street line or protrude beyond it, an ambivalent spatial zone is created along the street channel which blurs this structure". Also, Kostof (1999, p 256) argues that, "the creation of continuous street walls that will enhance the perspective drive of the street channel begins in earnest during the 16th Century … where … buildings are integrated with the pattern of movement defined by the street … the building fronts seen as expressive masses, stepping out into, and interacting with, the street space". Cantacuzino (1994) offers six criteria to ensure a good building. (1) An order and unity, which represents symmetry, balance, repetition, the grid, the bay, and the frame. (2) An expression related to the function of a building. (3) An integrity that can be a result of strict adherence to the principles of design, this entails a sense of diversity between different principles. (4) A plan and section; this "is concerned with the building as a whole and the need to take into consideration not only its elevations but also its plan and section". (5) A detail that refers to ornament or decoration. (6) An integration, which is governed by the relationship between the building and its surroundings (Cantacuzino 1994, p 69-76).

3.3.5 Block

Bourdic et al. (2012, p 594) suggests that, "the block area depends highly on local architecture and on the form and relationships between buildings. The block is a highly versatile form with a millennia-old history and looks different for each civilization around the world. The block is the built part framed by street". Porta et al. (2010b) define a block as "is a mainly built-up urban area defined on its borders by STREETS, whose components are STREET FRONTS. We intend the urban BLOCK as a complex rather than a uniform element" (Porta et al. 2010b, p 15). In the traditional and historic area, a block tends to correspond to coherent and compact buildings. The high-rise building is forcibly implanted within traditional\historical areas and corresponds solely to itself with little consideration of the surrounding urban structure. Arguably, people in modern spaces tend to stray from their humanity; endless spaces, roads, blind blocks which strip down details and a lack of human scale can make these cities repulsive to humanity (Gehl 2010a).

Jacobs (1961, p 186) states that, "frequent streets and short blocks are valuable because of the fabric of intricate cross-use that they permit among the users of a city neighborhood". As a street is designed to serve more than one primary function and activity, blocks are required to be short, and streets and opportunities to turn corners need to be repeated. In this respect, Bourdic et al. (2012) refers to the potential value of a short block and its role in the urban context; these blocks work to maintain the coherence and consistency of the urban fabric, where the "morphological parameters are particularly increasing on the block scale and in urban configurations consisting on adjoining or homogenous buildings" (Salat 2009 cited in Bourdic, Salat et al. 2012, p 594).

The idea of the short block becomes a significant theme in designing new neighbourhoods and in examining and analysing the urban structure or raising the claim to maintain current urban areas. The main aim is that a short block is likely to "provide pedestrians with a network of sidewalks, crosswalks, and walking trail. The street pattern is largely grid-like, with block lengths of 400 to 600 feet and many 4-way intersections-all indicators of high connectivity and high level of pedestrian service" (Shay et al. 2003, p 15). Marcus (2000, p

36) argues that, “a tradition of urban planning and design existed with roots going far back in time ... it was expressed in cities with streets and blocks with a clearly defined streetscape - however - this traditional was replaced ... by functionalist urban planning and design, that among other things was expressed through a dispersed urban space with free-standing buildings”

3.3.6 Street

Streets, regardless of their classification (cul de sac, connected and main or locally, regionally, and so on), work as a coherent platform. This unified network platform also defines the relationship between the public and private realm. The foremost aim of the street network is to link buildings and enable the flow of pedestrians and non-pedestrians. Streets offer a more practical sense than a national one in characterising urban space, where people meet and interact with each other. It is a democratic space for interacting, socialising and communicating with people. Morphologically, the street is steadier than other urban components, which tend to change over time. The plot pattern offers more resilience than the street network; this is followed by buildings that were more exposed to dramatic change (Oliveira 2016). Oliveira (2016) illustrates that the main character of a street is organised by other urban elements, such as plots (whether on the one side of the street or both), building heights, and how buildings are situated within the plot. A street is characterised by its shape, size, the nature of its relationships to other streets, its position within the network, its function and its value regarding its implicit meanings, such as historical value, cultural value and the experiences of people.

Hashim et al. (2014) denote that the common ordinary function of a street is to enable different patterns of movement between places. The street is an open space that settles between physical elements within an urban structure, including various types of spaces like pedestrian walkways, roads sitting areas and public amenities. They have the primary purpose to accommodate human activities. Marshall (2005a) distinguishes four different typologies of the street, which are labelled as an ‘*ABCD typology*’. These types are extracted from different urban analyses featuring various stages of the city’s growth. The A-type is a typical pattern that can be observed in so many traditional and historical cities, particularly walled cities; it is characterised by the, “angularity of routes, oriented in a variety of directions, generates a rudimentary radiality, where such a pattern is located at the core of a settlement” (Marshall 2005a, p 84).

The B-type is a typical planned pattern of a street that originates for extension purposes or for newly founded settlement; it is distinguished by “four-way perpendicular junctions [and] naturally gives rise to bilateral directionality, with the implication of a grid form at the wider scale” (Marshall 2005a, p 84). The C-type refers to the most common pattern that could be seen at various locations of a city, “but most characteristically astride an arterial route, whether constituting the central armature of a village, a whole settlement or a suburban extension along a radial route” (Marshall 2005a, p 84). The C-type stands for the modern hierarchical pattern of a street network including curvilinear layouts of distributor roads, forming looping or branching patterns. It can be described as a “distributory, connoting a combination of distributor and tributary with a hint of disurbanity” (Marshall 2005a, p 84). The ABCD typology can be interpreted in terms of structure and configuration. The structure is used to distinguish between the narrow, crooked streets of the A-type, the straight orthogonal streets of the B-type, and the sprawling curvilinear patterns of the D-type. In terms of configuration, it is possible to distinguish the connective properties of the B-type versus the tributary properties of the D-type. (Figures 3.3 and 3.4).

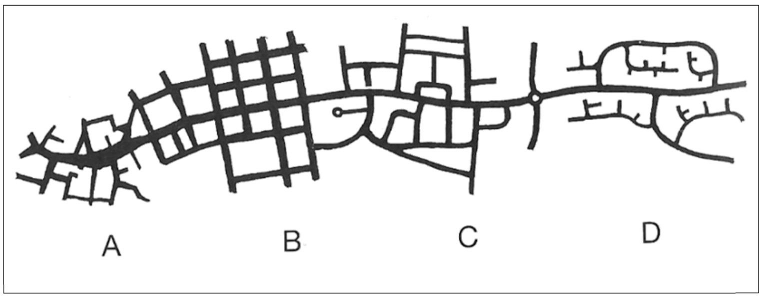


Figure 3.3. ABCD Typology. Source: Marshall (2005a, p 84).

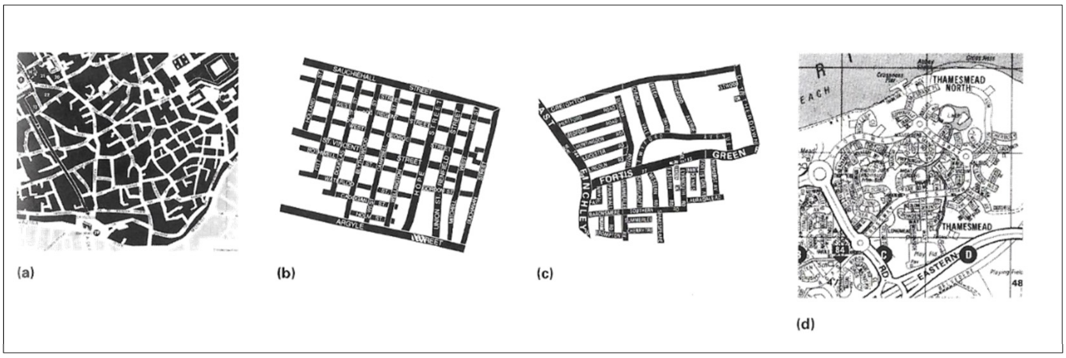


Figure 3.4. Examples of ABCD street patterns; (a) Tunis, (b) Glasgow, (c) East Finchley, (d) Thamesmead. Source: Marshall (2005a, p 85).

The mechanism of dealing with a street has dramatically changed between the pre-modern, modern and post-modern. The street has often been considered a social aspect, as a setting for political expression and struggle, and the locus of cultural identity. In the modern view, traditionally attributed variously to traffic engineers, municipal authorities, and the motoring public; streets became a network for traffic aside from their social dimensions. Later, several attempts called for a revival of the street as a social milieu for various activities and events (Marshall 2007). Thus, it is important to re-read the streets as a social milieu rather than merely as a channel for motor movement and as an aesthetic element (Loukaitou-Sideris et al. 1998).

According to Porta et al. (2010b) “STREET FRONTS are the formation of PLOTS facing on a STREET. They are the key components of urban BLOCKS, yet their relation to STREETS is, in history, more direct and important” (Porta et al. 2010b, p 15). Jacobs (1961, p 372) writes that, “when we deal with cities we are dealing with life at its most complex and intense”. One of the key components of a city is its streets, which provide the principal scenes in cities. Unity is a crucial factor, not in terms of its physical aspects, but also as the social and economic dimensions to create a harmonious neighbourhood. Thus, “successful street neighbourhoods, in short, are not discrete units. They are physical, social and economic continuities - small scale to be sure, but small scale in the sense that the lengths of fibers making up a rope are small scale” (Jacobs 1961, p 121).

Khder et al. (2016) refer to seven fundamental principles that define walkable street: connectivity, safety, accessibility, comfort, convenience, engagement, and vibrancy. Every principle has an active role in shaping the street to meet people’s needs and desires. These principles are governed by physical elements which affect the quality of both the built and natural environment. Carmona et al. (2010) write descriptively about the street and state that it can be perceived as a linear three-dimensional space, identified by the building’s edge on one or both sides. It can be analysed in terms of its many polar qualities, the amalgamation of which offers a spectrum for diversity: visually dynamic or static, enclosed or open, long or short, wide or narrow, straight or curved, and formal or informal architectural details. They also offer other considerations about the street edge in terms of its scale, proportion and rhythm of a street’s architecture and its connections to other streets and squares”.

Engwicht (1999, p 9) states that, “street reclaiming is a technological leap beyond traffic calming. Not only does it reduce traffic volume and speed in your street, it helps reclaim your street as a place for play, social activity, and community building. For thousands of years, streets have been the epicentre of the social, cultural, and economic life of cities”. Thus, by reducing connectivity and social interaction through the loss of social space for urban activity, major urban roads can represent an obstacle to pedestrian movement. According to Carmona et al. (2010, p 107), “cities around the world sought to change the character of urban road - and to re-discover them as ‘street’, ‘avenues’ and ‘boulevards’, and to conceive them as connectors rather than dividers”.

Regarding the street as a public space, “the only legitimacy of the street is [as a] public space. Without it, there is no city. Practical needs - access to [an] adjacent property, [a] passage of through traffic - come to mind first because they are obvious. But the fundamental reality of streets, as with all public space, is political. If the street was an invention, it set out to designate a public domain that would take precedence over individual rights... The street, furthermore, structures community. It puts on display the workings of the city, and supplies a backdrop for its common rituals” (Kostof 1992, p 194). Moreover, Engwicht (1999, p 13) states that, “for centuries, people have felt that the street in front of their house was an important part of their home territory. Home was not just the dwelling in which they ate, slept, and procreated. Home embraced the street on which people lived, the marketplace, the street leading to the market place, the landmarks, the public buildings, and dozens of special places”. The main concern is that the three fundamental components of urban fabric are not isolated from each other, but instead, they manage to complement each other at varying levels. In this sense, Aldallal et al. (2016) state that site and composition “[it] is concerned with the need for a renewed understanding of the site in the twenty-first century and the establishment of a critical position regarding the continued tendency to view the site as a fragment severed from its wider context” Aldallal et al. (2016, p 3).

3.4 Urban Form and Urban Life

Hall raises the concept of *Primary Message Systems* (*PMS*). This system, however, encompasses ten separate kinds of human activity, and these are non-linguistic forms of the communication process. According to Hall, this communication system involves: (1) *Interaction*, (2) *Association*, (3) *Subsistence*, (4) *Bisexuality*, (5) *Territoriality*, (6) *Temporality*, (7) *Learning*, (8) *Play*, (9) *Defence*, and (10) *Exploitation* (use of materials). Some of these system elements relate to this study such as interaction, territoriality, and exploitation (Hall 1959). In a sense, the ingredients of the Primary Message System are likely to be observed in street life, where humans tend to share the same impression, emotion and behaviour whether between people and the street edge or between each other. Moreover, people, to a large extent, have the same reaction and interaction towards the given built setting. The origin of responses to objects is inherent in people’s consciousness and reflects in their behaviour. Three rules (activities) from the Primary Message System can be recognised in street life; according to Hall (1959), these are:

1. *Interaction* “[it] has its basis in the underlying irritability of all living substance. To interact with the environment is to be alive. Beginning with the basic irritability of the simplest life forms, interaction patterns become more complex.
2. *Territoriality*. [it] is the technical term used by the ethologist to describe the taking possession, use, and defence of territory on the part of living organisms … people use space for all the activities in which they engage. The balance of life in the use of space is one of the most delicate of nature. Territoriality reaches into every nook and cranny of life ... territoriality is an example of an infra-cultural activity. It has to do with the way in which territory is claimed and defended by everything
3. *Exploitation*. In order to exploit the environment, all organisms adapt their bodies to meet specialized environmental conditions … Occasionally organisms have developed specialized extensions of their bodies to take the place of what the body itself might do and thereby free the body for other things … such extension activities came into their own as a means of exploiting the environment” (Hall 1959, p 36, 38, 44, 55).

The interaction, definition and utilisation of space are significant criteria for determining the degree of street occupation and its own components; otherwise, the street might be abandoned. From Alexander’s vision, the concept of a street edge, which influences street life, is a substantial factor of a living city, where “the life of public square forms naturally around its edge. If the edge fails, then space never becomes lively [moreover] people gravitate naturally toward the edge of public spaces [so] if the edge does not provide them with places where it is natural to linger, space becomes a place to walk through, not a place to stop” (Alexander 1977, p 600). Furthermore, Hillier highlights the two central tenets of territoriality theory and the extent to which it relates to the spatial domain; this denotes the organisation of space by human beings as a biologically determined impulse, either individually or collectively, by claiming and defending a marked territory against others. However, the theory tends to represent a form of correspondence between socially identified groups and spatial domains and makes it possible for spatial behaviour to be dynamically connected with the preservation of this correspondence. Nevertheless, the territorial theory explains the relationship between human behaviour in both occupying space and space itself. Yet, Hillier believes it remains limited in its attempt to locate the origins of spatial order in the individual biological subject (Hillier et al. 1984).

3.4.1 Street Life and Urban Form

Urban elements in a city are part of a shared milieu that embraces both people and activities. This sharing extends to cover the responsibility of design, and the different patterns of urban entities where those elements are always much broader than the specialised design expertise for the built environment. In other words, the principle of the design of any part of a city cannot generally, be separated from its daily life and the social activities of urban areas, besides the other aspects and institutional considerations in making a decision (Carmona et al. 2010). Also, Carmona et al. (2010, p 201, 203) concentrate on people's movement in space, stating that it is crucial to enable a dynamic street arguing that, "movement is fundamental to understanding how places function. Pedestrian flows through public space are both at the heart of the urban experience and important in generating life and activity … Most shops, for example, are not a sufficient magnet and have to be well-located with respect to the existing movement patterns. The land-use activity merely reinforces/multiplies the basic movement" (Carmona et al. 2010, p 201, 203).

For Montgomery (1998) the key to successful places is their ability to make different kinds of the transaction between diverse activities. Montgomery argues that, without a transaction pattern for a wide variety of activities at many levels and layers, it is not possible to create attractive urban places and vibrant street life. For example, as not all transactions are economic, urban areas and cities must also give space for social and cultural interaction. Montgomery lists a number of key indicators of vitality one of which is the presence of active street life and active street frontages. Kostof (1992, p 123) states that, "streets are public places: so is the harbour waterfront ... But street and quay are primarily places of transit, capturing public life in momentary pauses from a river of people in motion. The public place, on the other hand, is a destination; a purpose-built stage for ritual and interaction. Broadly, the reference is to places we all are free to use, as against the privately-owned realm of houses and shops". Furthermore, he refers to the meaning of democracy in addressing the public realm in a city by stating that, "the life and control of the public [is] indeed the fundamental aim of the public place is to ensconce community and to arbitrate social conflict. The program is a paradox. The square is where we exercise our franchise, our sense of belonging. We are meant to come and go as we please, without the consent of authorities and without any declaration of a justifying purpose" (Kostof 1992, p 124).

Moreover, Hillier (1996a) further describes the space by noting the significance of cultural and social values. He argues, "culturally and socially; space is never simply the inert background of our material existence. It is a key aspect of how societies and cultures are constituted in the real world, and, through this constitution, structured for us as 'objective' realities. Space is more than a neutral framework for social and cultural forms. It is built into those very forms. Human behaviour does not simply happen in space. It has its own spatial forms. Encountering, congregating, avoiding, interacting, dwelling, teaching, eating, conferring are not just activities that happen in space. In themselves, they constitute spatial patterns… But the relation between space and social existence does not lie at the level of the individual space, or individual activity. It lies in the relations between configurations of people and configurations of space" (Hillier 1996a, p 29, 31-33).

Jacobs et al. (1987) argue that there is a number of aims for a good urban environment. Some of these aims are: *livability* or whether the city is a comfortable place to live; *identity and control,* or whether it enables the sense of individual or collective belonging to an urban environment; *access to opportunities*, or whether there are chances to interact with space, people, and activities; *community and public life* or whether there is the ability to effectively participate in social and public life; and *an environment for all*, or whether the space is accessible for all people in a desirable and acceptable way. Marshall (2007, p 110) states that, "the social space of streets is the single contiguous public off of which private spaces are carved… the public-private filtering of the building-plot-street system enables settlements to exist – they enable large agglomeration of humans to coexist in a limited area. This is why the streets are not merely voids between blocks of buildings but must be seen as integral to the concept and fabric of a city".

To enrich the notion and highlight the interrelationship between social and spatial dimensions, Thwaites et al. (2013) focuses on street segments stating that, "segments tended not to appear discretely but were observable sequentially, strung out along the extent of edges formed by overlapping adjacent realms. As one progressed along the extent of such an edge, the degree to which directional or locational attributes predominated tended to change according to local conditions, reflecting the changing type of segment" (Thwaites et al. 2013, p 111). Moreover, the "segments are as much social as they are spatial, and as such provide us, at least as an abstract approximation, with the beginnings of a socio-spatial structure capable of integrating social processes and spatial organisation. Segments and their accumulation as transitional edges can, therefore, be a focus for design attention. They provide a structural framework amenable to conventional design decision-making processes that can, in optimal circumstances, deliver spatial porosity which then encourages and supports localised expression, coherence and adaptability" (Thwaites et al. 2013, p 218).

One of the fundamental aspects of a city's street life is the need to understand that the street is part of the network rather than just an individual link. Recognising the importance of the social street as a social network and a connective system for all human beings helps to effectively promote different patterns of social interaction. In this respect, "network analysis is concerned with the structure and patterning of these relationships and seeks to identify both their cusses and consequences" (Tichy et al. 1979, p 507). Furthermore, the "pattern of interaction and communication [is] the key to understanding social life" (Park 1924; Cooley 1956; Simmel and Wolff 1950, cited in Tichy, N. M., et al. 1979). Therefore, like the Multiple Centrality Assessment (MCA), spatial analysis measures are employed not only to measure the values of the centrality of the street, but also to disclose the correlation between such values, street life and human behaviour. The MCA measure focuses on the local and global scale in terms of the street network.

3.4.2 Social Life and Urban Form

Highlighting the series of factors and limitations, which are related to the effects of the sensory apparatus performance, are essential in understanding and examining the nature of these systems. For instance, the performance can highlight considerable dimensions concerning the relationship between humans and the environment in terms of perception and coexistence. To simplify the understanding of these influences; it can be divided into two primary levels. The first is related to the individual level, while the second is related to the built environment. Moreover, Gehl (2010a) noted that the crucial factors in perception are speed, time, and distance. Humans have a responsibility toward these factors where an individual has a wide range of alternatives and opportunities to control movement, time-lapse, and distance. These opportunities and controls are not spontaneous and independent but instead depend on the quality of the surroundings, which contribute to the ability of an individual to invest in what an environment offers. The second level relates to the surrounding areas, which include both the natural and built environment (Gehl 2010a).

In his argument about the social logic of urban order, Marshall (2007, p 89-90, 95-98) states that, "the urban order is not only to do with humans as physical organisms and their individual inclinations; as we shall see, it is also to do with social considerations". Therefore, "human behaviour cannot be reduced to the satisfaction of the bodily and mental needs of individual person but must also take account of their social context". Also, he states that, "the form and internal structure of buildings will tend to reflect their social organisation [and] the city is also inextricable from the human's status as social - and indeed political-animal; cities are strongly associated with citizenship and civilization". Through their history, human beings signify a type of communication system among its members. Having such a system enables humans to make sense of a community, regardless of the pattern and progress of its language. Also, communication enables direct interaction between people without artificial intervention, which thus makes the activity make more social, and vice versa. Gehl offered five categories of communication according to the distance that connects people. These categories are: (1) intimate distance, which covers about 0.0 – 0.45 metres; (2) personal distance, which covers about 0.45- 1.20 metres; (3) social distance, which covers about 1.20 – 3.70 metres, and (4) public distance, which covers more than 3.70 metres (Gehl 2010a, p 47) (Figure 3.5).

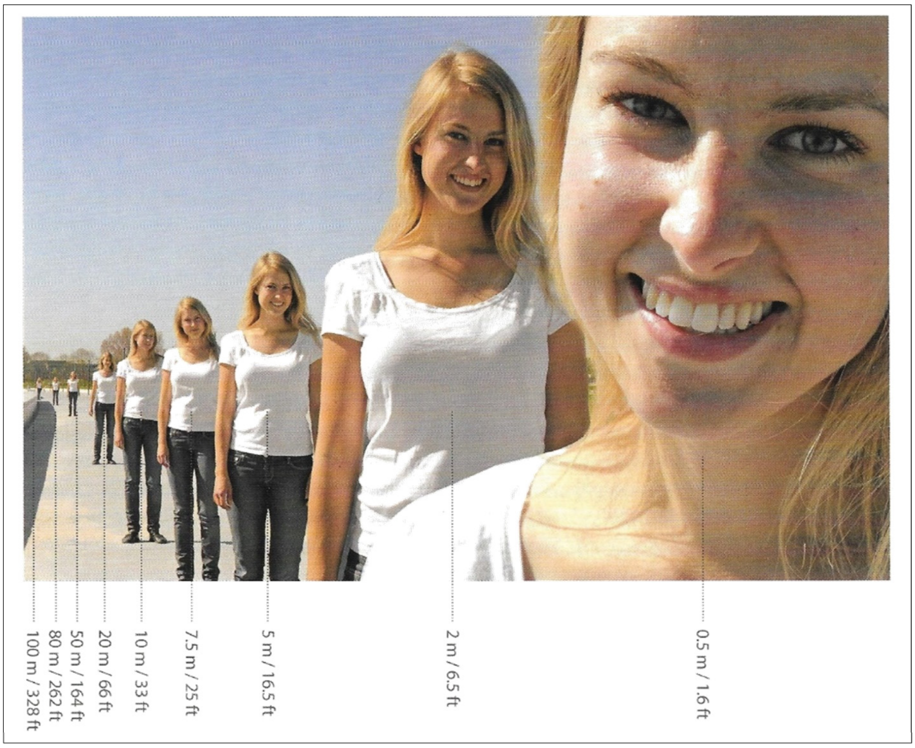


Figure 3.5. One can see others 100 metres away. The details of human body become more legible when the distance becomes closer. Source: Gehl (2010a, p 34).

These five types of proximity are highly likely to be experienced and accompanied by those who use a street. This is because these proximities are a significant way to enable communication and interaction between people. Gehl (2010a, p 49) refers to, "the existence of these communication ground rules is important in order for people to move securely and comfortably among strangers in public space". Moreover, the differentiation between distances depends on the purpose of communication and its aim. In one space can be there an opportunity to experience some contact among individuals with different distances (Figure 3.6). Also, Hall (1959); (1966) refers to the relationship between people which is typified by the distance between those who use the space, and the intimate, personal, social and public distances (Figure 3.7).

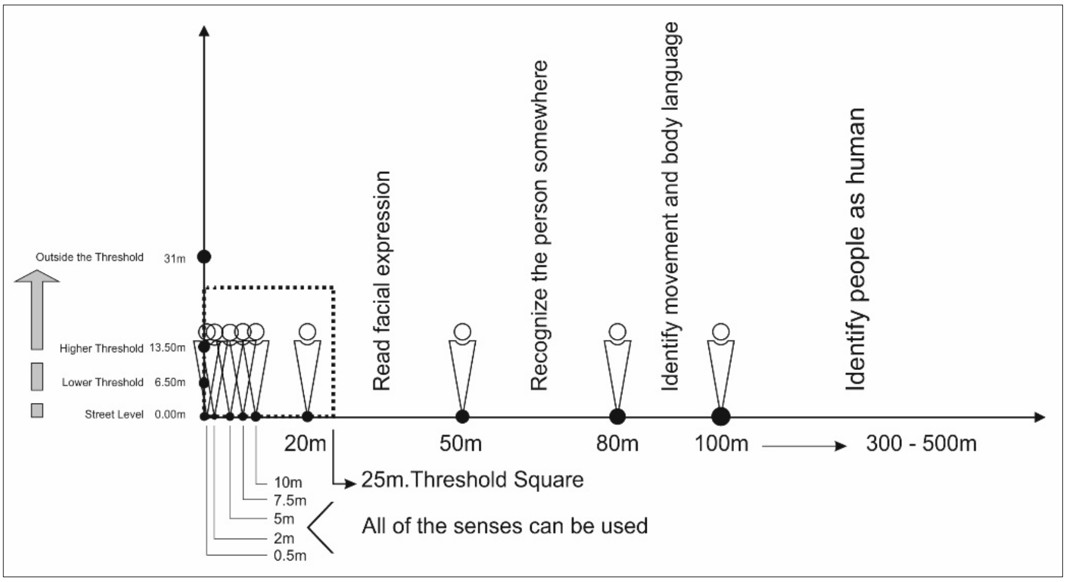


Figure 3.6. Social field of horizontal and vertical vision. Source: Drawn by the author based on Gehl (2010a).

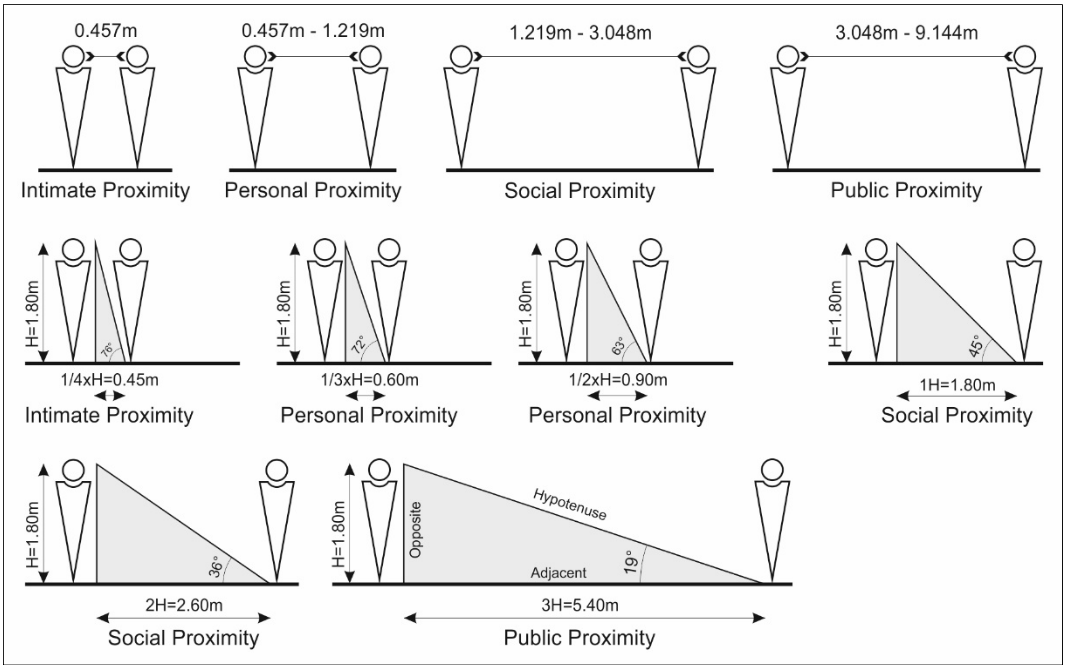


Figure 3.7. Top row illustrates the four patterns of relationships between people perceived in space. Source: Drawn by the author based on Hall (1966). The bottom two rows provide a correlation between human height and these four types of proximity.

The meaning of proximity is also addressed by Knapp et al. (2006); they offer a taxonomy of relationships between people that is based on the nature of messages communicated: (1) Functional/Professional; (2) Social/Polite; (3) Friendship/Warmth; (4) Love/Intimacy; and (5)

Sexual/Arousal (Knapp et al. 2006, p 272-273). Thus, a city's ability to offer different levels of communication among its people by connecting distance, intensity, closeness and warmth can help to raise its quality (Figure 3.7).

A lack of perspective is perceived as the loss of an essential human dimension. However, cities and spaces can be characterised by a pattern of planning that provides considerable opportunity to make people feel like a significant entity within this pattern through their influences on each other. Moreover, Hall (1959) defines space as a factor in cultural contact and influences how space communicates. He states that, "spatial changes give a tone to a communication, accent it, and at times even override the spoken word. The flow and shift of distance between people as they interact with each other is part and parcel of the communication process" (Hall 1959, p 175-176). With such knowledge about informal spaces, there was a need for a hypothesis to explore the proxemics classification system and the dynamism of space. Thus, Hall (1966) distinguished a four-part classification system that could be used to read the various distances which mediate among people, namely intimate, personal, social, and the public. Therefore, to bring the meaning of culture into space, Hall (1966, p 174) invites planners to be aware of the relationship between space and culture by stating that, "city planners should go even further in creating congenial spaces that will encourage and strengthen the cultural enclave. This will serve two purposes: first, it will assist the city and the enclave in the transformation process that takes place generation by generation as country folk are converted to city dwellers; and second, it will strengthen social controls that combat lawlessness".

Hillier (1993b) further defines the interrelationships with the urban form through the spaces and people who perform social and cultural activities. He states that, "space can be seen as a key aspect of how our social and cultural worlds are constituted in the physical world and structured for us as objective realities. Space is not the neutral framework for social and cultural forms. It is built into those very forms. It is because this is so that buildings can carry within their spatial forms the kinds of social knowing that Glassie notes" (Hillier 1993b, p 11). This requires an explanation of how the physical environment can shape social meanings through signs and symbols that are fundamentally understood by society (Hillier et al. 1984). The street edge and the transitional edge (as defined by Thwaites et al. (2013) plays a crucial role in formulating social interactions. They state that it is evolutionary in its development and essentially expressive in its nature. In terms of its form, both the growth and development of the transitional edge as a street edge come from the expressions of territorial occupation and use. Therefore, it represents an interdependent relationship between the social and spatial dimensions of the urban structure.

The transitional channel, namely the street edge, characterises the coherent, holistic socio-spatial realms in such a way as to integrate the spatial and social aspects of the urban form. In this respect, "the social dimension of transitional edges derives from interactions which generate engagement, action and change. …[Consequently,] [t]ransitional edges thus become the visible socio-spatial form of built environments: that which gives meaning through use, character and identity through territorial expression, and sustainability through adaptation" (Thwaites et al. 2013, p 78). Thwaites et al. (2013) distinguish between social activity and social interaction. They define social activity as, "soft, active or engaging edges are commonly associated with social activity, usually generated by their capacity to hold the attention of passers-by. Such edges are also associated with having transitional qualities defining an overlap of adjacent realms, their social activity related to accessibility across it and opportunities to be stationary coupled with things that can hold attention". Whilst social interaction is defined as, "the transitional nature of edges is associated with social interactions because of qualities they possess which support stationary activities. It appears, therefore, that transitional edges, as elements of urban form, have a significant role to play in encouraging and sustaining the social dynamic of the urban realm" (Thwaites et al. 2013, p 81, 83).

Thwaites et al. (2013) refer to three fundamental factors that play a vital role in the interactive value of such a segment: direction, centre and social depth. These can be regarded as catalytic points or motivational spots that attract people to create an interactive dialogue. Three factors (direction, centre, and social depth) are governed by ten themes (social activity, social interaction, public-private gradient, hide and reveal, spatial expansion, enclosure, permeability, transparency, territoriality, looseness) and in turn determine the degree to which social activities take place in the surrounding environment (Figures 3.8 and 3.9). Thwaites et al. (2007) argue that successful centres should offer three fundamental functions. Firstly, there should be there social imageability in terms of facilities, pronounced physical features, visual variety and complexity, and social meaning. Secondly, there should be opportunities for social interaction which can be achieved by a significant convergence of routes, functions for waiting, seating in social groupings, features to encourage comment, revealingness, and places for arrival/departure. Thirdly, there should be restorative benefits, including separation from distraction, comfort and shelter, provision for rest, and the presence of nature (Thwaites et al. 2007, p 60-65).

In this regard, to encourage interaction between people, Knapp et al. (2006, p 126) state that, "if you want a structure that encourages social interaction, you must have human paths crossing; but if you want people to interact, there must be something that will encourage them to linger. Differences in interaction frequency are often related to the distances people must travel between activities"

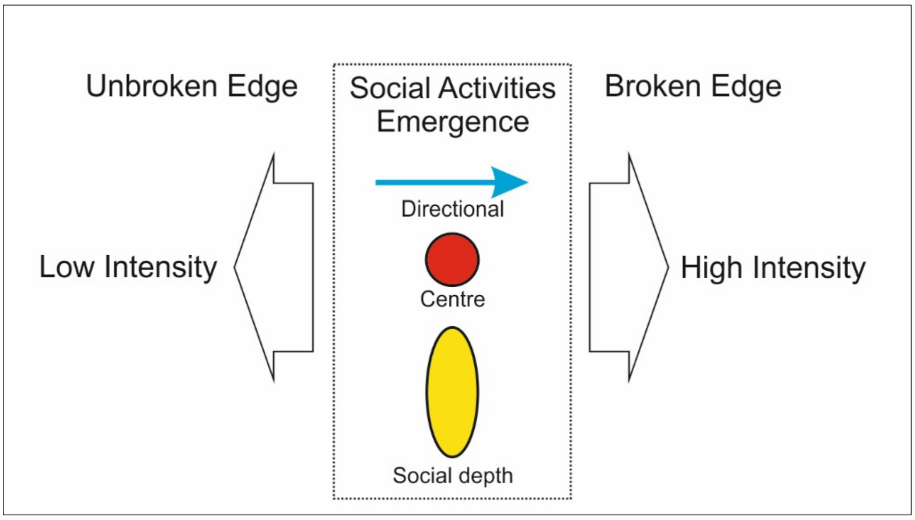


Figure 3.8. The social activities and the factors in which control the intensity of their emergence. Source: Drawn by the author based on Thwaites et al. (2013).

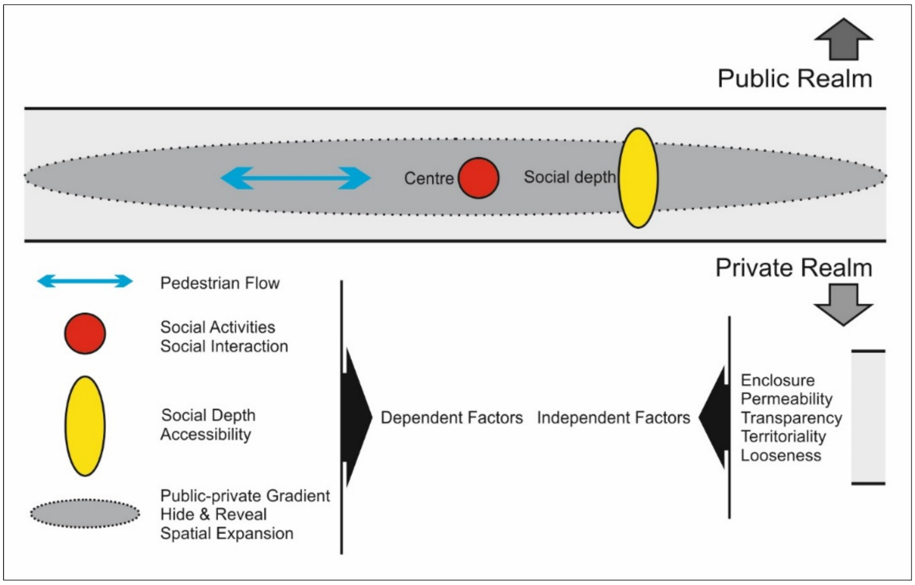


Figure 3.9. Two realms (private and public) besides the dependent and independent factors that shape social activities and social interaction. Source: Drawn by the author based on Thwaites et al. (2013).

3.5 Conclusion

The chapter defined urban morphology and its importance in considering the platform for studying and analysing the existing urban area. It also considered its role in formulating different development plans to create or promote a city. Examining the urban structure provided a keymap to understand not only the components of the built environment but helped to determine the nature of the relationship that binds these urban ingredients in one coherent unit. The city is a long historical series of atrophy and growth processes, with static spatial components and a dynamic experience of moving through space over time. Indeed, people have a "perception of space [that] is dynamic because it is related to action - what can be done in a given space - rather than what is seen by passive viewing" (Hall 1966, p 115). Also, the importance of dynamic spatial interactions stands out from their functional purposes and the performance of people. It is necessary to understand the relationship between spatial and functional dynamics, and to realise the relationship between structure and function in a city where a 'function-structure' model should be capable of providing a mechanism for interrelating functional and spatial dimensions, and morphological and social dimensions.

A symbiotic association can be perceived as a dynamic relationship between the evolving urban structure that is connected to natural movement patterns and human behaviour as well as to developing land use patterns. Therefore, the dynamic of the urban context and its forms can be targeted to connect with other entities of the city, such as the urban form itself, any economic and social considerations, and the environment as a comprehensive perspective. Three urban schools, the British, Italian, and French, developed three different interpretations of the existing urban form and the growth stages of a city. Even though these three trends of morphological analysis shared the same subject, the method of examination differed regarding the scale, criteria and correlation between the urban components. However, urban morphology is not independent of the other disciplines, but rather benefits from different fields of knowledge. Geography, sociology, anthropology, and history are closely connected to architecture, urbanism and planning, and similarly influence street life and social interactions.

This chapter referred to the elements of the urban form as the origin of morphological studies and examined their role in formulating the urban structure as a spatial configurative pattern. The plot, building, block, and the street system are ingredients of the urban form aside from the potential pattern, which signifies the ability of the urban structure to deal with other aspects of urban context usage, such as behaviour and activities. In this regard, the chapter defined a meaningful street life and social interactions, and their relationship with the built environment on different scales. This importance comes from the primary aim of the physical elements of urban pattern, namely, to bind different patterns of viable activities and social considerations and in turn to promote street life. This chapter theoretically depicted guidelines on how to quantify the urban form, comprising the street network, urban fabric and street edge in considering urban life. These dimensions will be addressed in detail throughout the next chapters (Table 3.3).

Table 3.3 Parameters and their variables

Scale	**Parameters**	**Vriables**	**Chapter**
Selected Neighbourhoos	Street Network	Betweenness	4
		Closeness	4
	Plot	Perimeter	5
		Size	5
	Block	Perimeter	5
		Size	5
		Dimension	5
		Density, Area and Mean Area	5
		Block to Street Ratio	5
	Street	Intersection Density | I_d	5
		Street Density | S_d	5
		Link to Node Ratio | LNR	5
		Internal Node Connectivity | INC	5
		External Point Connectivity | EPC	5
		Grid Pattern Ratio | GPR	5
		Pedestrian Route Directness Factor | PRD/PRF	5
		Ped-shed and Effective Walking Area | PS and EWA	5
Selected Street Segment Plot-Block	Building	Constitutedness	6
		Permeability	6
		Intervisibility	6
	Urban Life Street and Social Life	Movement	7-8
		Activity	7-8
		Gender	7-8
		Age	7-8
		Group	7-8

SECTION TWO

QUANTIFICATION OF URBAN FORM

Chapter Four

Measuring the Street Network

4.1 Introduction

The importance of street space might be extended to include intangible dimensions that mainly relate to historical and social considerations and could be conceived and experienced by people. It plays, to a large extent, an essential role in forming the whole urban setting whilst the city is characterised by the pattern of the street. The street network is a spatial pattern that can be identified as a platform to link other components of the urban setting, such as buildings and open spaces. Fundamentally, the street network is not only a cluster of lines that work to transfer people, vehicles and goods from a certain point to another one, but also contributes to a broad spectrum of activities and influences human behaviour.

In this regard, some studies address the street as a network that consists of two primary elements, link and node. The link can be represented differently based on the type of mechanism that it connects, whilst the node can be classified according to the method of the analysis adopted. Determining the street's elements is a critical point in ascertaining the expression of whatever is a link or/and a node. Thus, some scholars tend to use the term link to refer to a street, and a node is used to define the intersection; meanwhile, others adopt the opposite meaning. This chapter will also introduce two different perspectives deal with spatial network analysis; the first is a method that is based on topological depth, such as Space Syntax SS, and the second is Multiple Centrality Assessment (MCA) that is used for metric analysis. Besides, it will provide the metric network map of the selected area which will be subject to the MCA.

4.2 Graph Theory and Spatial Network Analysis

Graph Theory can be defined as the mathematics that describes the specific properties of the relations between two representatives; a line and a point. Graph Theory creates a nodal structure where each point has a unique value that relies on its position and the number of lines to connect to other points within the same nodal structure (Nystuen et al. 1961) (Figure 4.1). Graph Theory deals with a specific phenomenon as an ideal given case; it represents the components of that phenomenon as a set of points and a set of lines to describe the relations between them. The graph defines the communication network where each position in a real system corresponds to a point or node in the graph, and the symmetrical communication path or edge corresponds to a link or line that connects a pair of points or positions (Freeman 1979) (Figure 4.2).

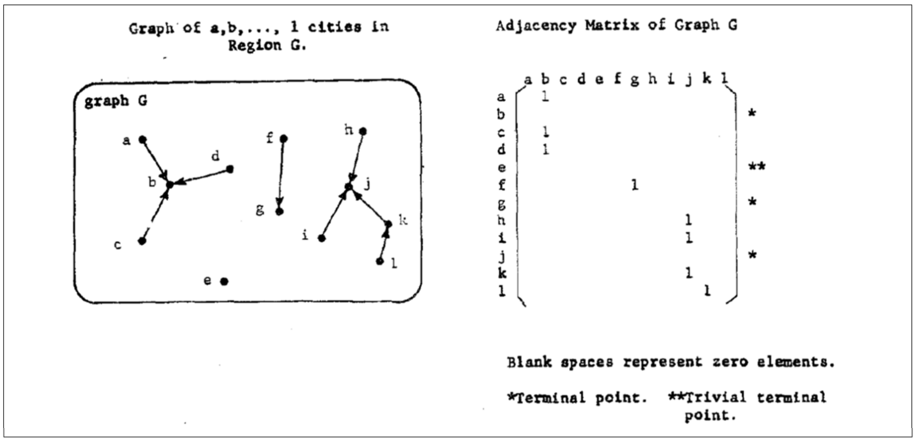


Figure 4.1. Graph of a nodal structure in a region. Source: Nystuen et al. (1961, p 35).

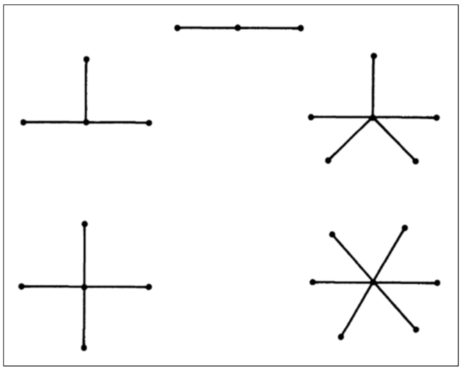


Figure 4.2. Graphs of stars or wheels for points (*n*) = 3, 4, 5, 6, 7. A set of measures of centrality based on betweenness. Source: Freeman (1977, p 38).

According to Freeman (1979, p 219, 227), ‘graph centrality’ is when, “a graph is compact to the degree that the distances between pairs of its points are short. Thus, for those who define point centrality in terms of closeness, the graph-theoretic conception of compactness seems to be a natural extension of the centrality idea”. Freeman explained that a certain point or person could be structurally more central than other points or individuals in any other network of a similar size. Freeman (1979, p 219, 227) states that, “position has the maximum possible degree; it falls on the geodesics between the largest possible number of other points and, since it is located at the minimum distance from all other points, it is maximally close to them”. In respect to graph centrality, each single point (representing a person) reflects the relative dominance when subject to a degree-based measure.

Since the 1940s, social scientists have expressed significant interest in network research, including graph theory and how to reflect this in social networks. This plays a key role in formulating the primary trend of social studies. Social scientists have attempted to invest in social network analysis and to contribute to a thoughtful exploration of the expectations, aims, and explanatory mechanisms in the field. The main point of interest is that network analysis was employed by sociologists who studied transformations in the social fabric of cities after communities were destroyed by the new fashion for urbanisation (Borgatti et al. 2009) (Figure 4.3).

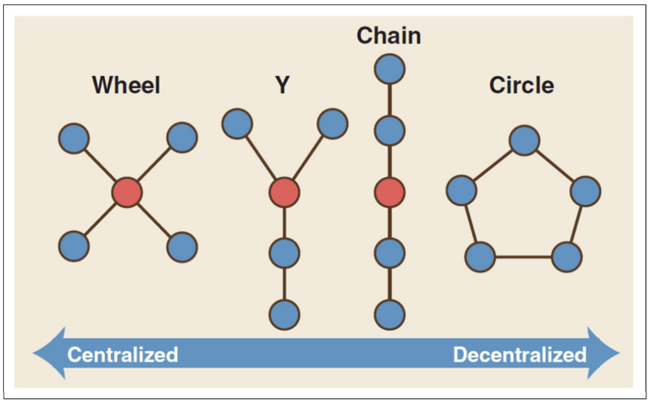


Figure 4.3. Four network structures examined by Bavelas and colleagues at MIT. Each node signifies a person; each line denotes a potential channel for interpersonal communication. The most central node in each network is colored red. Source: Borgatti et al. (2009, p 893).

Porta et al. (2006a) describe elaborate networks in various fields, including economics and social science, and suggest that natural and human-made systems have already been subjected to some common structural properties. Graphically, the concept of structural sociology deals with people as a type of network system, where individuals can be recognised as nodes, and the relationship between them can be represented as edges or links. However, the definitions of street and intersection are based on the type of graph, such as the street as a link and the intersection as a node, or vice versa. Porta et al. (2006a) state that all these contributions and approaches have dealt with various terms, such as accessibility, proximity, integration, connectivity, cost or effort. These terms principally focus on the notion that some streets or spaces seem to be more interesting than others because they have higher centrality (Porta et al. 2006a). Thus, Space Syntax and Multiple Centrality Analysis (MCA) are two spatial analysis approaches (Figure 4.4).

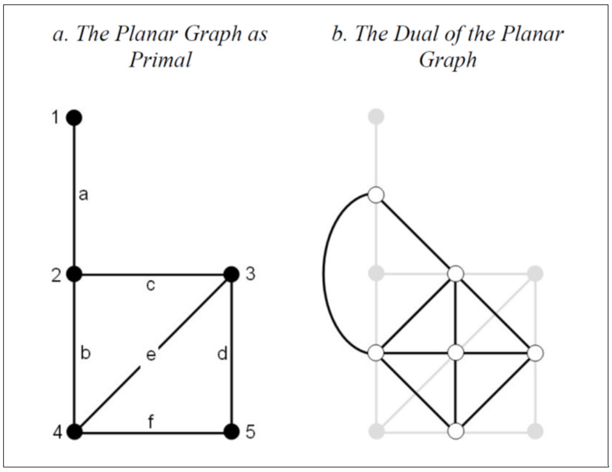


Figure 4.4. Conventional Graph-Theoretic Representation of the Street Network. Source: Batty (2004, p 3).

4.2.1 Space Syntax (SS)

It is widely acknowledged that the contribution of urban studies was mostly theoretical, until the seminal studies of Hillier et al. (1984). Space Syntax is a dependable application for examining the network system across the various entities of a city; streets, neighbourhoods, activities, traffic flow, and particularly buildings. Hillier et al. (1976) illustrate that Space Syntax is an attempt to analyse artificial systems, like space patterns and social patterns, for inherent formal structures that could contribute to knowledge. Hillier et al. (1976, p 150) confirmed that, "man-made space is effectively two-dimensional because the movement is two dimensional". In this respect, two-dimensional space can be characterised by the use of graph theory, which expresses the space as a point or step; this, however, deals with topological depth as a strategy of Space Syntax (Figure 4.5).

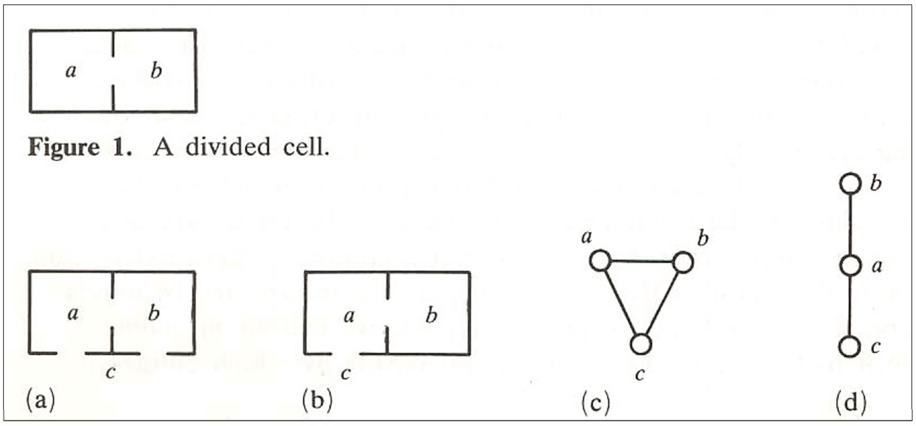


Figure 4.5. (a), (b) Two relations of spaces a and b to the outside, space c. (c), (d), the corresponding justified graph. Source: Hillier et al. (1987, p 363).

Space Syntax, according to Hillier et al. (1987, p 363), "... is a set of techniques for the representation, quantification, and interpretation of spatial configuration in buildings and settlements. Configuration is defined in general as, at least, the relation between two spaces considering a third, and, at most, as the relations among spaces in a complex taking into account all other spaces in the complex. Spatial configuration is thus a more complex idea than spatial relation, which needs invoke no more than a pair of related spaces" Moreover, they demonstrate that, "the Space Syntax techniques which post-dict[1] natural movement were not originally aimed at modelling movement but at understanding the morphological logic of urban grids, especially their growth" (Hillier et al. 1993a, p 32).

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[1] That is, techniques which find regularities that form the basis for prediction Hillier, B., et al. (1993a). "Natural movement-or, configuration and attraction in urban pedestrian movement." Environment and Planning B-Planning & Design **20**(1): 29-66.

Depth and choice are the configurational properties of spatial analysis, where depth determines the number of spaces that would be required to move from one space to another. Choice offers many alternative routes to pass from one selected space to another. The concept of depth will be formulated in quantitative form, called integration, to express the relative depth of a space (line) from all others in the graph and to produce the mean depth of each line in the system from every line (space) (Hillier et al. 1987); (Hillier et al. 1993a). The integration value determines that, “the most integrated lines are those from which all others are shallowest on average, and the most segregated are those from which they are deepest” (Hillier et al. 1993a, p 35). Empirically, three fundamental imageries express the application of Space Syntax; axial graph, node graph, and axial map. The axial graph represents the grid where the lines are the nodes and the intersections of these lines are the edges (Hillier et al. 1993a).

The primary rule of Space Syntax is to rely on the topological measure rather than a metric measure. The topological pattern can be represented by an axial map that translates the space as a node, and the intersection as a line; this is the second rule of Space Syntax (Hillier 1999b). Hillier argues for the adoption of topological depth as an alternative technique to metric depth; furthermore, this argument has become a stimulating issue for other scholars addressing a new approach in analysing spatial patterns. The mechanism to consider the space (street) as a node and the intersection as a line (link) is another dialectic issue for scholars. Figure 4.6 illustrates that there are four prerequisite steps to understanding the integration pattern of the street network. The first step is to determine the boundary of case study (1), and then to draw the street network and open spaces (2) to produce the axial map (3), the final stage subjects the axial map to the Space Syntax formula to create the integration pattern map.

Figure 4.6. The case study of King’s Cross. (1) case study boundary; (2) the street and open space pattern; (3) axial map; (4) pattern of integration; (5) observed spaces with number of moving adult per 100m. Source: Hillier et al. (1993a, p 37, 38- 43).

4.2.2 Multiple Centrality Assessment (MCA)

Bavelas (1948) presented the concept of centrality in dealing with communication between people. Freeman (1979) states that Bavelas investigated communication within small groups and his hypothesis concerning the relationship between structural centrality and its effects on group processes. Freeman (1979) reported some significant references that addressed the centrality index in communities; there were similar to Bavelas (1948), (1950), Bavelas et al. (1951) and Leavitt (1949), (1951). According to Freeman (1979), the first research that applied centrality was supervised by Bavelas at the Group Networks Laboratory, M.I.T. in the late 1940s. Also, he states that the first studies in centrality were conducted by Leavitt (1949) and Smith (1950). These were similarly reported by Bavelas (1950) and Bavelas et al. (1951), and addressed in detail by Leavitt (1951). The meaning of centrality, reported by these studies, related to group efficiency and concerned problem-solving, the awareness of leader-ship and the personal satisfaction of participants.

Throughout the 1950s and 1960s in particular, the principle of centrality became the basis for numerous experiments; these extended, revised and perfected the results of centrality (Freeman 1979). Moreover, Freeman (1979) states that centrality in its own right could be divided into different kinds: centrality as control, centrality as independence, and centrality as an activity. However, combining these three types, for example, would be fruitful to a phenomenon that has different variables and aspects. The scope of the centrality approach has not been narrowed to involve only experimental studies of group problem-solving. Instead, a considerable number of researchers have adopted centrality, for example, political integration within the context of social life, such as (Cohn et al. 1958), mentioned in Freeman (1979). Furthermore, Pitts (1965) studied centrality in communication paths for urban development and attempted to reconstruct the Twelfth-Century river transport network in central Russia. In 1974, Rogers researched the occurrence of two types of centrality through inter-organisational relations; he found that some organisations manage to be more central than others.

This consideration was derived from the properties of the organisation itself and the characteristics of the network where it was embedded. Recently, the idea of centrality has attracted the attention of scholars and researchers from different fields of knowledge, such as community organisations, urban studies, and city planning. It is receiving investment from a wide range of applications, meaning that centrality is a quintessential structural attribute of the social network. Thus centrality refers to the location of position or points in networks and the ways in which to generate the structural properties of the whole network (Freeman 1979).

The idea of a network, however, emerged in social studies and anthropology. It envisaged that, "each person as a node linked with others to form a network to quantify both the interactional attribute of the linkages and to overall morphological attribute of a network" (Rogers, 1995, p. 15). One of the fundamental issues in urban research is the extent to which measures can provide meaningful and precise findings. The spatial network is considered a vital layer in an urban configuration; it contributes to the shape of the whole image of the urban space. This is achieved by creating links between urban features; moreover, it is continuous and moves in harmony with other urban components. Centrality can reflect a considerable number of factors about human behaviours in urban spaces (Crucitti et al. 2006a); (Crucitti et al. 2006b).

Porta et al. (2006a) state that centrality as an intricate system originated and developed in other scientific fields, particularly structural sociology, before its use in urban research. Furthermore, "centrality has never been extensively investigated metrically in geographic networks at it has been topologically in a wide range of other relational networks such as social, biological, or technological ones" (Porta et al. 2006a, p 705). Porta et al. (2009) state that the main characteristics of the MCA are: the adoption of a standard primal format in representing the street network; that all centrality measures deal with a real street network as a metric computation; to measure centrality by using multiple peer indices, and that centrality can reflect a significant role in forming a city's growth, besides how it works. According to Crucitti et al. (2006b), centrality is a tool to diagnose the value of nodes and edges within spatial networks in urban spaces. The origin of the principles of centrality occurred in the context of a social system that regarded an individual as part of a whole system that could affect group processes (Crucitti et al. 2006b). This is a new pattern in the philosophy that understands human dimensions by reading the relationship between humans and urban form elements.

Porta et al. (2006a) defined centrality within a number of studies by focusing on the importance of the growth of centrality in analysing the network system. Porta et al. (2006a) addressed different types of centrality and concluded that efficiency C^E as an index represents a kind of closeness that is used geographically and normalised by associating the shortest length of paths with the virtual straight lines between the same nodes. This becomes the straightness centrality C^S, which identifies a new geographic idea, namely the most directly accessible nodes by all others in the network system; this concerns the most central nodes. The other two indices of centrality, closeness C^C and betweenness C^B, are embedded into the information centrality C^I to generate another concept of a central node, namely when they are critical for other nodes (Porta et al. 2006a). Additionally, Freeman (1979) who defines the centrality of a point, referred to three types of structural attributes for a network: degree, betweenness, and closeness.

Therefore, the centrality indices are: (1) Degree Centrality, (2) Closeness Centrality, (3) Betweenness Centrality, (4) Straightness Centrality, (5) Information Centrality and (6) Efficiency Centrality (Cardillo et al. 2006); (Crucitti et al. 2006b); Freeman (1977); Porta et al. (2006a); Porta et al. (2009). It would be valuable to etymologically, algorithmically and terminologically track the six indices of centrality and their meaning. This research adopted Multiple Centrality Assessment (MCA) as one of its methodological processes.

The degree of centrality, C^D, can be represented as the number of ties for one node that connect to other nodes in the graphic network. The more significant the number of ties, the more important the node. The degree of centrality of i is formulated as:

$$C_i^D = \frac{\sum_{j=1,N} a_{ij}}{N-1} = \frac{k_i}{N-1}$$

Where ki is the degree of node i, i.e, the number of nodes adjacent to i. The value of C_i^D is between 0 and 1, 1 when a node is connected to all other nodes of the graph, and 0 when there is no connection. The degree of a node can be noted as the number of edges incident with the node, or the first neighbours of the node. The degree ki of node i is defined within the adjacency matrix as:

$$k_i = \sum_{j \in N} a_{ij}$$

Closeness centrality, C^C, identifies the nearest nodes to node *i* along the shortest links, and is formulated as:

$$C_i^C = \frac{N-1}{\sum_{j \in G, j \neq i} d_{ij}}$$

Where d_{ij} is the shortest link length between i and j. The minimum sum of the length of the edge among all possible links between *i* and *j*, is the valued graph. Such an index is crucial for a connected graph, or in case one is artificial, it assumes d_{ij} is equal to a finite value, and there is no path between the two nodes *i* and *j*, then to mark between 0 and 1 as a nonvalued graph.

Betweenness centrality, C^B, the node will be centred when there is a number of links that connect it to other nodes. The betweenness centrality of node i is defined as:

$$C_i^B = \frac{1}{(N-1)(N-2)} \sum_{j,k\in G, j\neq k\neq i} n_{jk}(i)/n_{jk}$$

where n_{jk} is the number of shortest links between *j* and *k*, and $n_{jk}(i)$ is the number of shortest links between *j* and *k* that contain node *i*. C_i^B has one value between 0 and 1 and reaches the maximum value when node *i* is located within all linking geodesics. From a sociometrical perspective, Freeman (1977, p 35) defines betweenness centrality as “the degree to which a point falls on the shortest path between others and therefore has a potential for control of communication”.

Straightness centrality, C^S, is based on the concept that efficient communication between two nodes *i* and *j* comes from the inverse of the shortest link length d_{ij}. The equation can be defined by:

$$C_i^S = \frac{1}{N-1} \sum_{j\in G, j\neq i} d_{ij}^{Eucl}/d_{ij}$$

where d_{ij}^{Eucl} is the Euclidean distance between nodes *i* and *j* along a straight line. This index measures the extent to which the connecting link between nodes *i* and *j* deviates from the virtual straight link.

Information centrality, C^I, measures the relative drop in the network efficiency when the *i* node is removed from *G* of the edge’s incidence in *i*:

$$C_i^I = \frac{\Delta E}{E} = \frac{E[G]-E[G']}{E[G]}$$

where the efficiency of a graph *G* is formulated by:

$$E[G] = \frac{1}{N(N-1)} \sum_{i,j \in G, i \neq j} d_{ij}^{Eucl} / d_{ij}$$

Where G' is the graph with N nodes and K - k_i edges, obtained by removing from the graph, G, the edges incident in node i. With a specific definition of the information centrality C_i^I of node i, the formula is:

$$C_i^I = \frac{\Delta E_2^{glob}}{E_2^{glob}} = \frac{E_2^{glob}(G) - E_2^{glob}(G')}{E_2^{glob}(G)}$$

The index C_i^I takes a value between 0 and 1; it is correlated to all three types other of centrality, C_i^D, C_i^C, and C_i^B. Also, the value of C_i^I is affected by the length of the new geodesics when the substitute of the paths is used once the node i is deactivated. For this multiplicity of indices in the MCA approach, Porta et al. (2006a, p 722) stated that "offering a set of multi-faceted pictures of reality, rather than just one, MCA leads to more argumentative, thus less assertive, indications for action"

4.2.3 Comparing Space Syntax and Multiple Centrality Assessment

The characteristics that identify the two approaches when analysing the spatial network could help to understand those two methods. The aim is not to favour one side and ignore the other, but rather to formalise the singularity for each method. When applied to the study of urban spaces, network analysis is typically based on a primal graph to represent intersections as nodes and streets as edges. In a social system, the distance between two nodes is measured by the reliance on topological steps; however, this contrasts with Space Syntax, by adopting a dual graph of street patterns. It considers the street as a node and the intersections between each pair of streets as an edge (Crucitti et al. 2006b). In comparison, the Multiple Centrality Assessment (MCA) represents another significant approach. This provides a number of centrality types that differ from the Space Syntax approach. In particular, it is based on the primal street graph, adopts the metric framework, and works with a plurality of centrality indices. These indices, however, work collectively to comprise an extended knowledge theme, and to understand the hidden orders underlying the structural, spatial network (Porta et al. 2006a).

4.2.3.1 Principles

To distinguish the main characteristics of these two approaches (SS and MCA) Crucitti et al. (2006b) summarise four variances of Space Syntax:

- It relies on the concept of the line of sight where the street pattern is turned into an axial map.
- The axial map is formulated as a dual graph to become what is called a connectivity graph. This connectivity graph expresses the streets as nodes (N) and intersections as edges or links (K).
- The Space Syntax methodology (regarding the index of integration) is based on the analytical key of spatial organisation. The primary equation of integration can be formulated as:

$$INT_i = \frac{D_N}{RA_i}$$

where D_N is a normalisation factor based on N (links), and where RA_i is relative asymmetry that is defined as $RA_{i=} \frac{2(MD_i-1)}{N-2}$

$$MD_i = \frac{1}{N-1} \sum_{j=1}^{N} Sij$$

where S_{ij} is the shortest route length between two streets that should already be given in the dual graph as the number of steps for two respective nodes.

- The integration index, however, will be represented in a coloured graph where each single coloured line is a value of integration. Theoretically and practically, Space Syntax deals with the dual approach; this differs from network exemplification, which is a geographic system is a primal process. Therefore, integration illustrates the value of lines in terms of their relative positions within the global spatial network by depending on the number of mediated steps with others.

In comparison, Porta et al. (2006a) and Crucitti et al. (2006b) determine three fundamental principles of Multiple Centrality Assessment; (1) it is a primal graph representing the spatial network, (2) it deals with metric distance, and (3) it adopts a number of centrality indices. The criteria to derive centrality are based on four steps:

- The street pattern creates the primal graph where the intersections are represented as nodes, and the streets serve as edges or links. The edges reflect the metric distance of real streets.

Each street length responds to the single edge in the primal graph, where the metric dimension of the street network is analysed both topologically and geographically.
- A node in the primal graph is subject to the four types of centrality, namely: closeness C^C, betweenness C^B, straightness C^S, and information C^I.
- The analytical values are coded and coloured in the primal graph to weight the centrality of each node.
- Calculating the average of their paired nodes computerises the centrality of the edges. The importance of the end-nodes for every single edge is represented in the axial graph where each edge has its colour and code.

4.2.3.2 Structural Generational Model

The process of generating a dual graph completely differs from a primal graph. In the Space Syntax approach, the central principle in producing an axial map is based on the continuity of the street space as a linear object. In this respect, Hillier et al. (1984, 92, 99) state that the axial map is, "the least set of such straight lines which passes through each convex space and makes all axial links". They explained that the mechanism to generate this entails, "first finding the longest straight line that can be drawn …, then the second longest, and so on until all convex spaces are crossed, and all axial lines that can be linked to other axial lines without repetition are so linked". The procedural formation of the axial map in Space Syntax has recently become varied. Each scholar has adopted a different methodology to create an axial map. For example, Peponis et al. (1998) examine three different methods, while Batty et al. (2002) studied nine methodologies in generating an axial map. In comparison, other researchers relied on the names of streets, "to perceive a street network, we need to merge individual segments into meaningful streets, just as we merge individual pixels into meaningful objects … and this is the so-called named streets approach" (Jiang 2007, p 647, 648). Moreover, another approach is continuous and street-based, "to merge adjacent street segments to form meaningful streets" (Jiang 2007, p 648).

Thomson (2004) develops a different way to generalise the axial map; he defined, "the use of smoothly continuous road centre-line segments –which are here termed strokes …if a road network is observed as the diagram of a planar graph, with junctions and dead ends representing nodes and the corresponding connective road segments representing arcs, then a stroke is a set of one or more arcs in a non-branching, connected chain" (Thomson 2004, p 1, 3) (Figure 4.7).

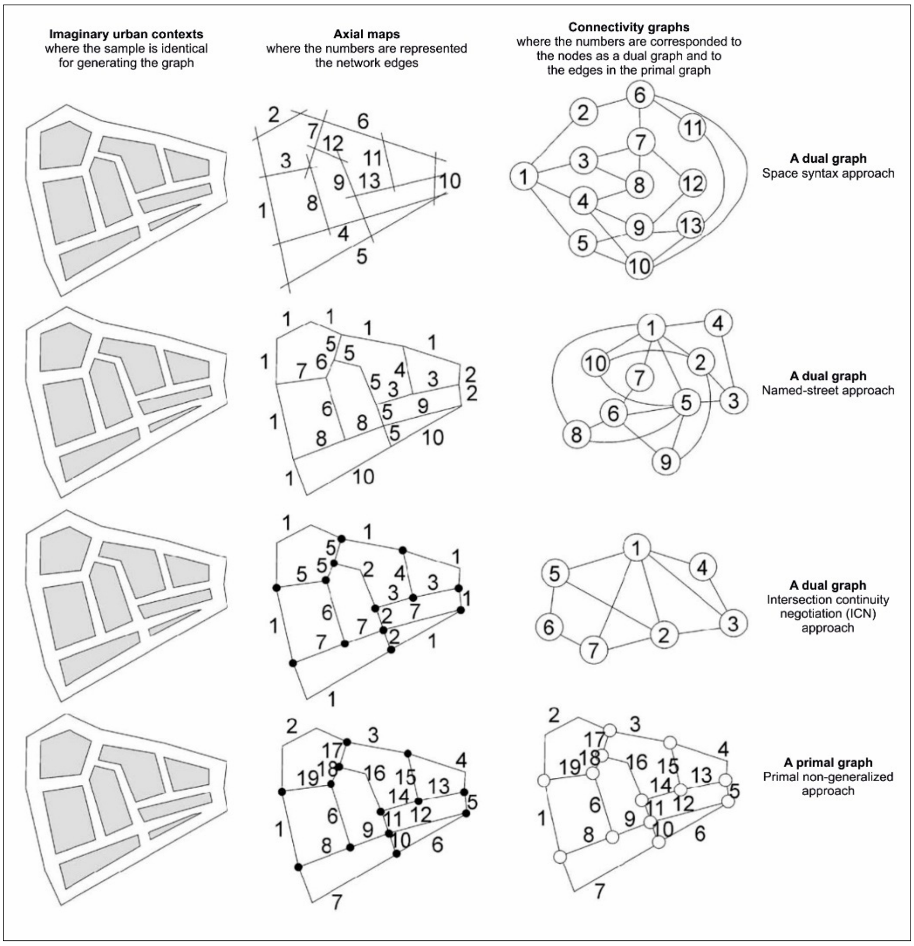


Figure 4.7. Multiplicity of methods in generating the structural model of a spatial network. Source: Based on the original figures; (Porta et al. (2006a, p 714); Porta et al. (2006b, p 855).

According to Porta et al. (2006a), the critical issue with a name-based street is that the street is defined as a nominal element in a spatial network. However, street name databases are not always available, and are not always significant or credible in terms of their status and scale. Also, the process of involving and updating street names within a geographical information system (GIS) could be costly on a large scale and involve massive datasets. Porta et al. (2006a) worked on the Intersection Continuity Negotiation (ICN). The ICN employs three steps to generate a dual axial map: firstly, nodes are examined in turn, where the continuity of street is negotiated among all pairs of incident links. The two-links shape the central convex angle, and the highest continuity is designated, then the other two links with the second most abundant convex angles are allocated the second largest continuity and are merged. The central principle of ICN is a good continuation. Therefore, discontinuity in the linearity of the street was neglected. Secondly, a street is allocated to the link and pertinent intersections, adjacent links are merged as per the first step. Thirdly, the dual graph is created and overlapping double links in the dual maps are excluded (Porta et al. 2006a).

According to Porta et al. (2006a), from the MCA perspective, the street networks and their intersections can be defined by spatial graphs in which one-dimensional geographic elements (in this case streets) are turned into one-dimensional graph elements (links or edges). This kind of graphic expression is termed as primal or direct, where the graph and real network system appears to be analogous. In territorial studies, the network analysis frequently adopts a primal approach where the distance is not only subject to topological terms (steps), such as what has been followed by the social system analysis, but also to spatial terms (metres) within an urban street system.

4.2.3.3 Topological, Geometrical and Metric Representation

The notion of distance became the milestone and breakthrough for both the Space Syntax and the Multiple Centrality Assessment. The former deals with the length of the street as a topological value where there is no consideration of the real value of the metrical dimension; in this method, the street is represented as a node in a dual graph. The second adopts the metric distance of street dimensions by formulating the primary algorithm of spatial network analysis. Ratti (2004) refers to a number of critical points. Significantly, he inserted the main headings to highlight the Space Syntax approach. The criticism of Space Syntax, however, can be found through the topological rather than the geometrical system. Thus, Space Syntax deals with topological depth, but not metric distance, as the primary representation for an axial graph. Furthermore, Space Syntax deals with two-dimensional movement regardless of the three-dimensional perspective of street edges that are constituted by buildings.

Hillier et al. (2004) argue that linking metric and topological data in the configurational model of an area is a key issue. Adopting segment lengths in the topological measures of an axial graph leads to an integration pattern. Therefore, the configurational analysis will focus on the geometric centre of the selected area and exhibit the decreasing integration from the centre to the boundary. Distance plays a key role in familiarising the space and how individuals perceive and conceive it. This idea is not bounded to readings of the space, but also how it interacts with people Hall (1959); Gehl (2010a). Porta et al. (2006a, p 715) argue that, "… structural terms of metric distance has been recognized as the key feature of road network, which, exactly because of this fact, need to be dealt with as a new, specific family of networks". MCA, primarily adopts a metric distance that is located between two paired intersections of the street centreline (Dalton et al. 2003); (Turner 2007). This mechanism is employed to form the primal system, where the spatial network can be characterised analogously within the real network, and where streets are represented as links or edges and intersections become nodes (Porta et al. 2006a) (Figure 4.8).

Figure 4.8. Panel 1, original maps of four cities; (a) Ahmedabad, (b) Venice, (c) Richmond, CA, and (d) Walnut Creek, CA. Panel 2. primal graph of selected cities based on the MCA approach. Panel 3. dual graph of selected cities based on the Space Syntax approach. Source: Porta et al. (2006a, p 712).

4.2.3.4 Edge Effect in Spatial Network Analysis

In considering Space Syntax, Ratti (2004) argues that the edge governs the value of integration. He states that the edge has a significant impact on the Space Syntax results, and on the different product weight values for every single line within the spatial network (Ratti 2004). Hillier et al. (2004) argue that the main aim of the axial analysis is not to model the absolute ranges of movement in an urban space but to form the distribution rates of flux within constituent spaces. Also, Hillier et al. (2004, p 505) suggest that, “to ascertain average levels in an area as a whole would require, of course, knowledge of other variables …”. Figure 4.9 and 4.10. The edge effect, however, is not limited to Space Syntax so long as the system is a series of interconnected networks, where each single link has its value in depending on the other links.

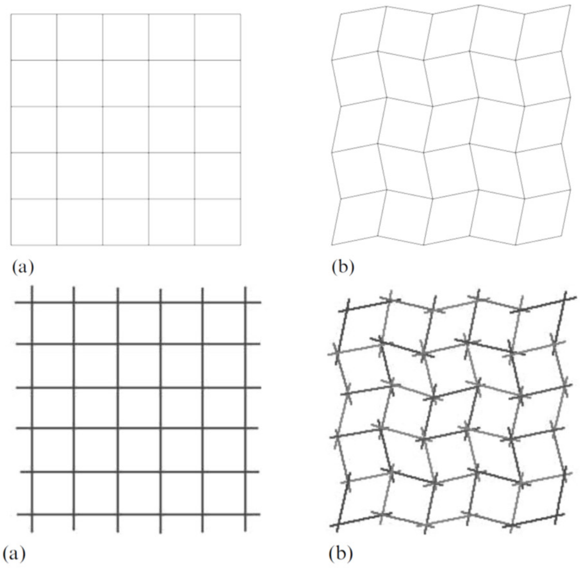


Figure 4.9. Above, (a) an orthogonal axial map and (b) a broken or deformed one. Bottom, global integration values on the two axial maps (above), they were calculated, where map (a) presents a uniform integration value 3.134, while map (b) varies between 0.919 (corner lines) to 1.930 (central lines). Source: Ratti (2004, p 8 - 9).

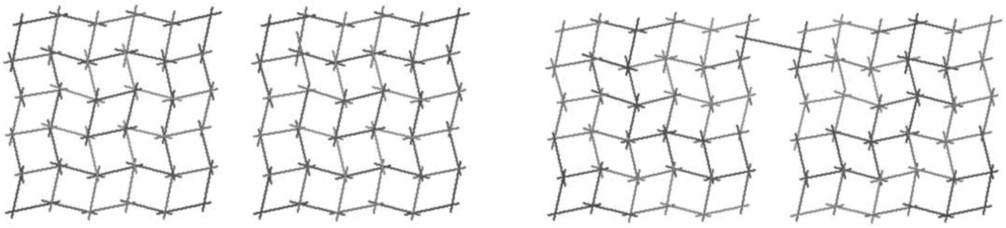


Figure 4.10. Global integration in two urban systems, first considered as separate entities and then communicating. The most integrated part is the line connecting the two systems and the adjacent segments. Source: (Ratti 2004, p 11).

Porta et al. (2006a) argued the influence of the border and the extent that the centrality indices could be affected by the boundary of the spatial network regarding its amplitude and narrowness. Throughout their seminal works, they found that the urban context with the highest quantity of street networks tends to respond to the border effect. To proactively reduce the edge (border) effect on the centrality value, Porta et al. (2006a) considered continuous routes across the urban context by performing a 'before' instead of a 'consequent' centrality analysis. The mechanism belonged to the algorithm employed in the structural generational model of spatial analysis rather than the principles of centrality. Porta et al. (2006a) stated that, in terms of the edge effect, neither Integration (Space Syntax) nor Closeness Centrality (MCA) are affected by the hidden structure of the urban fabric. Instead, they are of a deep-stead nature, in that they do not give any eligible depiction of urban routes nor focal regions, with the exception of where the generalisation process is based on a defragmented system. Alternatively, the boundary of a case study is extended to cover a specific area in order to create a buffer zone and reduce the border effect.

Moreover, Porta et al. (2006a) refer to two options to deal with the edge (border) effect. The first adopts a dual-generalised model, including the Space Syntax approach, the named-street approach, and the intersection continuity negotiation approach. Moreover, all methods are based on a visibility analysis, and an identified street. The second espouses a primal approach, through reestablishing the entities of a spatial network by employing metric distances. This means that a centreline between two intersections of a street is invested metrically in a graph. According to Porta et al. (2006a), this last option would effectively contribute to the delivery of an exceptional characterisation of streets in an advanced process to allow for easy and consistent access to available data resources. Another step was involved in the edge (border) effect, which might be addressed within the closeness centrality C^C when using the local scale.

4.2.3.5 Two-dimensional Representation in Spatial Network Analysis

Based on a widespread agreement between different fields of knowledge Spatial Network Analysis primarily deals with network systems, although it is not limited to, the world wide web, the Internet, biological, social, and infrastructure networks, biochemical networks and citation networks. Two axiom elements represent all these types of network; a set of nodes or vertices are joined in pairs by lines or edges. Moreover, this network system is, in fact, practically planar, where it is possible to draw on a map as a two-dimensional form (Gastner et al. 2006). Both approaches (SS and MCA) use planarity in building a two-dimensional form, namely the dual graph and primal graph respectively (Figure 4.11). Ratti (2004) discusses the central role of Space Syntax in studying urban structure. Space Syntax mainly focuses on two dimensions in representing the urban context, namely the height of buildings and the property of streets. In comparison, Hillier et al. (2004), explain that subjecting spatial configuration analysis to other variables could lead to disorganised values. However, three-dimensional urban elements, such as building heights and other metric variables, such as street length and width are addressed within a study of, for instance, pedestrian and vehicular flow.

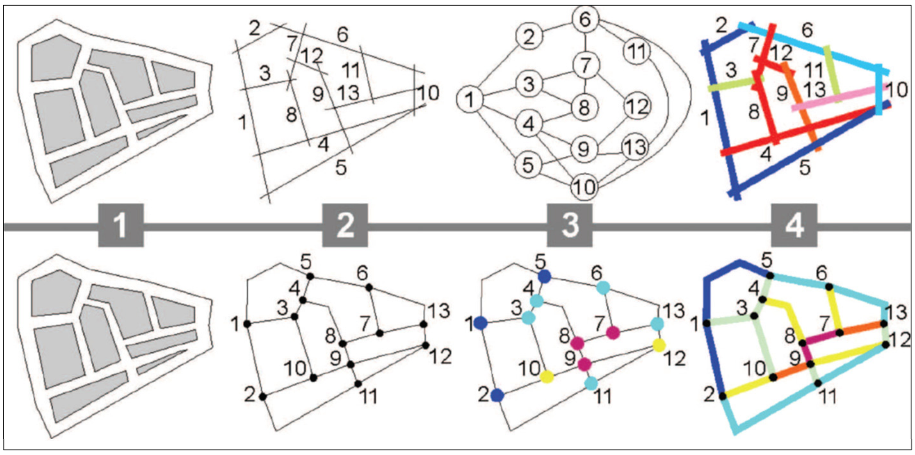


Figure 4.11. Both approaches adopt planar form in dealing with spatial network system. Top pane is the basic steps in the space syntax (SS) approach and bottom pane is a multiple centrality assessment (MCA) approach. Source: Crucitti et al. (2006b, p 3).

The level and the scope of an urban study is a crucial requirement in determining the nature of variables, their weights and the type of correlation examined. The shift from regional scale to macro, meso and then micro level, requires the adoption of different variables that must be reasonably comprehensible. Neglecting other considerations and aspects in an urban environment can automatically affect the quality and value of results at any level. Thus, there is a difficulty in adopting a two dimensional for the broad scope of the urban context.

4.2.3.6 Urban Form Elements and Land Use

Land use is another consideration for Space Syntax and Multiple Centrality Assessment. Neither approach directly refers to the pattern of land use; instead, they are more attentive to spatial configurations within the urban context. Hillier et al. (2004) argue that any theoretical understanding beyond the separation of spatial analysis and land use is that space syntax deals with land use as a dependent variable. Thus, when spatial configuration affects movement, then land use can be influenced as an expected result. Nevertheless, Space Syntax has a significant place in seeking a correlation between the topological accessibility of a street network and other urban phenomena, like movement flux, human wayfinding, retail commercial, distribution of activity patterns, and other influences related to pollution (Porta et al. 2006a). Hillier et al. (2004) state that recently, a considerable number of studies demonstrate that changes in land use patterns shift live centres from the traditional central area of a city towards its edges. Therefore, according to Hillier et al. (2004, p 507), "space syntax in that sense offers a diagnostic of urban areas, and this is indeed one of its primary functions on live projects … is ideal for use in innovative design … to uncover theoretical principles of how cities work spatially, it is not tied to simple copying of existing urban phenotypes". Porta et al. (2006a) denote that the primal approach of MCA is not the end of the evaluation of urban patterns, but rather the construction of a correlation between the centralities and dynamics of the network concerning land use, social interaction, the vitality of markets, and pedestrian and vehicular flows. Centrality captures the essence of a location's advantage in an urban area, and its values should be reflected in the intensity of land uses (Porta et al. 2009).

4.3 Applying Multiple Centrality Assessment

This research employs the MCA approach for the following reasons:

- It is considered a more recent approach; therefore, it is possible to enrich the understanding of spatial network analysis methods.
- It is a *multimetric* approach that incorporates several indices; betweenness, closeness, straightness, and information.
- The georeferencing maps for the selected case study areas are available, meaning that there is an opportunity to prepare primal metric graphs.

These three intentions are additional rationales to those discussed earlier in this chapter. To apply the Multiple Centrality Assessment MCA, some steps should be taken; firstly, a georeferencing digital map needs to be obtained; secondly, a metric network graph which corresponds to the georeferencing digital map is drawn; thirdly, the graph is saved in a specific format which can be analysed by MCA. Two centrality indices are examined; betweenness and closeness.

4.3.1 The Case Study of Baghdad

The case study of Bagdad includes four urban areas, namely: A an organic pattern; B a hybrid pattern; C a paralleled pattern, and D a loop-grid pattern. In Figure 4.12, it is possible to identify between the two fundamental elements of city form; human settlements and the Tigris River, and the boundary of the MCA analysis. Furthermore, Figure 4.13 illustrates the boundary of the metric network graph that is subjected to the MCA analysis. Four circles are drawn with a 400-metre radius to represent the four cases. Two maps (Figures 4.12 and 4.13) were authorised by the Remote Sensing and GIS Unit, in the Building and Construction Engineering Department at the University of Technology in Baghdad, Official letter, No. 1578, Dated 01/11/2017.

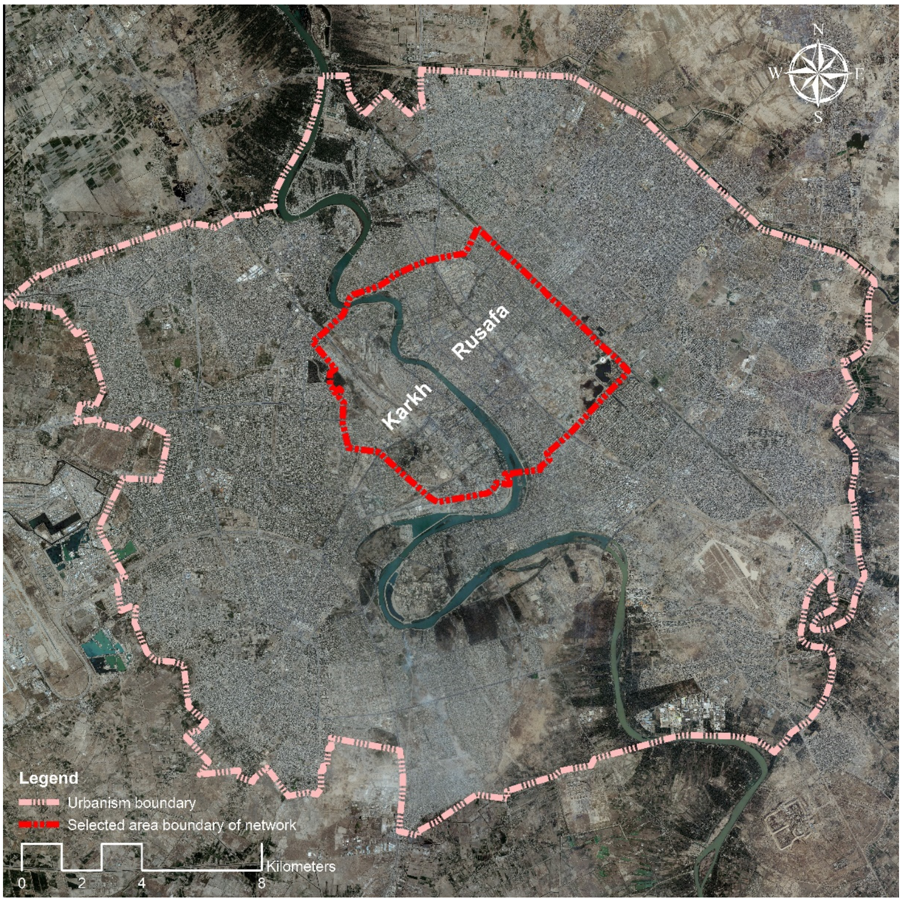


Figure 4.12. Georeferencing Satellite Imagery of Baghdad City illustrates the boundary of the case study area for the MCA analysis and the urbanism boundary. Source: Drawn by the author based on the georeferencing satellite imagery that authorised by the Remote Sensing and GIS Unit, in the Building and Construction Engineering Department at the University of Technology in Baghdad. (Official letter, No.1578, Dated: 01/11/2017).

The primary concern about the MCA analysis is to reduce the border effect. In this respect, the first boundary (in red) which combines the four cases is mapped to exceed the second edge (in blue) for each single case (Figure 4.13). The first boundary (in red) corresponds to distinct features; in reality, the Northwest boundary line is arranged as adjacent to the main street. The Northeast line is mapped to correspond to the water channel; another main street is adopted to determine the Southeast boundary. The last boundary line is drawn on the Southwest; it is matched with the main street (bottom part) and adjacent to the transport services zone (upper part) (Figure 4.13)

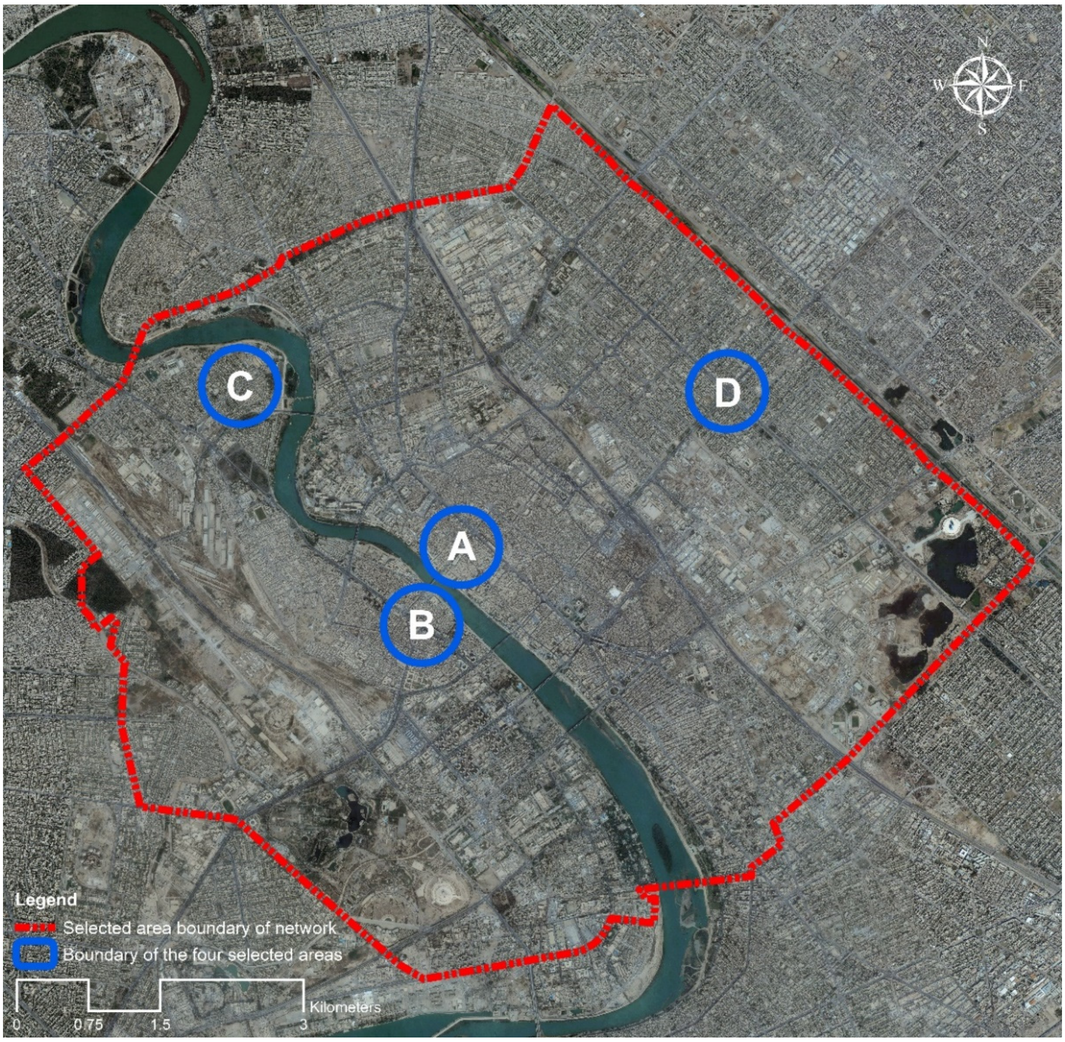


Figure 4.13. The boundary of case study includes the four selected urban areas (radius 400m). Source: Drawn by the author based on the georeferencing satellite imagery that authorised by the Remote Sensing and GIS Unit in the Building and Construction Engineering Department at the University of Technology in Baghdad. (Official letter, No. 1578, Dated: 01/11/2017).

Two types of case study boundary are shown. First, the urbanism border determines the main neighbourhoods, and the second border shows the boundary of the selected area that embeds the four cases. In addition, Baghdad is characterised by the Tigris River, which divides the city into the two-part Al-Rusafa region on the right bank and the Al-Karkh region on the opposite side of the river. Two cases (A, D) are located on Al-Rusafa side, while B and C are situated on Al-Karkh. The main natural feature of the city is the Tigris River, which was a vital element in shaping the first dominion and attracted people to settle. Later, the old city became a magnetic pole; this extended the urban development toward the fringe of the city. For this reason, the shape of the city takes a circular appearance. Thus, the development strategies tend to deal with the existing street; for example, as an engine to generate the new pattern of a network that starts from the core of the city. The concept of the main street as an urban incentive component plays a significant role both in drawing urban settlement and its urban elements, and in generating the whole network of this new pattern and its characteristics, which influence human behaviour.

Case study A represents an organic pattern and stands for a more complicated street network. It is the oldest part of Baghdad city, as discussed in Chapter One of this research. To track the street pattern two significant maps were used: an aerial georeferencing map and a base map for Baghdad (Figures 4.14 and 4.15).

Figure 4.14. The boundary of case study A: organic pattern (radius 400m). Source: Based on Polservice, Geokart, Poland, Rectified by G.I.S.Department (2016).

Figure 4.15. The boundary of case study A: organic pattern (radius 400m). Source: Based on the georeferencing satellite imagery that authorized by R.S.GIS.U (2017).

Case study B represents a hybrid pattern that combines the new model of the street network and the traditional pattern. Like case A, case B depends on the aerial georeferencing image and the rectified Baghdad base map (Figure 4.16).

Figure 4.16. The boundary of case study B | hybrid pattern (radius 400m). Source: Based on Polservice, Geokart, Poland, Rectified by G.I.S.Department (2016).

The base map is important in drawing the street network in relation to MCA and in preparing detailed maps of the urban form elements that will be analysed later in this research. Because of the nature of the network system in case A and partially in B, making different maps and plans for research purposes requires the tracking of streets, and the building up of elements by employing two types of the map (Figures 4.16 and 4.17).

Figure 4.17. The boundary of case study B: hybrid pattern (radius 400m). Source: Based on the georeferencing satellite imagery that authorized by R.S.GIS.U (2017).

Case C represents a parallel pattern and is less complicated than both cases A and B. Its urban street patterns and built units are obtainable, and as such, it is possible to follow the borders readily through the aerial georeferencing map (Figure 4.18). The same method has been used in case D, which represents a loop-grid pattern and highlights details of the urban structure. (Figure 4.19). The georeferencing map does not only trace the street network and other urban features but helps to prepare different map scales of for various purposes (this will be explained in coming chapters). Furthermore, the current study deals with the quantification of the components of the built environment across the four selected urban areas.

Figure 4.18. The boundary of case study C | paralleled pattern (radius 400m). Source: Based on the georeferencing satellite imagery that authorized by R.S.GIS.U (2017).

Figure 4.19. The boundary of case study D | loop-grid pattern (radius 400m). Source: Based on the georeferencing satellite imagery that authorized by R.S.GIS.U (2017).

4.3.1.1 Preparing the Metric Network Map of the Selected Area

To create the metric network map, the centre line of the street is employed, which is based on high-resolution georeferencing aerial and satellite imagery; it illustrates the streets as a metric network where each street is a metric link and each intersection is a node. Two software programs are used to generate the metric network map; Autodesk-AutoCAD Map 3D 2017, which can work with georeferencing maps, ArcGIS – ArcMap 10.2.2. These were used to create the metric map of the street network. The digital map includes both georeferencing maps (aerial and satellite); these are employed to draw the street network especially those related to case studies C (paralleled) and D (loop-grid). The main focus is on case studies A (organic pattern) and B (hybrid pattern). The street network in A is more intricate; therefore, in this regard, the study used another source to prepare the metric map, based on the Baghdad Base Map from the GIS department within the Mayoralty of Baghdad (Figure 4.20). The map border exceeds beyond the boundary of each single case, in order to reduce the edge effect on the spatial analysis of the street network; this was achieved by applying Multiple Centrality Assessment (MCA).

Figure 4.20. A metric street network of selected area. Source: Drawn by the author based on the georeferencing aerial and satellite imagery that authorized by Remote Sensing and GIS Unit in the Building and Construction Engineering Department at the University of Technology in Baghdad. (Official letter, No. 1578, Dated: 01/11/2017).

4.3.1.2 Applying MCA Analysis

A number of steps should be taken in order to run the MCA; first, the axial map is prepared in a specific format, namely a shapefile that subjects the network to the MCA analysis (Figure 4.21). The betweenness and closeness centrality indices are chosen to determine the relative value for each index. Therefore, the Multiple Centrality Assessment is adopted to explore the degree of connectivity and accessibility of the street network and its contribution to the identification of the greatest centrality parts of the network. After running the MCA program, the result encompasses the selected area that already includes the four cases A, B, C, and D with a 400-metre radius boundary for each. These are then isolated in order to study them in further detail and in accordance with the study's conceptual framework.

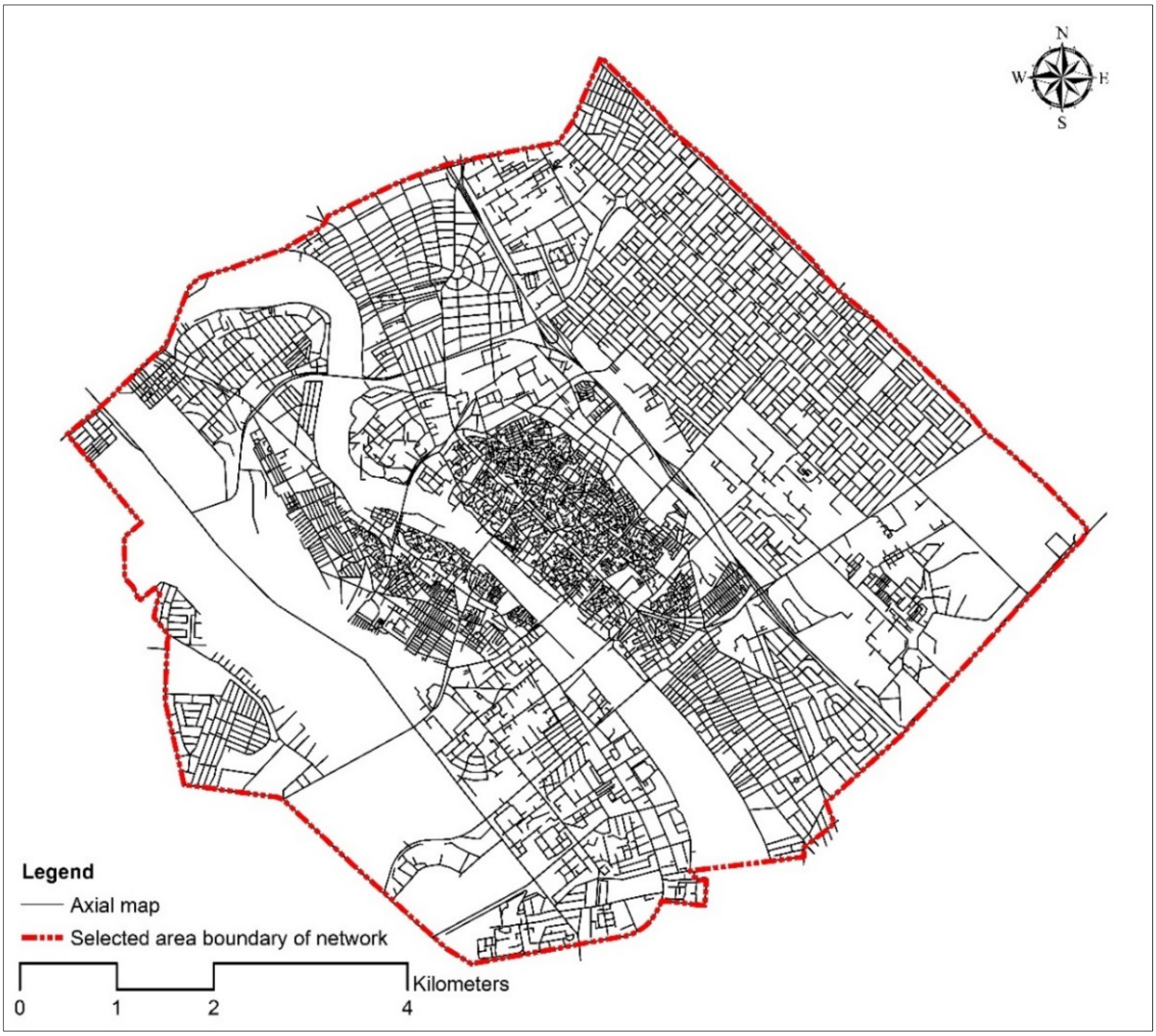


Figure 4.21. A metric map of selected area. Source: Drawn by the author based on the georeferencing aerial and satellite imagery that authorised by Remote Sensing and GIS Unit in the Building and Construction Engineering Department at the University of Technology in Baghdad. (Official letter, No.: 1578, Date: 01/11/2017).

4.3.1.3 Betweenness Centrality C^B of the Selected Area

The betweenness centrality is an index that determines the extent to which a street is an intermediary between other streets. It identifies the ability to connect between nodes within the network system by quantifying the nearest nodes to each single another node. This means that a node within the network has an exceptional structural position (Latora and Marchiori, 2007; Porta et al. (2006a), (2006b). Betweenness addresses nine classes where three ranges of classes are formulated within one category that refers to an individual colour. Category one is blue and has three classes that are 0.0000 - 0.0001, 0.0001 - 0.0002; category two is yellow and contains three classes, which are 0.0002 – 0.0005, 0.0005 – 0.0009, 0.0009 – 0.0017, and the last category is red, and its three classes are 0.0017 – 0.0037, 0.0037 – 0.0101, 0.0101 – 0.1397 (Figure 4.22).

Figure 4.22. Betweenness centrality of selected area of network. Based on MCA analysis including nine classes of degree of Betweenness centrality.

Accordingly, the high degree of betweenness is the shortest distance which spontaneously ties streets to each other and indicates how people could interact with each other and with the place. The set of centrality indices captures the essence of the location's accessibility, intermediacy and directness, among others (Wang et al. 2011). The betweenness centrality is a metric representation of the street network, and exhibits the urban spaces that are likely to be perceived and experienced by people. Boyd (2010) states that it is not who you know; it is where you know. Thus, the meaning of betweenness in the social network represents not just a person but also a place where individuals meet. In this regard, betweenness is a measure of how short the links need to be to connect an individual with others in the network, both spatially and temporally. Moreover, individuals who have the highest betweenness are likely to be connected to those who also have a high betweenness (Boyd 2010).

In this context, the betweenness centrality forms the main base in selecting the streets to examine the other indices and variables. Porta et al. (2005, p 51) state that, "the recent sustainability agenda has called for the integration of economic, environmental, and social concerns when planning future development". The street life as a social milieu can be defined as an important need and one of the leading elements of urban design processes that promotes the liveability of the street space. Three manifestations explain betweenness centrality, namely: to determine the number of streets that fall under a category, where each category includes a certain value of betweenness; (0.0000 – 0.0002), (0.0002 – 0017) and (0.0017 – 1397). These streets are chosen to also study other factors that affect the street characteristics. Therefore, two streets are picked for each category: blue, yellow and red (Figure 4.23).

Class of Betweenness	Category of Betweenness	Range of Betweenness
0.0000 - 0.0001	Blue 🟦	0.0000 - 0.0002 Lowest betweenness
0.0001 - 0.0002		
0.0002 - 0.0002		
0.0002 - 0.0005	Yellow 🟨	0.0002 - 0.0017 Medium betweenness
0.0005 - 0.0009		
0.0009 - 0.0017		
0.0017 - 0.0037	Red 🟥	0.0017 - 0.1397 Highest betweenness
0.0037 - 0.0101		
0.0101 - 0.1397		

Figure 4.23. Three manifestations in expressing betweenness centrality. Source: Drawn by the author based on the MCA analysis.

4.3.1.3.1 Case Study A: Organic Pattern C^B

In case A, located in the central area of the old part of Baghdad city, there are a considerable number of links, which form the street network. These range between the lowest and the highest degree of betweenness centrality (Figure 4.24), (Appendix Two).

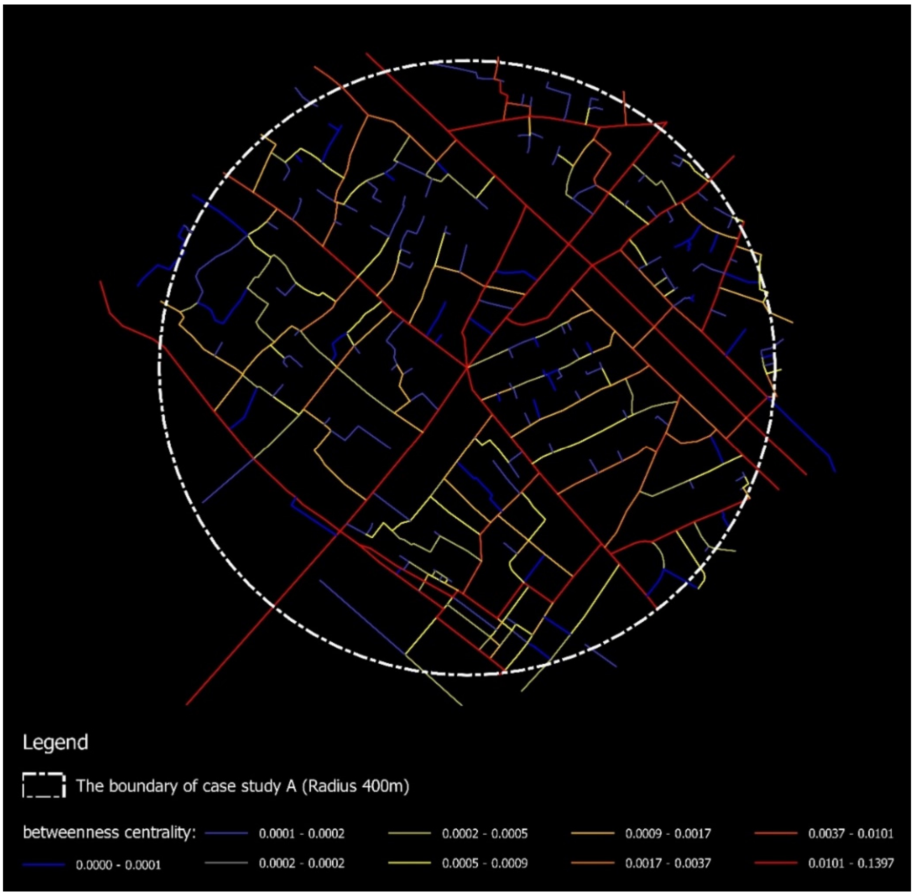


Figure 4.24. Betweenness centrality of network of case A (Radius 400m). Based on MCA analysis including nine classes of degree of Betweenness centrality.

The total of the lowest degree can easily be perceived due to the number of cul-de-sacs; these are higher in number than other ranges of betweenness. The cul-de-sacs shape the main characteristic of the old city. In addition, the entire area provides evidence of the main pattern of the street that was mapped by curved, organic, and sometimes hybrid network patterns (Figure 4.25). In total, 504 links within case A were subject to analysis, including cul-de-sacs, and three-way and four-way nodes, which were 111, 249 and 27 respectively. Moreover, there was a total of 387 nodes. Case A has the greatest number of both links and nodes, meaning that there is the potential for this area to be more accessible for pedestrian flow, besides enabling more street life. According to its betweenness centrality, 161 links are classified under the blue category whilst 159 links are yellow, and 184 links are classed as red (Figure 4.26). The importance of the statistic in computing the variables is to create a whole picture for one case and then for all cases. Therefore, the priority is to define each case separately.

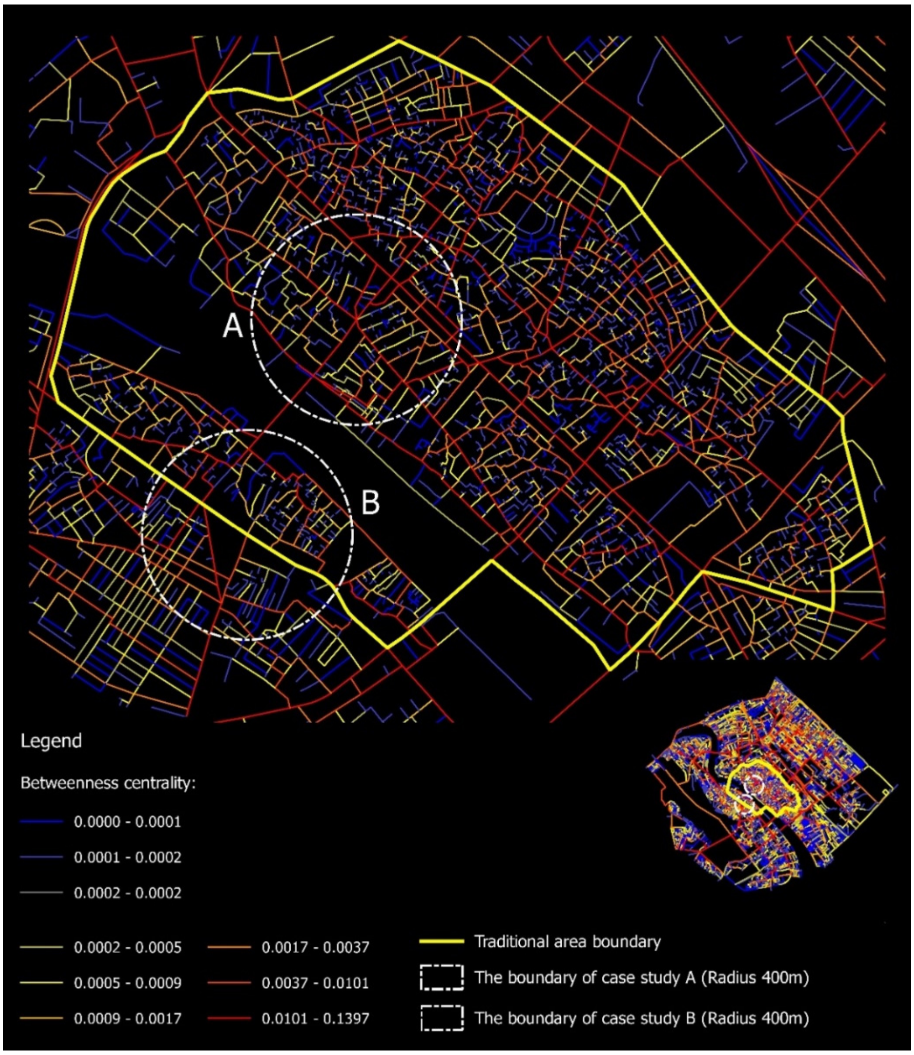


Figure 4.25. Betweenness centrality of network of the traditional area of Baghdad city where there is curved, organic, and sometimes the hybrid pattern of the network. Based on MCA analysis including nine classes of degree of betweenness centrality.

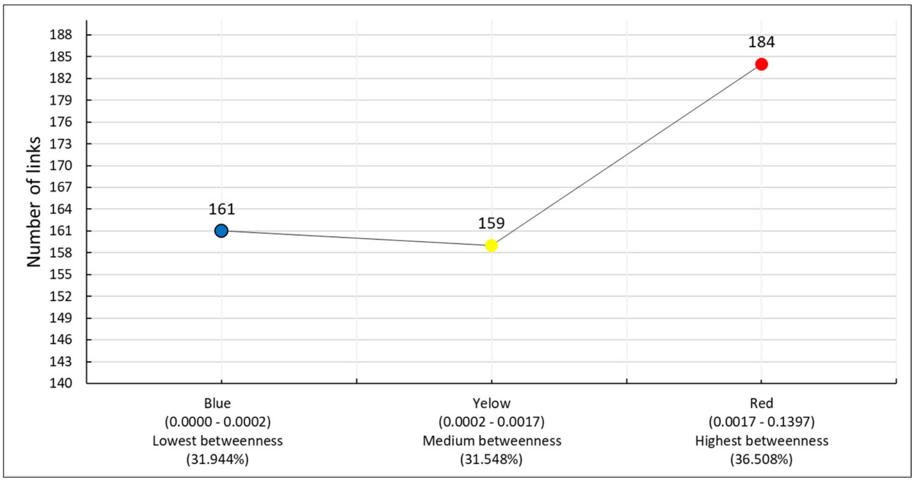


Figure 4.26. The number of links per category of betweenness centrality of case study A: organic pattern.

Statistically, the highest degree of betweenness is dominant, where its percentage is 36.508%, whilst the second is the lowest degree at 31.944%. Meanwhile, the medium degree covers about 31.548% of the total number of links. This means that the red category has many streets, then the blue and finally the yellow category. However, although the red category has the highest percentage, this does not necessarily mean that the streets with the highest degree of betweenness are connected to each other. This is also the same consideration for the other categories (Figure 4.27).

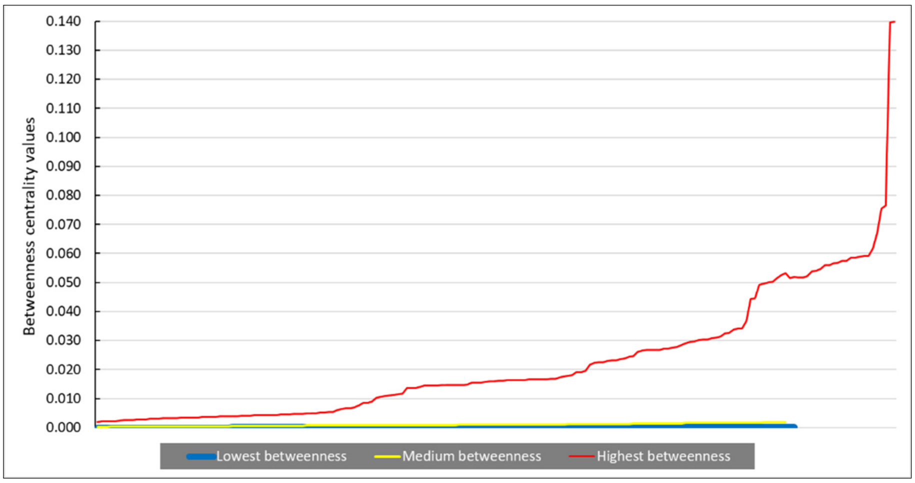


Figure 4.27. The betweenness centrality value of the case study A: organic pattern.

The red category, for example, embeds all links that are classified between 0.0017 0.1397; this range is classed as the highest value of betweenness centrality. This mechanism is applied to the other two categories, yellow and blue, as the medium and lowest values respectively. The street-length, as one object, does not correspond to the betweenness value unless it forms the nexus with other streets in the network via the intersections as nodes. In other words, the longest streets in the network do not necessarily hold the highest value of betweenness, as identified in the betweenness centrality (Figure 4.28).

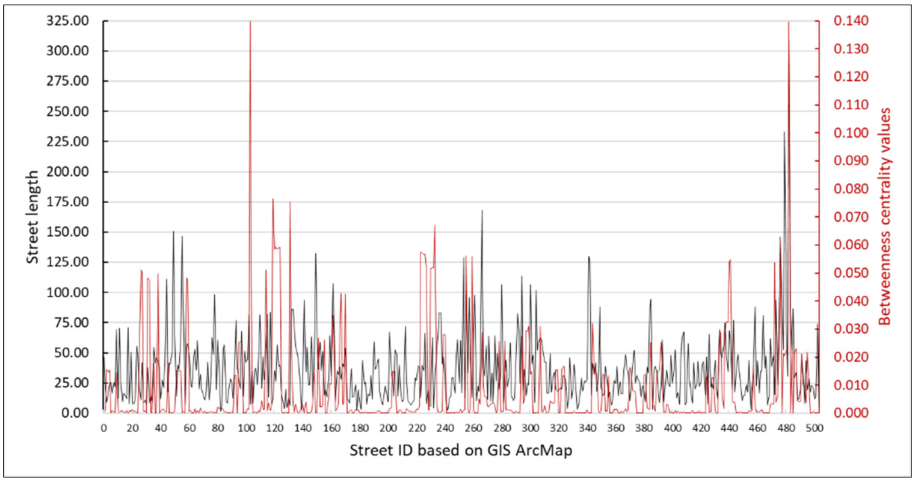


Figure 4.28. It illustrates the street length and betweenness centrality values of the case study A.

4.3.1.3.2 Case Study B: Hybrid Pattern C^B

Case study B covers two types of street pattern; organic with cul-de-sacs and the grid pattern. It includes the traditional area of Baghdad on the Tigris River in the Al-Karkh region. This part of the city witnessed a significant transformation in its street structure and building type after comprehensive development during the 1980s (Figure 4.29), (Appendix Two).

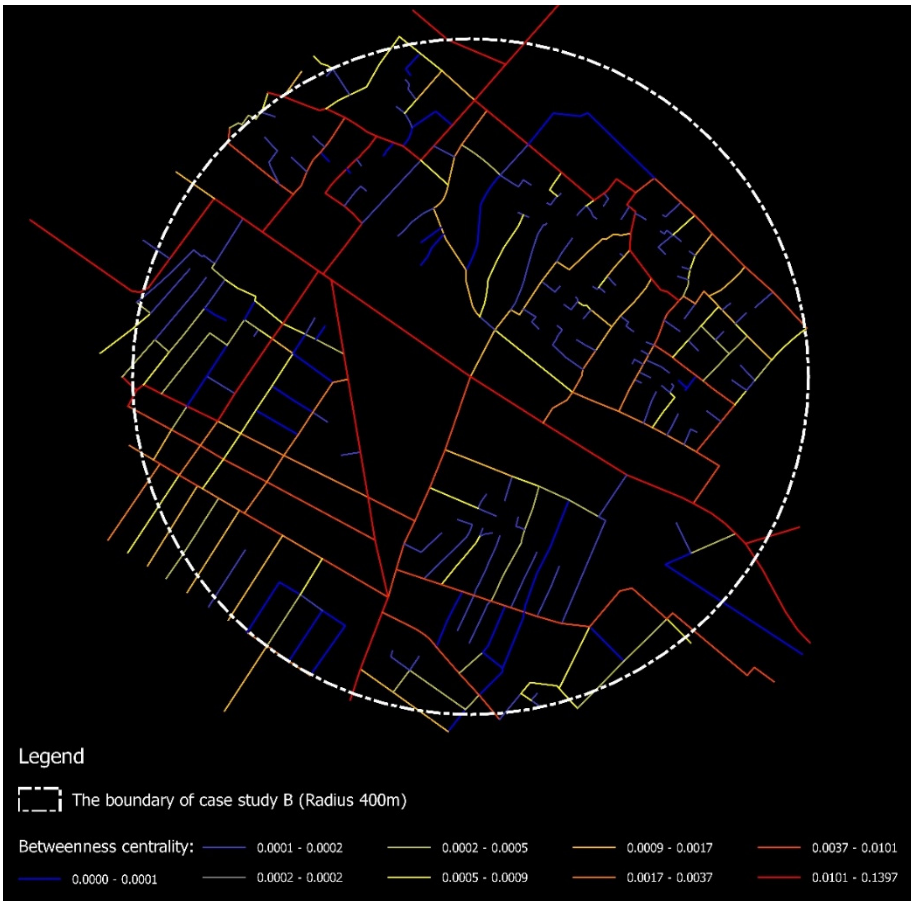


Figure 4.29. Betweenness centrality of network of case B (Radius 400m). Based on MCA analysis including nine classes of degree of betweenness centrality.

The number of links and cul-de-sacs decrease in comparison with case A. The selected area of case B covers 415 links with a total number of 314 nodes which are grouped as: 97, 183 and 34 to represent cul-de-sacs, three-way and four-way nodes respectively. The MCA analysis (betweenness centrality) consists of the highest value (red category), which includes 162 links; the medium degree (yellow) has 107 links, and the lowest degree (blue) has 146 links (Figure 4.30). The highest value (0.0017 – 0.1397) has the largest number of links and then the lowest degree (0.0000 – 0.0002); this is followed by the medium degree (0.0002 – 0.0017) (Figure 4.31). A key aim is to stand on the most important street in the network of case B for each category, and to study the selected streets in detail. The number of links and nodes in case B is less than for A; this occurred because of the old part of case B. Hence, the significance of the centrality analysis of the street pattern does not only determine the value of each single link in the network but also offers the potential to strengthen the connectivity and accessibility of the current system.

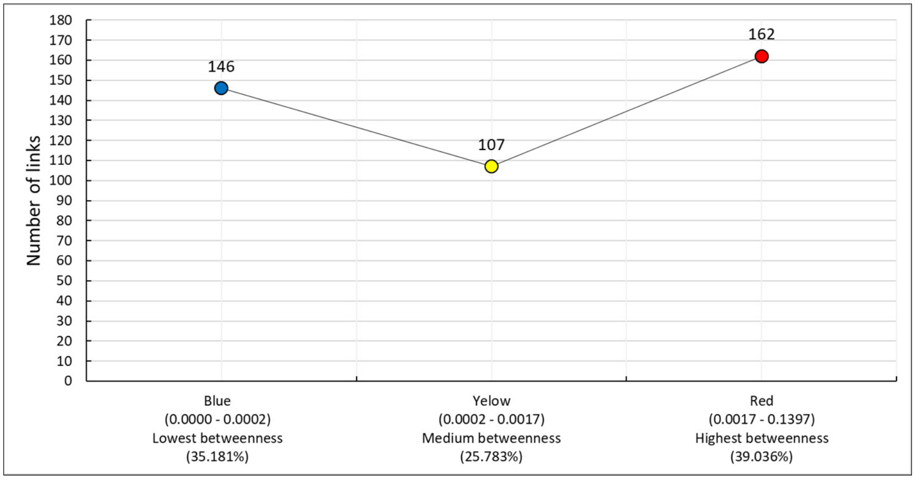


Figure 4.30. The number of links per category of betweenness centrality of case study B.

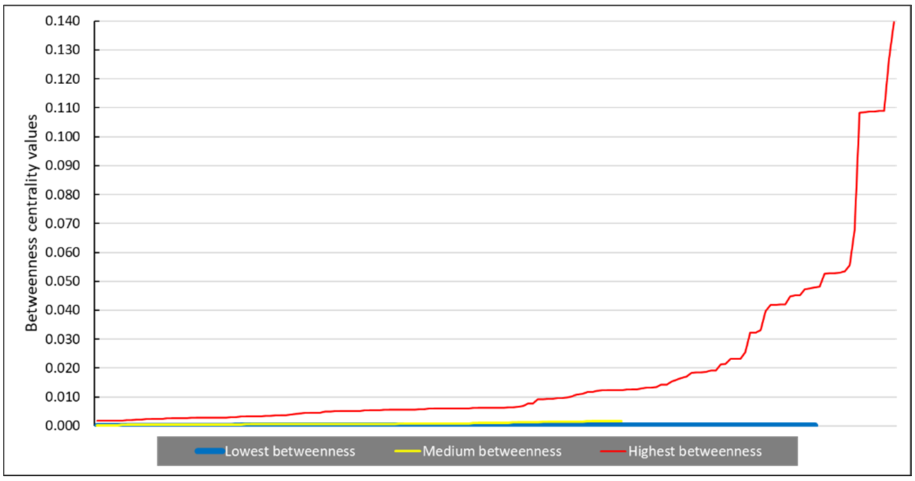


Figure 4.31. The betweenness centrality value of case study B.

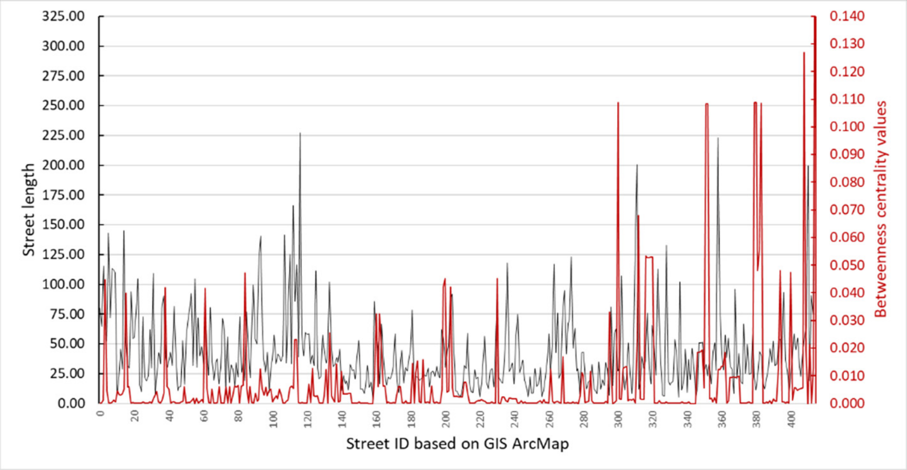


Figure 4.32. It displays betweenness centrality values, case B. The lengthened link in the system is not necessarily to owns the highest degree of betweenness centrality; instead, the value comes from the street placement within the entire network and its relation to other streets.

4.3.1.3.3 Case Study C: Paralleled Pattern C^B

The third case study is located along with Tigris River and is characterised by its long parallel network (Figure 4.33), (Appendix Two). Its main purpose is as a residential area and any other types of land use are limited. Its street pattern is based on a series of the longitudinal network lines which then end with short lines that serve as connections. The short lines are also combined and connected to shape the straight link.

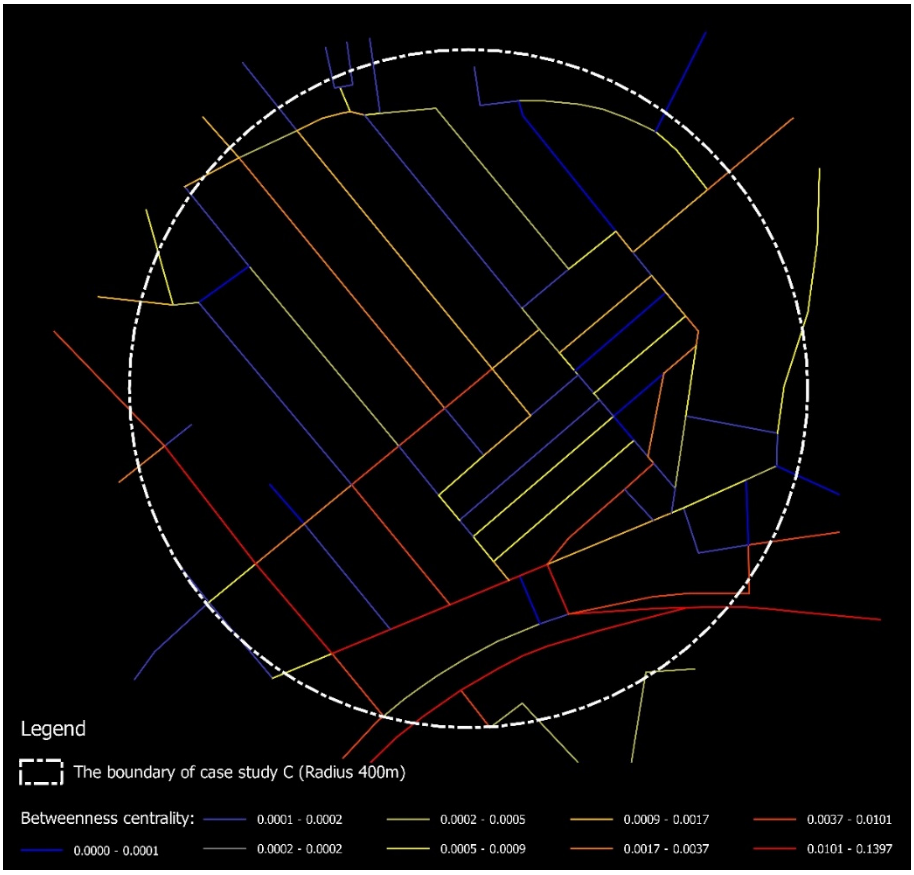


Figure 4.33. Betweenness centrality of network of case C (Radius 400m). Based on MCA analysis including nine classes of degree of betweenness centrality.

The structural analysis of the network indicates fewer cul-de-sacs in comparison to cases A and B. The total number of streets is also less than reported in both A and B. In this selected urban area, there are 125 links and 70 nodes that are mainly divided into 3, 52, and 15 nodes for the cul-de-sacs, three-way, and four-way nodes, respectively. The highest value of betweenness (0.0017 – 0.1397) represents 27.200% and 34 links; meanwhile, the medium value of betweenness (0.0002 – 0.0017) is more dominant at 38.400% with 48 links. Finally, the lowest number of the centrality of betweenness (0.0000 – 0.0002) represents 34.400% and 43 links (Figure 4.34).

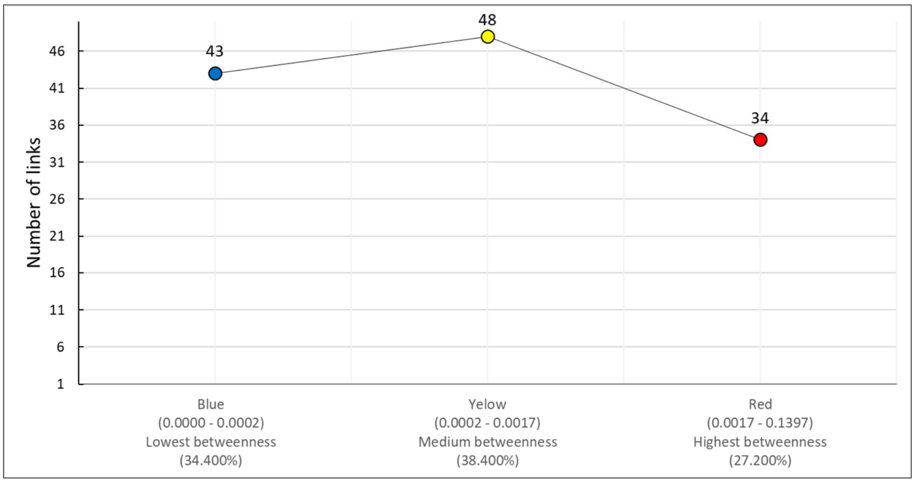


Figure 4.34. The number of links per category of betweenness centrality of case study C.

The highest value of betweenness was reduced due to the number of links identified by range 0.0017 – 0.1397. This contrasts with cases A and B, while the medium value of betweenness (0.0002 - 0.0017) is more prevalent, and the lowest degree (0.0000 / 0.0002) is moderate in all three cases, A, B, and C (Figure 4.35). The number of streets and their length with their relative location in the network is a crucial factor in governing social life (Figure 4.36).

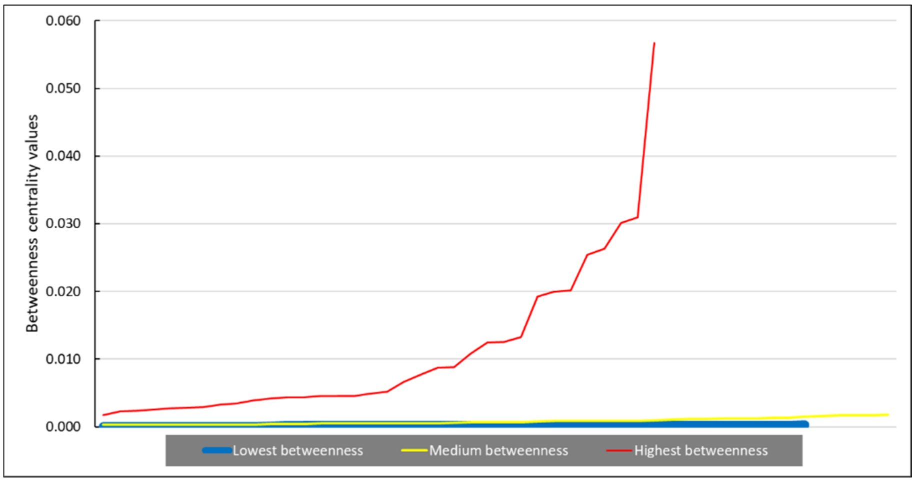


Figure 4.35. The betweenness centrality value of case study C.

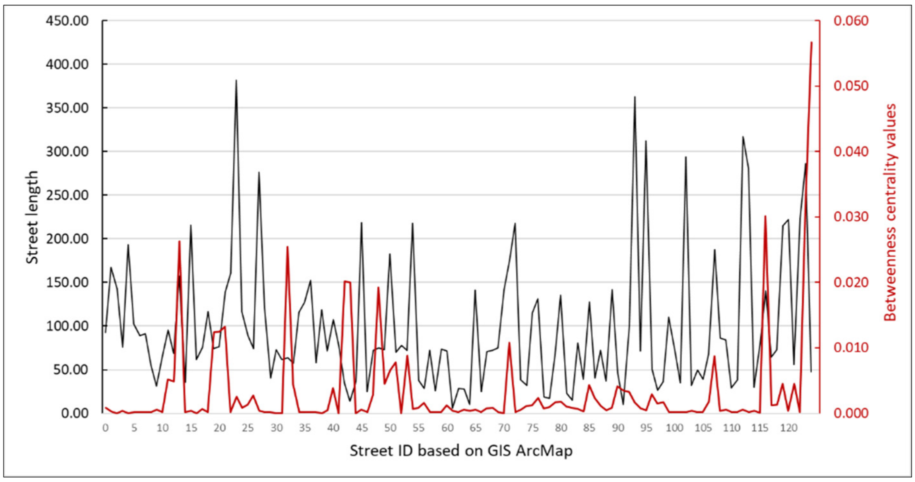


Figure 4.36. The displays betweenness centrality values of case C.

4.3.1.3.4 Case Study D: Loop – grid Pattern C^B

Case study D represents the modernist part of Baghdad, which differs from the previous three cases. It can be characterised by the straight streets that mainly adopt a loop shape and, in some parts, form a paralleled pattern. Moreover, the area is defined by its wide streets, which are mostly adjacent to residential buildings. Meanwhile, this characteristic is less prevalent in the three previous cases (Figure 4.37), (Appendix Two).

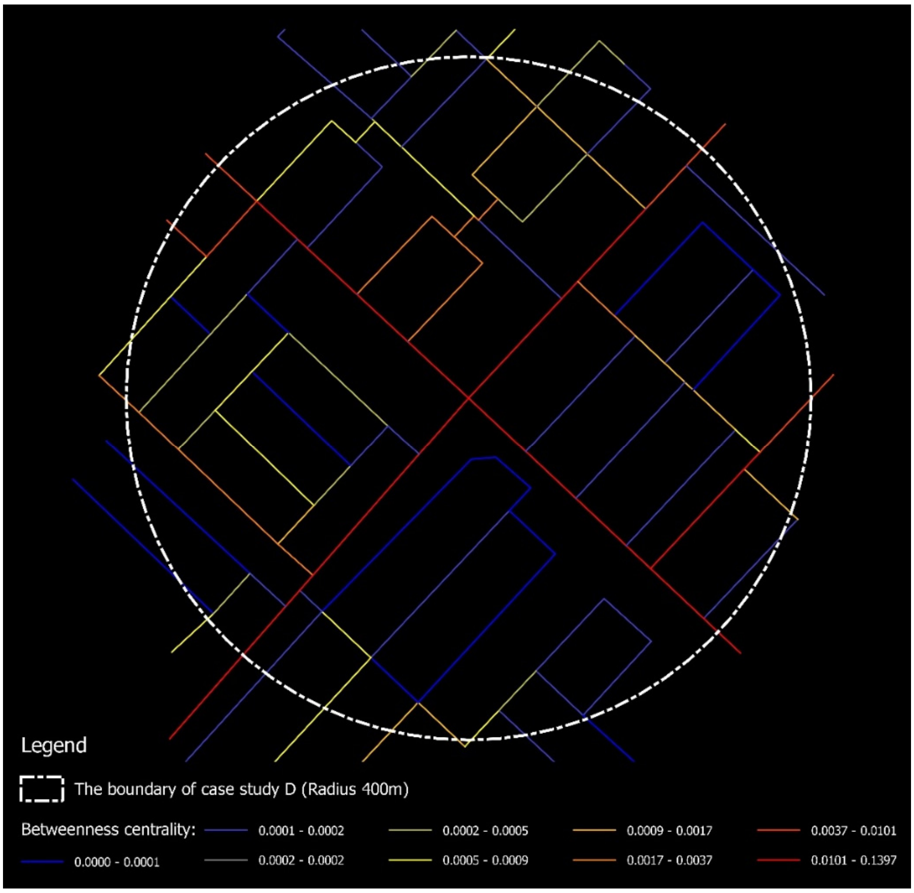


Figure 4.37. Betweenness centrality of network of case D (Radius 400m). Based on MCA analysis including nine classes of degree of betweenness centrality.

In case D, 111 links and 62 nodes were subject to the MCA analysis, which identified 54 three-way and eight four-way nodes, and no cul-de-sacs. Regarding the betweenness centrality, the range (0.0000 – 0.0002) falls within the blue category, which is ranked third; meanwhile, both the yellow (0.0002 – 0.0017) and red (0.0017 – 0.1397) categories have the same ranking. Both the red and yellow categories cover about 34.234%, while the blue category covers 31.532% of the total number of links (Figures 4.38 and 4.39). The highest and medium degrees of betweenness share a similar amount of links and their percentage ratios total of 38 links at 34.234%; meanwhile, the lowest betweenness holds 35 links at 31.532%.

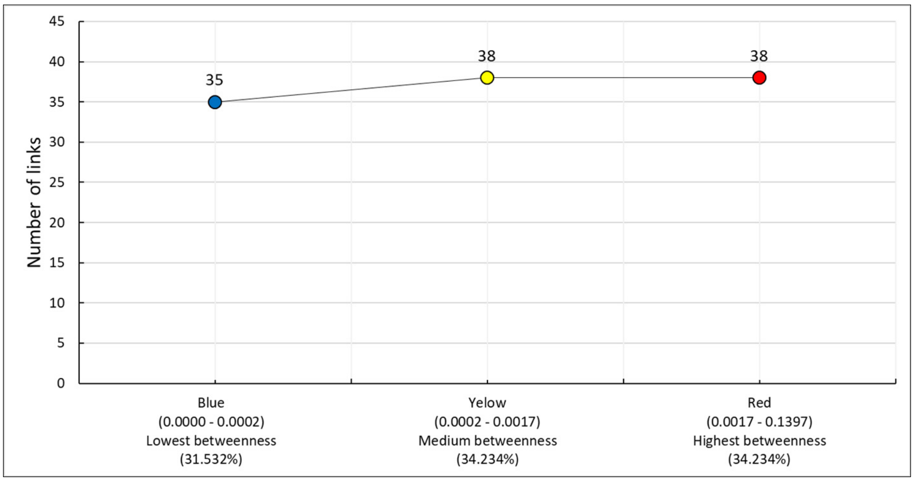


Figure 4.38. The number of links per category of betweenness centrality of case study D.

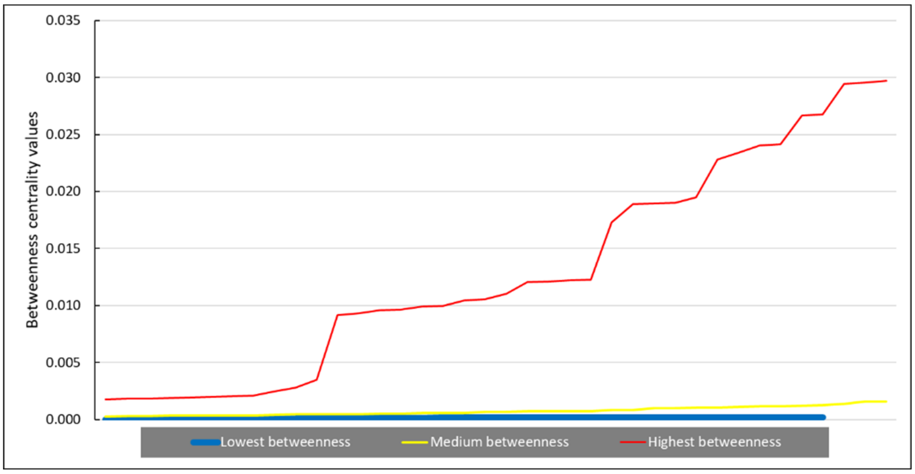


Figure 4.39. The betweenness centrality value of case study D.

The total number of streets in case D is 111, meaning that it has the lowest compared to cases A, B, and C. These streets are represented by a network of links that exhibit different lengths beside the different values of betweenness centrality (Figure 4.40).

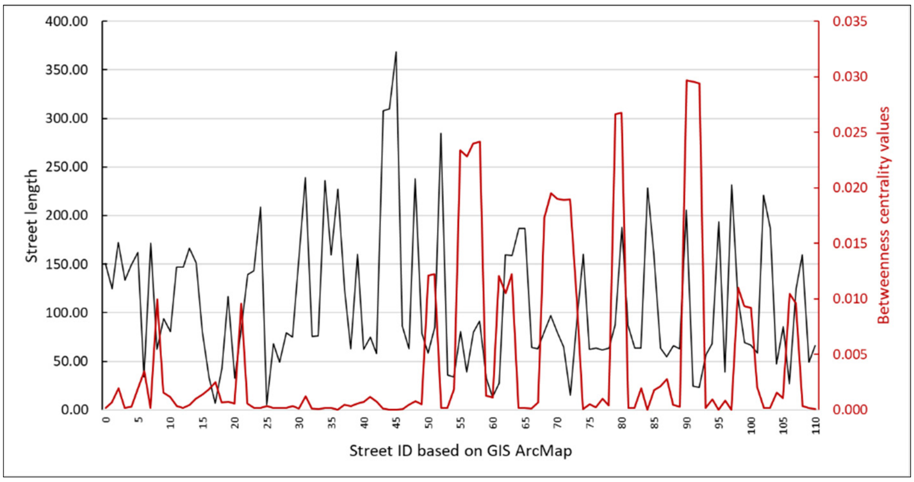


Figure 4.40. Displays the betweenness centrality values for case D.

4.3.1.4 Closeness Centrality C^c of Selected Area

The concept of closeness in a Multiple Centrality Assessment might be the second most dominant index used to identify the degree of proximity amongst nodes in a network. This quantitative weight helps to identify the structural position of each single node in a network; this is achieved by adopting a binary representation of a metric graph where links and nodes correspond to streets and intersections, respectively. In reality, the node within a network as a place (intersection) is not entirely isolated from others that share the same network. Instead, there is a degree of closeness among them; Thus, the purpose of the closeness centrality is to disclose the value of those nodes (Porta et al. 2006a), (2006b) (Figure 4.41).

Figure 4.41. Closeness centrality of the selected area of network. Based on MCA analysis including nine classes of degree of betweenness centrality.

The global scale of closeness centrality is the primary measure to define the nearest nodes within a system. Nine classes express the degree of closeness; these are divided into three categories of coloured indications: blue (0.000000 – 0.000203), yellow (0.000203 – 0.000286), and red (0.000286 – 0.000341) (Figure 4.41). Each indicator represents the degree of closeness and this helps to identify the highest (red), medium (yellow), and lowest (blue) closeness (Figure 4.42). The primary purpose of this classification is to represent the three degrees of closeness; highest, medium and lowest. It is not necessary to understand the closeness values to match the values of betweenness, nor to reflect the comparable classes on a coloured map, where each type of centrality has a unique equation. The closeness centrality is defined on a global scale.

.

Class of Closeness	Category of Closeness	Range of Closeness
0.000000 - 0.000162	Blue 🟦	0.000000 - 0.000203 Lowest closeness
0.000162 - 0.000182		
0.000182 - 0.000203		
0.000203 - 0.000233	Yellow 🟨	0.000203 - 0.000286 Medium closeness
0.000233 - 0.000261		
0.000261 - 0.000286		
0.000286 - 0.000310	Red 🟥	0.000286 - 0.000341 Highest closeness
0.000310 - 0.000323		
0.000323 - 0.000341		

Figure 4.42. Three manifestations in expressing closeness centrality. Source: Drawn by the author based on the MCA analysis.

4.3.1.4.1 Case Study A: Organic Pattern C^c

Case study A has the highest value of closeness centrality, which is evident when considering its location in the central part of the city (Figure 4.43), (Appendix Two).

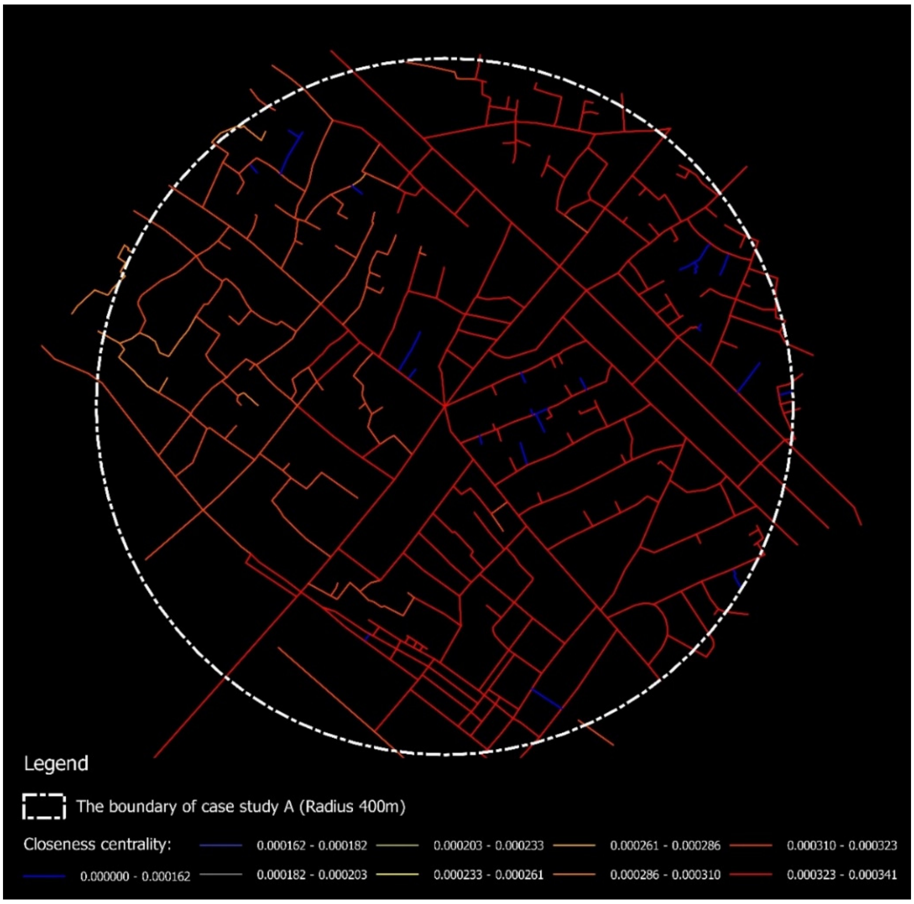


Figure 4.43. Closeness centrality of network of case A (Radius 400m). Based on the MCA analysis including nine classes of degree of closeness centrality.

This selected area includes 504 links and 387 nodes that are categorised as three different types; cul-de-sac nodes (111), three-way nodes (249), and four-way nodes (27). The MCA analysis exhibits the highest degree of closeness (red), which is dominant in totalling 479 of the 504 links and comprises approximately 95.040%. The second most prevalent is the lowest degree (blue) with 25 links of the total number comprising around 4.960%. In comparison, the medium degree (yellow) is not present at all, at 0.000% (Figure 4.44). The highest value ranges in case A is 0.000286 – 0.000341, while the blue category at 0.000000 – 0.000203 is reduced, and the yellow category, at 0.000203 – 0.000286, completely disappeared (Figure 4.45).

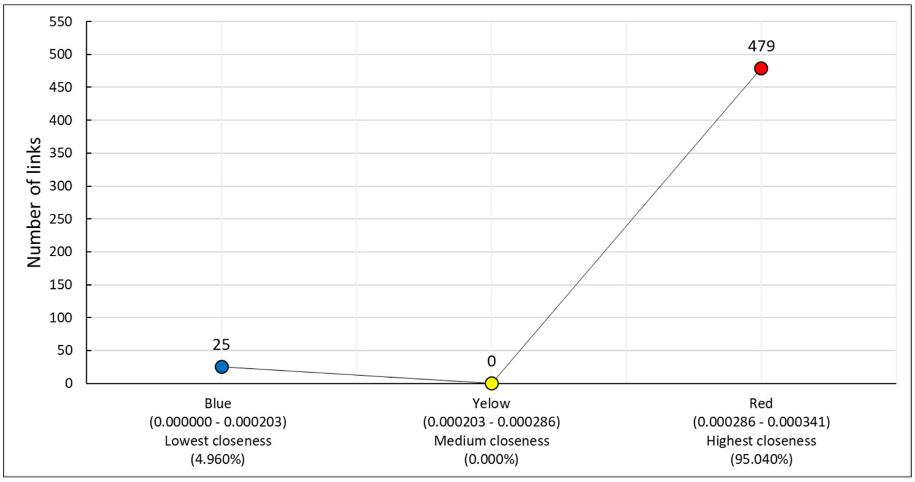


Figure 4.44. The number of links per category of closeness centrality of case A.

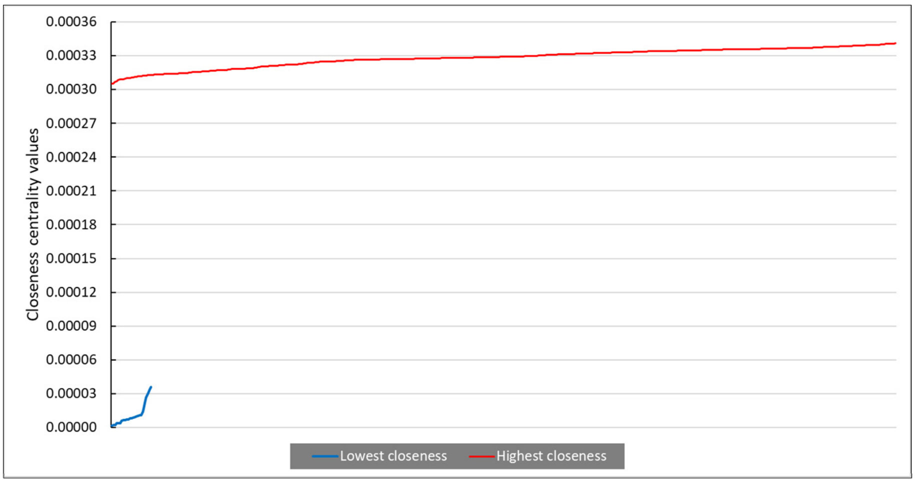


Figure 4.45. The closeness centrality value of case study A.

4.3.1.4.2 Case Study B: Hybrid Pattern C^c

In case B, all three categories (red, yellow and blue) are illustrated in different proportions. The area combines both the traditional and modernist parts of Baghdad city. Sample B includes 415 links and 314 nodes that are divided into three types; cul-de-sacs (at 97), three-way (183), and four-way (34) nodes. It has fewer links and nodes than case A, despite its location close to the central area of Baghdad (Figure 4.46). Based on the closeness centrality using the MCA analysis, the highest value (red) is 57.831% and ranges between 0.000286 and 0.000341, whilst the medium (yellow) closeness degree ranges between 0.000203 – 0.000268 and comprises 39.518%. Finally, the blue category is the lowest degree range at 0.000000 – 0.000203, which covers 2.651% of the total number of links (Figures 4.47 and 4.48), (Appendix Two).

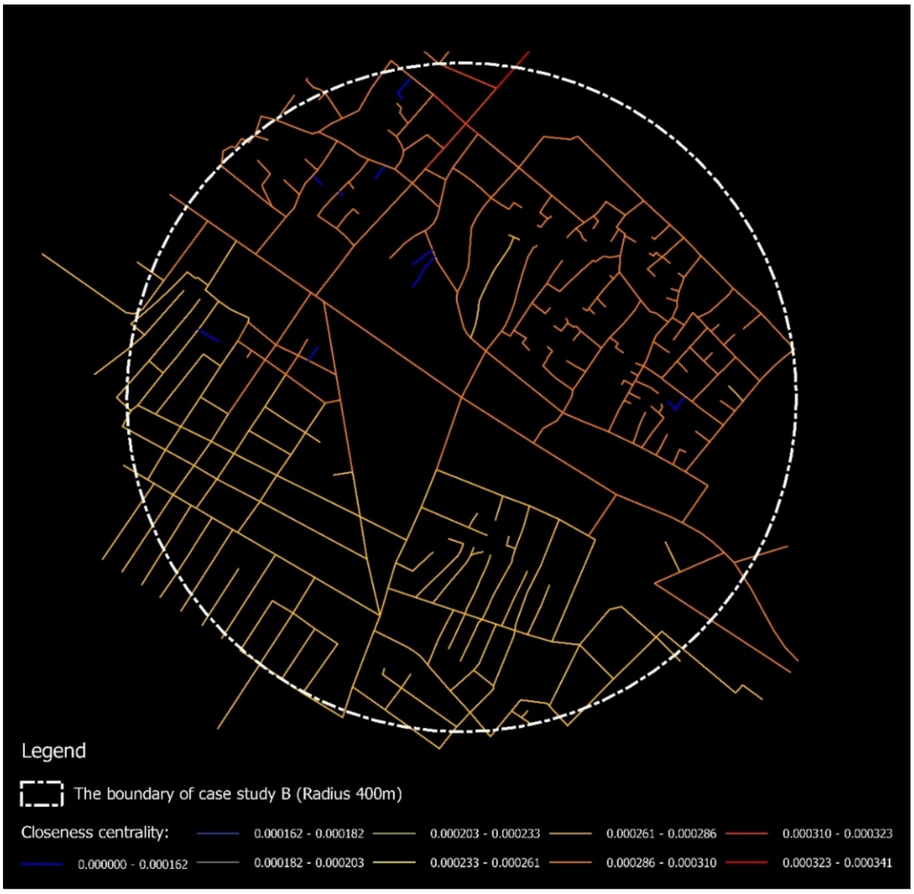


Figure 4.46. Closeness centrality of network of case B (Radius 400m). Based on MCA analysis including nine classes of degree of closeness centrality.

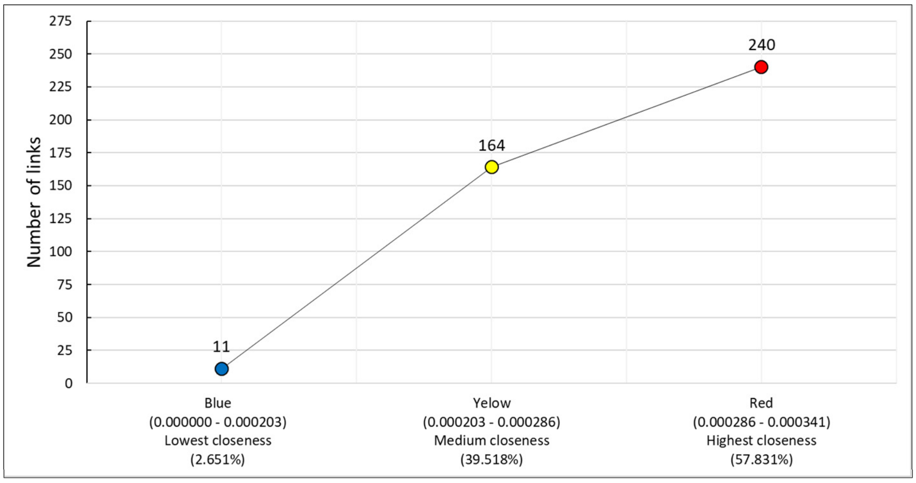


Figure 4.47. The number of links per category of closeness centrality of case study B.

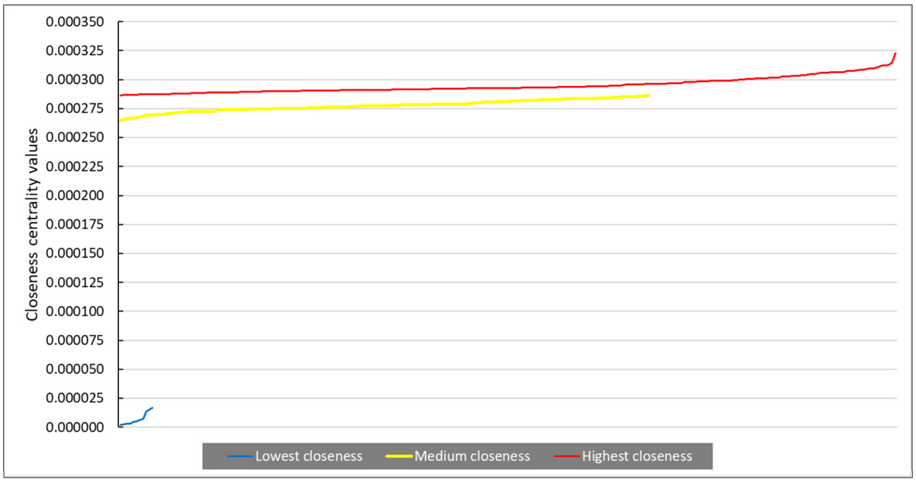


Figure 4.48. The closeness centrality value of case study B.

4.3.1.4.3 Case Study C: Paralleled Pattern C^c

Case study C is located away from the central area of Baghdad. It has a homogeneous street pattern, which differs to cases A and B, and is characterised by long streets (Figure 4.49), (Appendix Two).

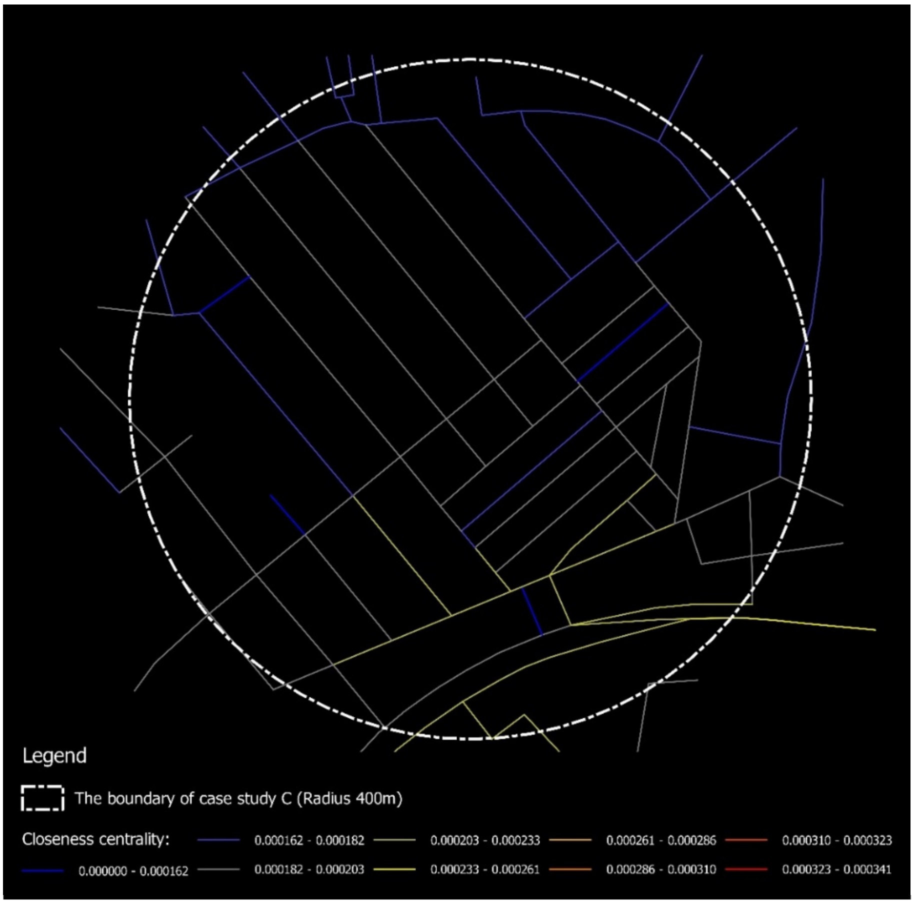


Figure 4.49. Closeness centrality of network of case C (Radius 400m). Based on MCA analysis including nine classes of degree of closeness centrality.

The number of links and nodes decrease overall. About 125 links are subjected to the MCA closeness centrality analysis. In terms of the node type, it embeds three forms: cul-de-sacs (3), three-way (52) and four-way (15) nodes. After computing the closeness centrality, the lowest value of closeness (blue) (0.000000 – 0.000203) comprises 84.000%, and the medium value (yellow) (0.000203 – 0.000286) comprises about 16.000%. Finally, the highest value (red) (0.000286 – 0.000341) accounts for 0.000% of the total of 125 links (Figures 4.50 and 4.51).

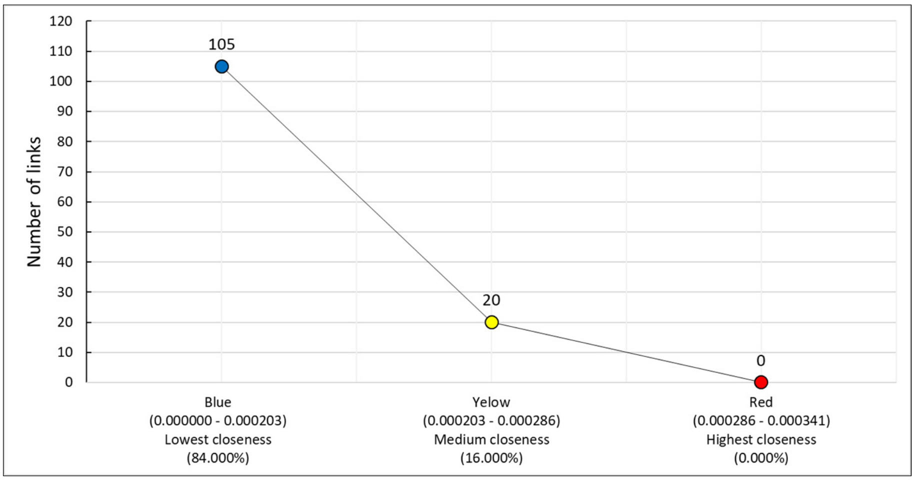


Figure 4.50. The number of links per category of closeness centrality of case C.

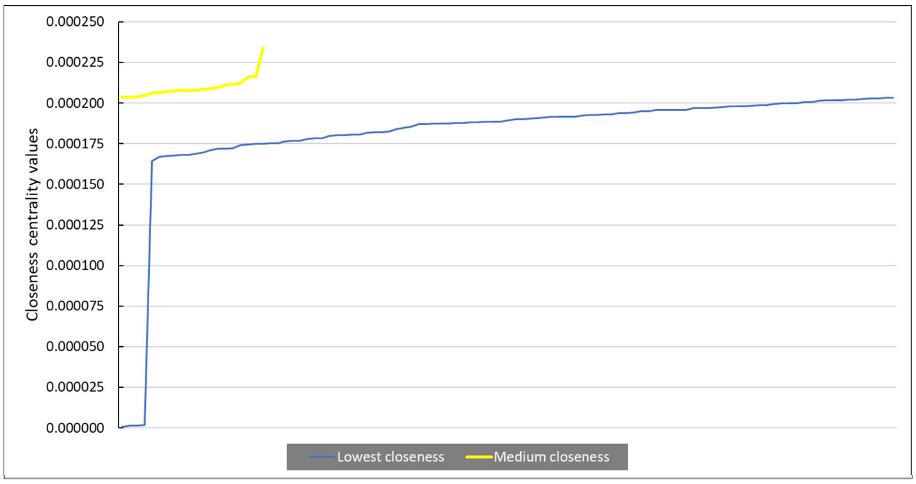


Figure 4.51. The closeness centrality value of case study C.

4.3.1.4.4 Case Study D: Loop-grid Pattern C^c

Case D includes the most recent street pattern, which is compared with the former three studies (Figure 4.52), (Appendix Two). The number of links and nodes reduce significantly; there are just 111 links and 62 nodes subject to the MCA analysis. The main result of the closeness centrality analysis is that the medium value (0.000203 – 0.000286), which is coloured yellow, comprises about 86.486% with 96 links. Meanwhile, the lowest value (0.000000 – 0.000203), which is coloured blue, accounts for 13.514% and 15 links. Finally, the highest value is represented by red (0.000286 – 0.000341) and comprises 0.000% (Figures 4.53 and 4.54). Every single case has shown a significant response to the closeness centrality based on MCA analysis in connection with the central area of the historic part of Baghdad. In the subsequent chapters, there will be a comparison among the four selected neighbourhoods: organic (A), hybrid (B), paralleled (C) and loop-grid pattern (D).

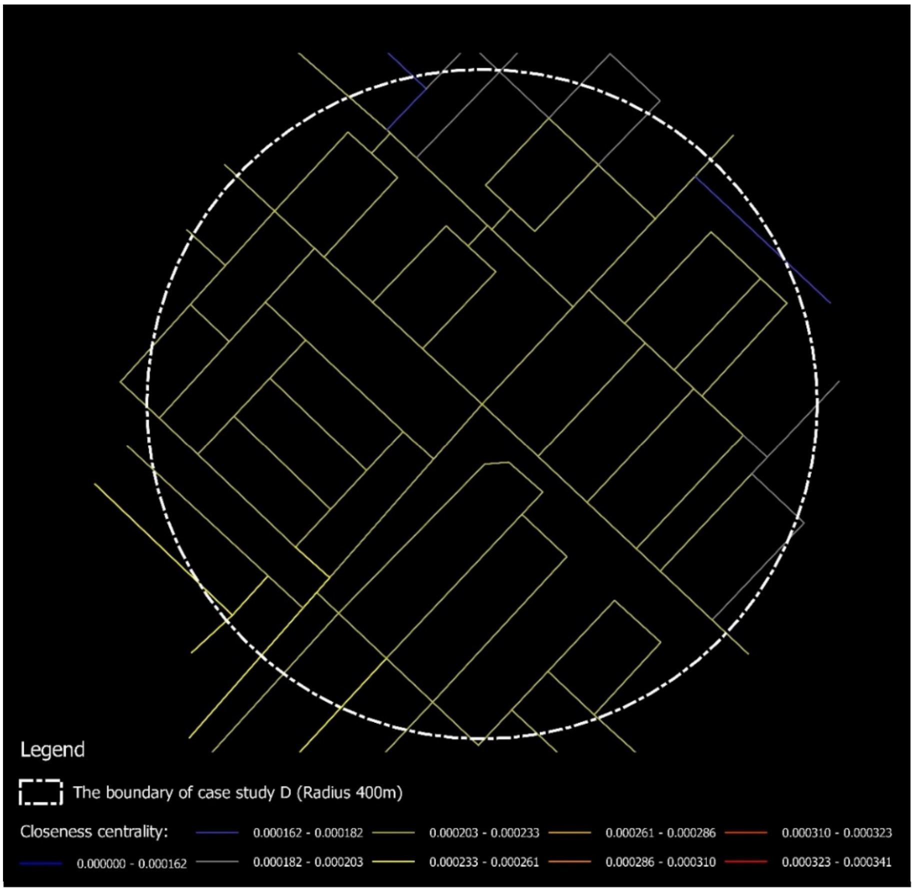


Figure 4.52. Closeness centrality of network of case D (Radius 400m). Based on MCA analysis including nine classes of degree of closeness centrality.

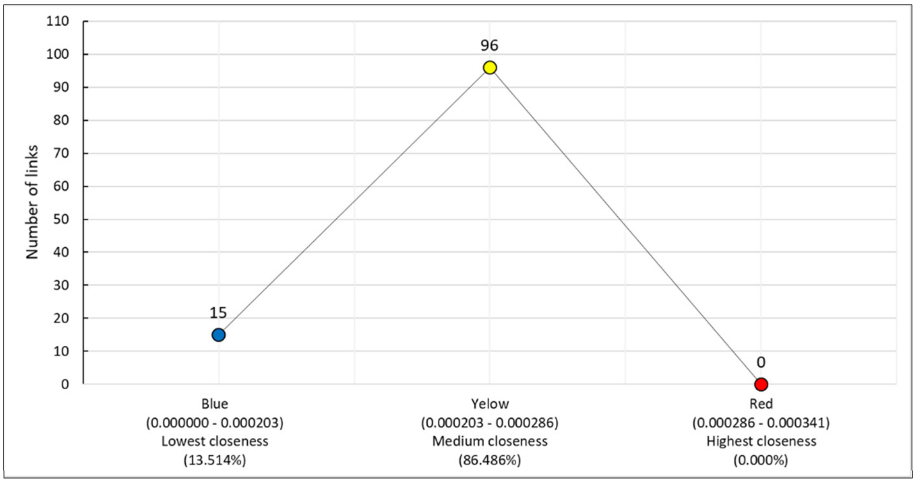


Figure 4.53. The number of links per category of closeness centrality of case study D.

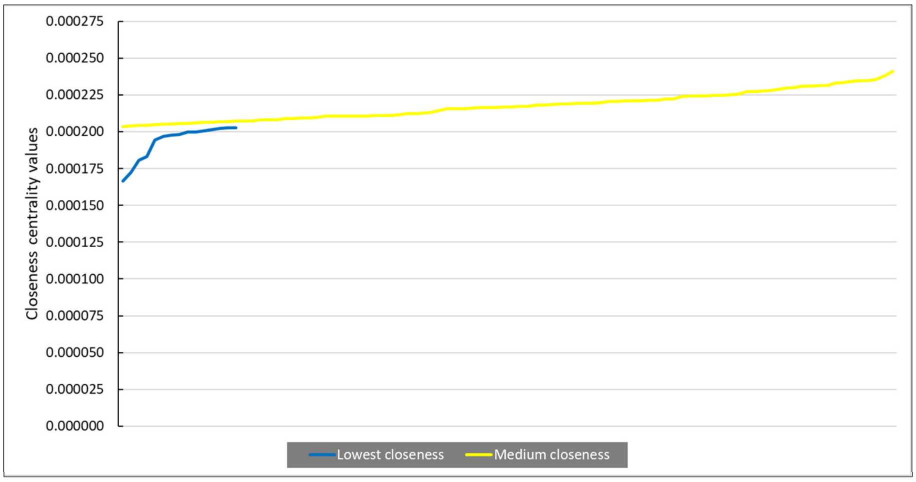


Figure 4.54. The closeness centrality value of case study D.

4.4 Conclusion

A spatial network is one of the principal urban components. It governs different types of movement, and its role is to manage various flux and to shape human behaviour. Streets with adjacent buildings help to formulate the identity of a city; they work to connect urban elements to each other in a distinct pattern. Therefore, a considerable number of studies address the key characteristics of a street network, and these studies tend to benefit from graph theory. This theory analyses two significant features, lines and nodes. Two primary elements operate together to form the entire network street system; the street and intersection. These have a reciprocal relationship that maps the distribution of the movement stream. However, graph theory is not restricted to urban studies; instead, many different disciplines adopt this approach, including, although not limited to, sociology, biology, technology, planning studies, and urban studies. The mechanism of representing both line and node is varied. Therefore, several generating models are used to compute the relationship value between nodes and lines.

Urban studies consider two substantial approaches that significantly help to enrich the urban field regarding the analysis of the spatial network of the street system; these are Space Syntax (SS) and Multiple Centrality Assessment (MCA). Understanding these two methods was necessary in order to apply one of them individually. Before applying the MCA approach, the necessary materials needed to be available; one was the georeferencing maps of the selected area used to prepare the street network and then a metric map. The Multiple Centrality Assessment can be defined as a multimetric approach, as it employs a network map that depends on metric distance rather than visual steps, like Space Syntax or the continued street, as in other approaches. In MCA, each street is represented by a link, at the end of which are a pair of nodes.

The case studies were selected to concentrate on the old urban centre of Baghdad and its surrounding neighbourhoods. Therefore, four cases were embedded within the central chosen area and labelled A, B, C and D. The selected area was subjected to the MCA analysis to determine two types of centrality, betweenness and closeness. Each case was isolated individually to extract the information about its network system and the values of the street lengths, betweenness and closeness for each single link. Analytically, MCA yields significant outcomes at global and local scales for both the betweenness and closeness centrality. Based on the MCA, in the next chapters, six streets are chosen to examine the other research variables. In this context, the chapter has dealt with the neighbourhood scale that identified by the boundary of the selected area and then by four chosen case studies; A | organic pattern, B | hybrid pattern, C | paralleled pattern and D | loop-grid pattern. The main interrelationship and comparison among the four case studies in terms of their street centralities will be provided in Chapter Nine.

Chapter Five

Measuring the Urban Fabric

5.1 Introduction

The primary goal of this chapter is to define urban form indicators and their role in generating the connectivity and accessibility of the urban fabric. There are three street sections; plot, block, street-intersection. Furthermore, land use is where each section is divided into a number of variables; such plot and block. It includes length, size, density, perimeter, and block to street ratio. The value of street-intersection analysis increases when studying and comparing different urban areas. Within the street-intersection, nine variables are examined, namely: intersection density (ID), street density (SD), link-node ratio (LNR), internal node connectivity (INC), external point connectivity (EPC), grid pattern ratio (GPR), pedestrian route directness (PRD), and ped-shed (PS) and effective walking area (EWA).

This chapter aims to understand the drastic changes that occurred in the land use of the historical area, from fine-grained activities to pre-determined uses underpinned by new development policy. This process not only invents a new function for the traditional areas but also requires the removal of the organic pattern of the street system. The transformation is not only limited to the urban structure, but its impacts also take place (gradually or promptly) to create new functions that are experienced in the historical pattern of the old city of Baghdad. Chapter Nine provides the main comparison across the four cases regarding the parameters of the plot, block, street and land use.

5.2 Human – Edge Interface

5.2.1 Plot

A plot represents the smallest generative unit of an urban form. It can be defined as an essential element that works to formulate the spatial configuration of a place. The mechanism of an arrangement of plots plays a significant role in producing both the block and the neighbourhoods in a city. In this regard, plot analysis can be adopted to study the plot pattern according to two variables: perimeter and size. The four-selected cases A, B, C, and D have a clear variety of plots types and arrangement patterns. From the organic and hybrid model to the paralleled and loop-grid patterns, there is a substantial differentiation between such plots in terms of their shape, dimension and the way they are organised. To calculate the plot values, the study tends to use the overall area of plots within a certain block. The ID names both the plot and block, for instance, *AB10P10* represents the following: *A* denotes case study A; *B* identifies the block; *10* is the numeral ID of the block; *P* stands for the plot, and *10* is the numeral ID of the plot. This numbering system is applied to all cases to enable the tracking of each plot (Figure 5.1).

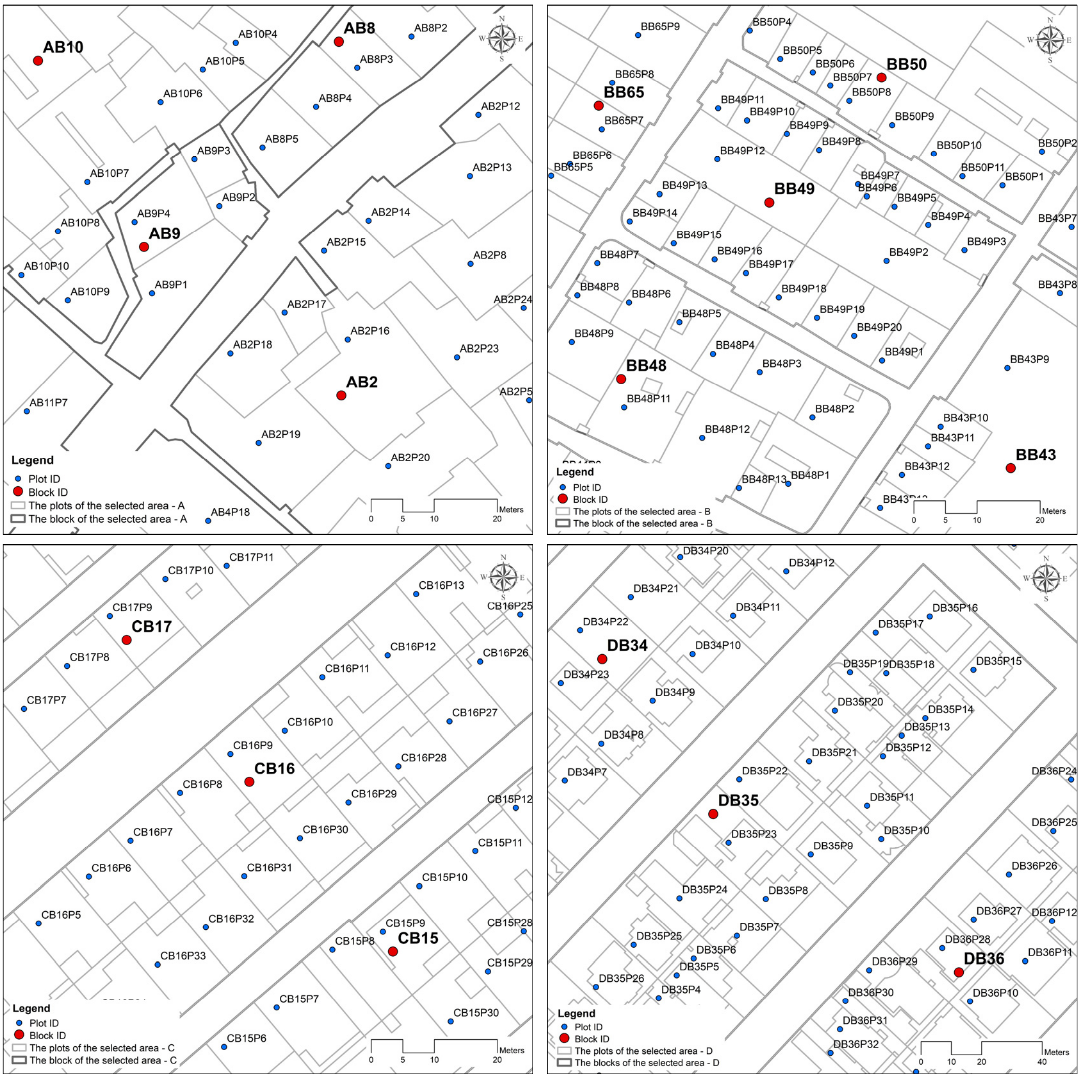


Figure 5.1. An example of the numbering system used in four cases studies A, B, C, and D. Each plot consists of five characters: AB8P1. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

5.2.1.1 Perimeter

Across the four cases studies, A, B, C, and D, there are different types of plot in terms of dimensions and shape. Some have an irregular layout in the oldest area of Baghdad, and these are marked as case study A. The concept of the perimeter is commonly used with blocks Cervero et al. (1997), Dill (2004) and Remali (2014). In this research, the perimeter is adopted to calculate the differentiation of blocks in terms of their ability for containment; this is an indicator of the plot’s density per block. Plot perimeter, in this regard, includes all plots, whether they fall within the selected areas (400 meters radius) or are intersected the boundary of cases. The perimeter of the plot is extracted and then listed in a table for all four cases studies. The principle on which to calculate the perimeter is to sum the value of each plot per block:

$$Plot\ perimeter = \sum_{P_l=1}^{n} PP_l$$

Where P_l is the perimeter per plot, PP_l is the total perimeter value of the plots, and n is the number of plots. Each set of plots are organised within a block. Therefore, one block refers to the total perimeter of plots that belong to it.

5.2.1.1.1 Case Study A: Organic Pattern

The marginal edge of the plot in case study A is quite diverse, and it is rare to find two identical plots together, even in the same block or in one alley. The settlement of plots was spontaneous and subjecting to a bottom-up approach. Consequently, the cluster of an irregular layout of plots leads to the creation of an asymmetrical block (Figure 5.2).

Figure 5.2. Case study A: organic pattern. The spatial configuration of plot arrangement and asymmetrical blocks. The selected area includes 1753 plots within a 400-metre radius, where different perimeters acknowledge each individual plot. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

The interrelationship between the adjacent plots mostly involves interlocked edges rather than a contiguous brink (Figure 5.3). Case A is the most complicated area of the four cases; it displays a high density of plots, not only regarding their amount but also concerning their shape. Moreover, the degree of interlink between them is represented as a crisscross pattern. Thus, there are 138 blocks, and 1753 plots within the 400-metre radius of case study A. Two blocks and plots are excluded in computing the plot's perimeter as they represent the riverbank. The value of the perimeter for each single plot has been calculated (shown in Appendix Three). A large number of plots in case study A mean splitting the perimeter into two levels: firstly, grouping the plots according to their blocks and secondly, making a comparison between all plot perimeters. Each single plot is marked (*Pn* = Plot and number) preceded by the case's title and block's number (*ABn* = case *A*, block *B* and number *n*). After applying the perimeter's equation, the result is illustrated in Figure 5.4. There are fifteen of blocks that extended beyond the case study boundary, and the plots that fall inside the border or intersect with it are also involved. These blocks are listed as: AB14, AB43, AB44, AB47, AB48, AB58, AB62, AB63, AB64, AB126, AB129, AB130, AB131, AB133, AB134.

Figure 5.3. Enlarged slice of case study A to explain the interrelationship between plots. These are calculated by the interlocked edges rather than the contiguous brink. The perimeter of each plot differs from the adjacent ones. There is no manifest module to adopt in controlling the periphery of the plots, instead, each a new plot on the existing scheme displays a spontaneous and organic pattern. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

In case study A, there are 138 blocks (only two are excluded as they are adjacent the riverbank) and 1753 plots. The blocks are quite varied in terms of the total number of plots they include; moreover, the plots also differ regarding their perimeter. According to Figure 5.4, case A illustrates a high differentiation among blocks, where each block is a unique unit that encompasses a set of plots; in addition, it differs from other surrounding neighbourhoods.

Also, it displays the four values (minimum, median, average and maximum) of the overall perimeter of the plots within a block. For one block, there is a considerable gap between the lowest (60.70 meters) and the highest (2857.69 meters) plot perimeter per block.

The total perimeter of case study A is:

$$Plot\ perimeter \mid case\ A = \sum_{P_l=1}^{1751} 101843.68$$

The total perimeter of 1751 plots (excluding the two riverbank plots) within sample A is 101843.68 metres.

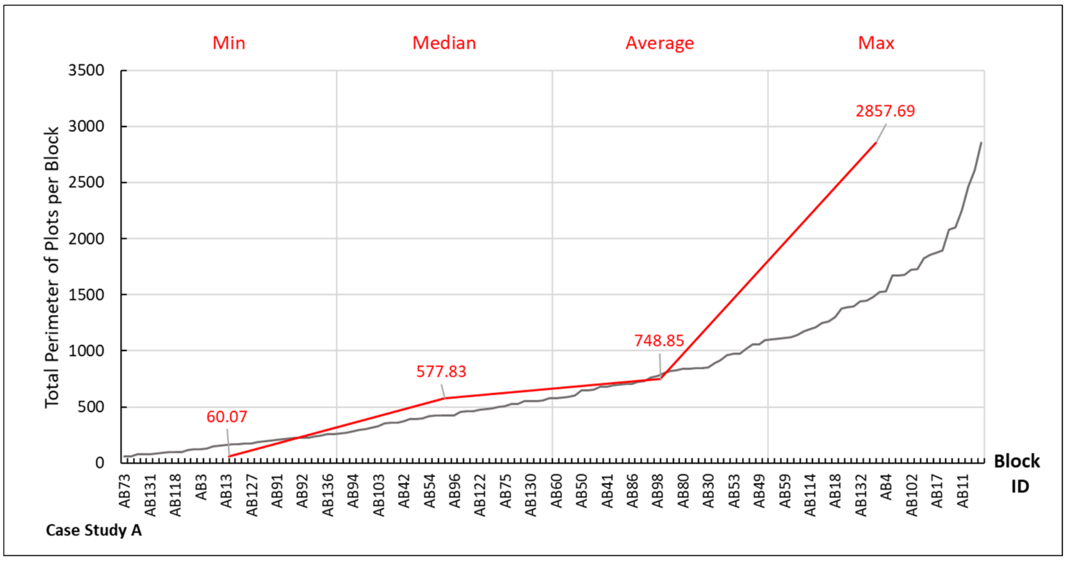


Figure 5.4. Case A. The total perimeter of the plots (1753 - 2 riverbank) per block (138 - 2 riverbank). It shows a high differentiation between the selected blocks regarding the plot borders. Each block differs from the others in terms of the number of plots and their perimeters.

5.2.1.1.2 Case Study B: Hybrid Pattern

The plots in case study B combine two shapes: an irregular and a regular layout. Generally, the plot pattern is less complicated than for case study A, excepting the old part, which is like the traditional part of case A in terms of the spatial configuration of its plot arrangement. Meanwhile, the remaining parts include plots that were designed according to the planned scheme, where the distinct line between the plots is a continuous edge (and therefore clear) rather than interlocked (like the traditional area) (Figure 5.5). In case study B, there (1976 – 1 riverbank) plots that are arranged within (125 – 1 riverbank) blocks (Figure 5.6).

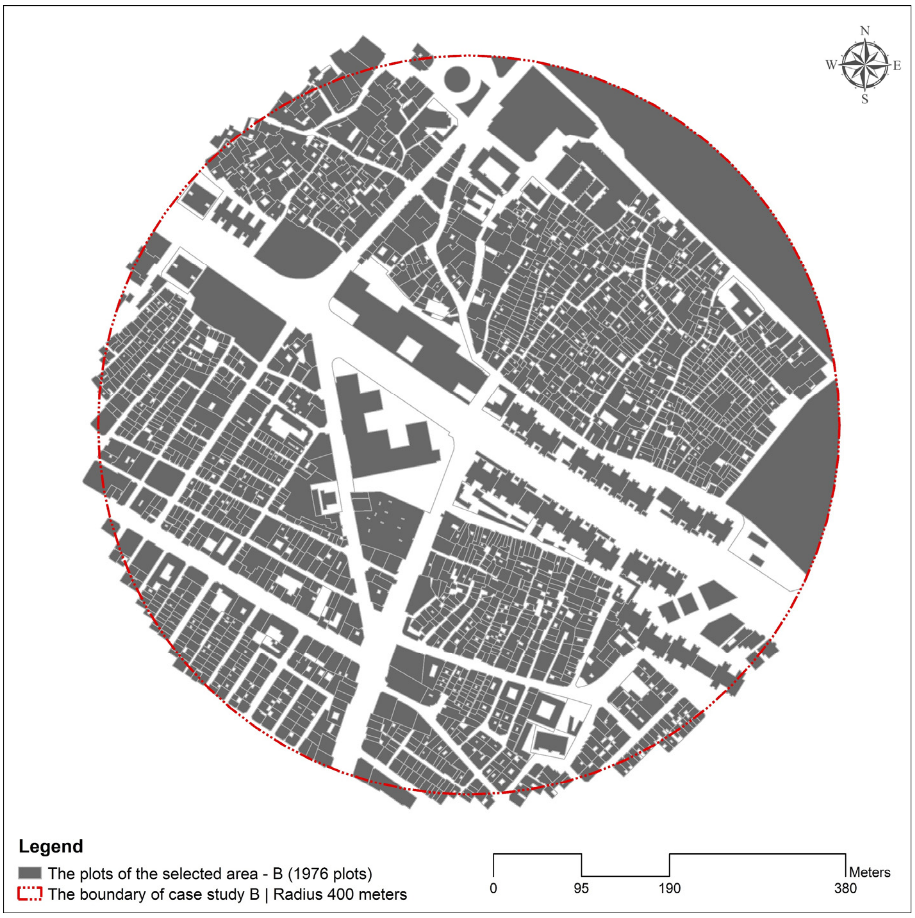


Figure 5.5. Case study B: hybrid pattern. The spatial configuration of plot arrangements and asymmetrical and regular blocks. The selected area includes 1976 plots within 125 blocks. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad that was authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

In this respect, case B is less complicated than case A; this, in particular, is related to the size of the traditional area.

By using the perimeter's equation:

$$Plot\ perimeter\ |\ case\ B \sum_{P_l=1}^{1975} 98943.63$$

The computation of the plot's perimeter depends on the block to which it belongs. Figure 5.6 illustrates the perimeter of 1975 plots that are marked by the block and plot ID. There are four significant values in dealing with plots' border: minimum, median, average and maximum. Like the case study A, the value difference between lowest and greatest perimeter is high (62.81 metres and 2650.82 metres). The differentiation between the two values is due to the variety in the blocks' sizes, especially in the traditional area where there is no systematic block shape that might encircle the group of plots. Neither is there a uniform size of block (Figure 5.7).

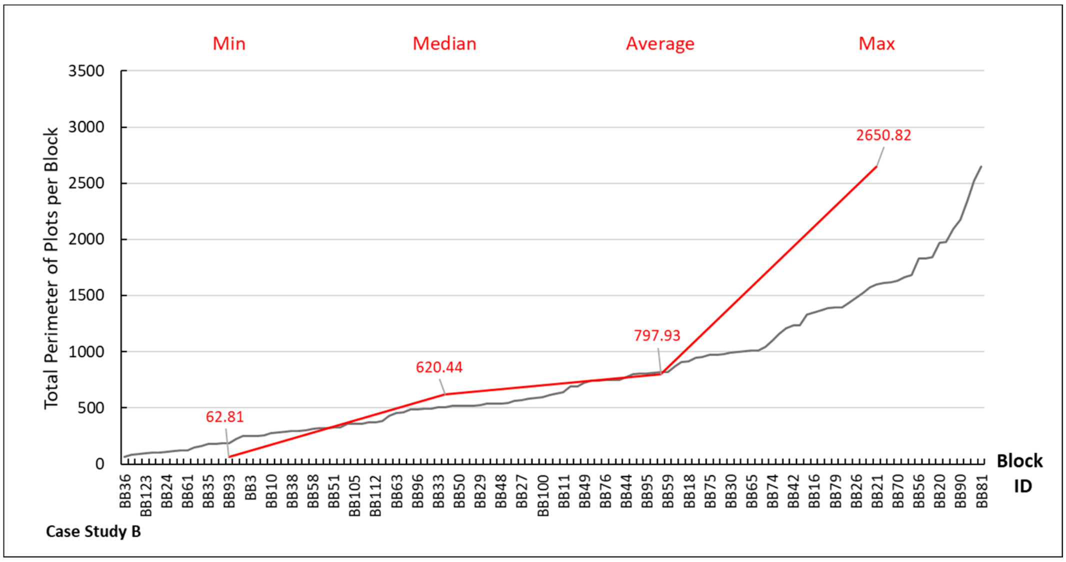


Figure 5.6. Case B. The total perimeter of 1975 plots per 124 blocks. It displays a high variation between selected blocks around the plot edges. Each block varies from the others in terms of the number of plots and their perimeter.

Figure 5.7. Three enlarged slices of a spatial configuration of a plot's perimeter (case B). Top-left is the oldest part, which is an organic perimeter, while top-right is as the transitional pattern. Bottom-left represents the newest areas in plot border design. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad that was authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Fifteen of blocks intersect the boundary of the case study, and some extend beyond the border; nevertheless, the plots that belong to the area of the case study are counted. These blocks are BB3, BB4, BB13, BB32, BB33, BB34, BB35, BB36, BB60, BB110, BB115, BB116, BB117, BB123, and BB125. Typically, the total perimeter of the plots within these peripheral blocks does not cover all plots, excepting those that are located on, or intersected with, the border of the case study.

5.2.1.1.3 Case Study C: Paralleled Pattern

Case study C can be identified as a more advanced stage than cases A and B. The plot arrangement is evident, it is possible to define the edges of a plot, and the dividing line between any two adjacent plots is straight and without a complicated shape. In this sample, 849 plots are embedded by 49 blocks. The area of the plots is mostly similar, whether in the same block, or even in different blocks. Furthermore, the plot is a generative unit and, in this sample, it often holds a regular shape. Therefore, the block layout is more systematic than for cases A and B (Figures 5.8 and 5.9). In addition, the number of plots per block differs, which alters the dimension of the block and the proportion between lengths and widths. This also affects the formulation of the whole network system (Figures 5.8 and 5.9).

Figure 5.8. Case study C: paralleled pattern. Both the spatial configuration of plots and blocks are regular. The selected area contains 849 plots within 49 blocks. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 5.9. Two types of plot arrangement within case study C. Row of back-to-back houses with maximum metric depth (left); the houses cover the whole area of the plot with a minimum setback (right). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Based on the perimeter plot formula, the significant values occurred across (849 - 2) plots, which are subjected to four statistical operations, minimum, median, average, and maximum, and their values are (144.57, 1037.66, 1426.22, and 4550.97 respectively), shown in Figure 5.10.

$$Plot\ perimeter \mid case\ C \sum_{P_l=1}^{847} 67032.31$$

The total quantity of plot perimeters in the case study C is 67032.31 metres (excluding the two plots encompassed by blocks CB47 and CB48, which are green areas). The variance between the two values (lower and upper limit) is high. In this regard, the smallest amount comes from the peripheral blocks that are situated at the boundary of the case study. This is due to the exclusion of the plots outside the border. In this example, there are ten blocks, namely: CB5, CB23, CB34, CB36, CB38, CB39, CB40, CB43, CB44, and CB49.

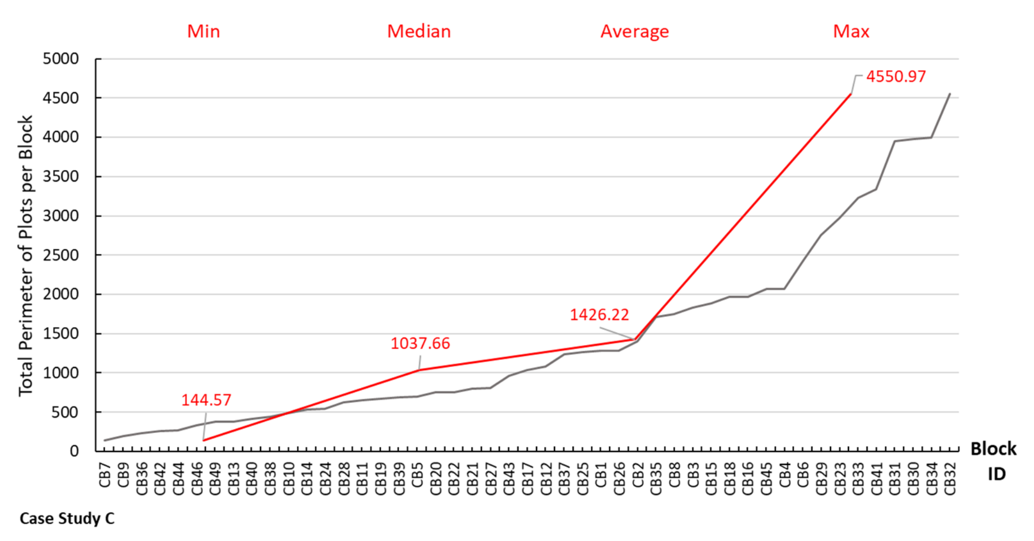


Figure 5.10. Case C displays the significant values across (849 – 2 green areas) plots that are subjected to four statistical operations (minimum, median, average, and maximum) and their values are 144.57, 1037.66, 1426.22, and 4550.97, respectively.

5.2.1.1.4 Case Study D: Loop-grid Pattern

Case study D is the newest of the four cases, where the plots are relatively orderly, and their edges are planned in order to shape regular blocks with equable dimensions. The plots' perimeter is distinct, and it is shared with an adjacent plot via a straightedge that differs to the sinuous line within cases A and B. Mostly, the buildings partially cover the plot area to maintain a considerable metric depth as an intermediate space between the street edge and buildings (Figures 5.11 and 5.12). In this example, there are 55 blocks and 11 are green and open areas. Meanwhile, the number of plots is 720 excluding the 11 green area plots and undeveloped land; therefore the number of plots total 709.

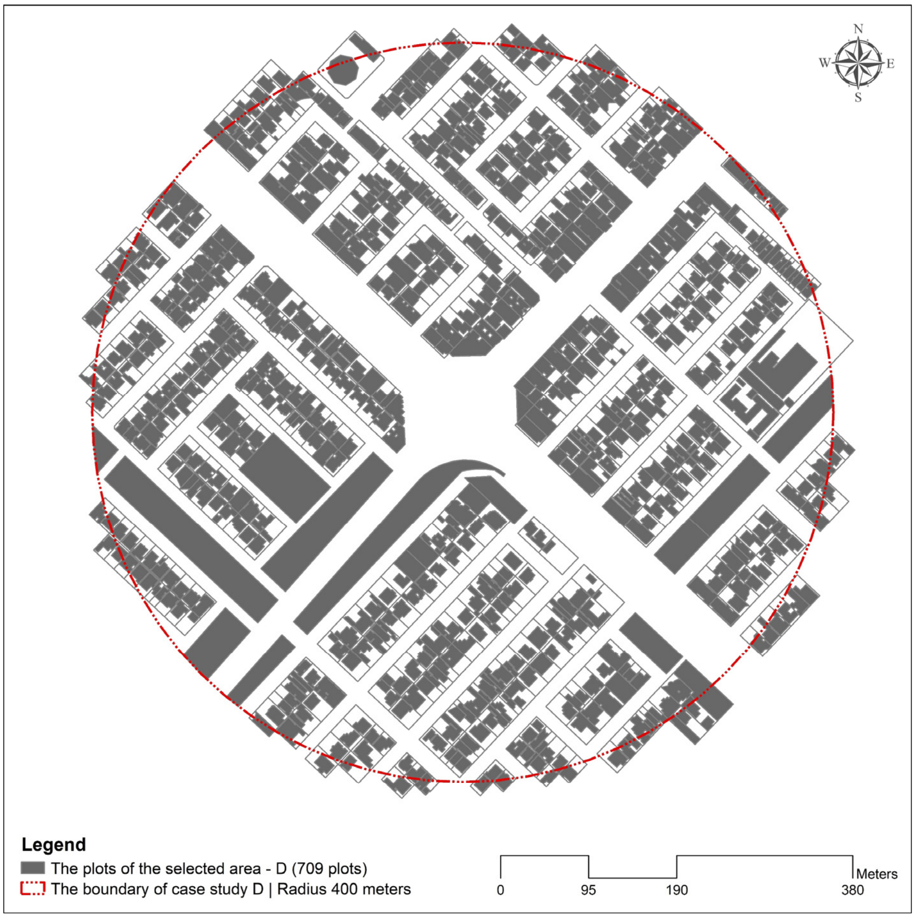


Figure 5.11. Case study D; loop-grid pattern. Both spatial configurations of plots and blocks are quite systematic. The selected area holds 720 plots within 55 blocks. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

According to the perimeter plot method, the result of four values; minimum, median, average, and maximum was 205.79, 1206.02, 1353.99, and 3470.70 metres respectively (Figure 5.13). Across the 400-metre radius of the selected area of case D, the number of plots is the lowest among the four cases. The gap between the lowest and greatest plot perimeters is notable, like the three examples above, in addition, the number of peripheral blocks is higher. The layout of case study D was subjected to the plot-block order, and its arrangement efficiently contributes to the crystallisation of the street network as an inevitable result of the planned system.

Figure 5.12. Two enlarged slices of case study D, where both plot and block border are outlined in contrast to cases A and B. The matrix of the plot is responsible for forming the block's edges and its shape. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

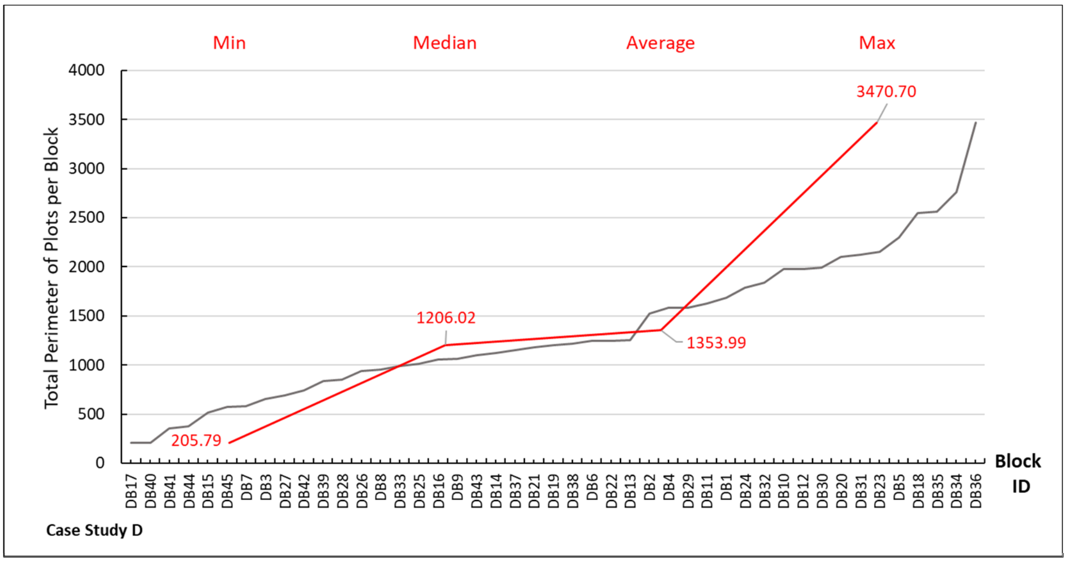


Figure 5.13. Case D and its plots' perimeter is about 60929.60 metres of 709 plots. The arithmetical standards are minimum (205.79), median (1206.02), average (1353.99), and maximum (3470.70) metres per block.

Seventeen blocks extended beyond the boundary of the case study, while their plots are considered regardless of where they are located within the selected area.

$$Plot\ perimeter \mid case\ D \sum_{P_l=1}^{709} 60929.60$$

The total quantity of plots' perimeters in the case study D is 60929.60 meters (excluding the 11 plots that are located within green areas and undeveloped land).

5.2.1.2 Size

The concept of the plot size is addressed by scholars, such as Bentley et al. (1985), Dill (2004), Hess et al. (1999), Kim (2007), Reilly et al. (2003) and Remali (2014). In this research, the plot holds two types of size: plot's area and the built-up area. These two areas can be distinguished throughout the four selected cases. Morphologically, the plot represents the smallest urban form unit in structuring the spatial configuration within an area. The characteristics of plot itself in terms of its size, shape, and how to settle in relation with others, are an analytical value. Therefore, the four cases are examined in detail after tracking the border of each single plot and the built-up area by using the two main maps authorised by the G.I.S.Department (2016) and R.S.GIS.U (2017).

In this study, all plots are counted regardless of the land uses; as such, both the plot area and built-up area are needed. Therefore, the value of the plot area and built-up area per block are calculated by the following two equations:

$$Plot\ area\ per\ block = \sum_{P=1}^{n} PA$$

Where *P* is plot, *PA* is plot area, and *n* is number of plots

$$Plot\ built-up\ area\ per\ block = \sum_{P=1}^{n} PB$$

Where *P* is plot, *PB* is plot built-up area, and *n* is number of plots

The aim is to disclose the differentiation between two significant values: a plot's area and the built-up area of the plot per block in a particular case and then across the four samples. This ratio is an indicator to explain to the extent that an area of a selected case is used regardless of the type of land use. The proportion between the two values is a simple index can be formulated as:

$$R_c = \sum_{P=1}^{n} PB \Bigg/ \sum_{P=1}^{n} PA$$

Where R_C is the ratio between the built-up area of plot and plot area itself, where both values are calculated per block.

5.2.1.2.1 Case Study A: Organic Pattern

In case A, the size of the plot very varied in terms of the shape and greater number of zigzag edges. Mostly, the built-up area occupies the whole plot size, where the building is completely adjacent to the plot's edges. Case A includes 1753 plots, which is distributed over 138 blocks, including open or green areas, and each single block has a different number of plots. Two equations of plot's size are:

$$Pot\ area\ per\ block \mid case\ A = \sum_{P=1}^{1753} 410334.7325$$

$$Plot\ built-up\ area\ per\ block \mid case\ A = \sum_{P=1}^{1753} 327532.2076$$

The degree of coverage in case study A is determined by the ratio between two values:

$$R_c \mid case\ A = \frac{327532.2076}{410334.7325} \times 100 = 79.82\%$$

Sample A, according to the analysis above, exhibits the most significant value of covered area that derives merely from dividing two values; built-up area and the plot area, as shown above. Furthermore, Figure 5.14 displays the overall of vacillation between two values. The two trendlines seem to be close to each other, and the gap between them is slight.

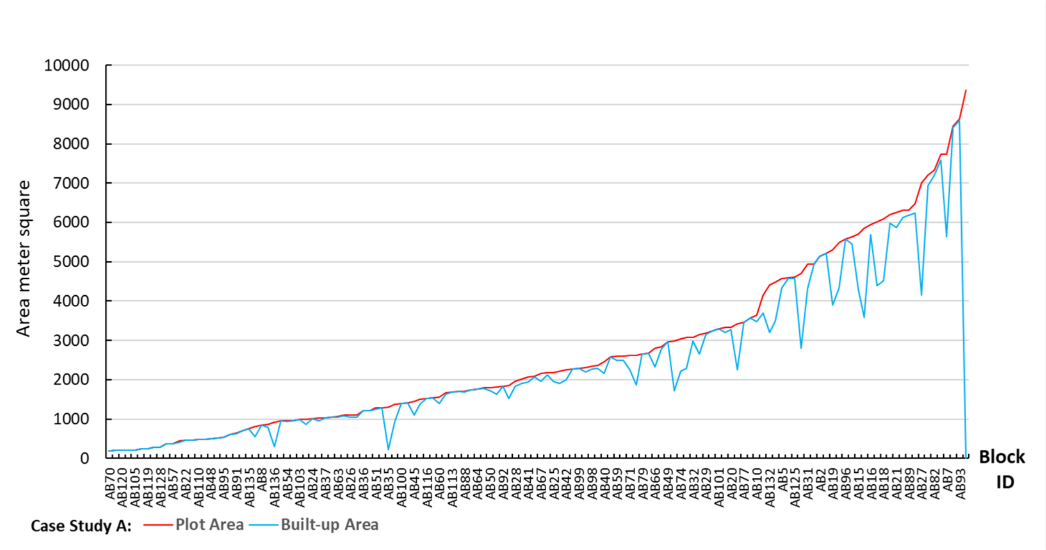


Figure 5.14. The two trendlines: plot area and built-up area of case study A. It is calculated for each plot and then classified according to the block. The differentiation between the two values is small, where most buildings cover the plot area.

5.2.1.2.2 Case Study B: Hybrid Pattern

The sample combines different patterns of the plot-block system and adopts several regulations in determining the relationship between plot size and the built-up area. The oldest part of the case in sample A considers the degree of land coverage. The rest is varied regarding the ratio of the plot area to its building. Case B includes 1976 plots that are organised within 125 blocks; these cover all plots regardless of their land use. According to the three equations, plot area, built-up and the ratio between them, the result is:

$$Pot\ area\ per\ block \mid case\ B = \sum_{P=1}^{1976} 371732.4045$$

$$Plot\ built-up\ area\ per\ block \mid case\ B = \sum_{P=1}^{1976} 263230.4699$$

The degree of consumption for case B is calculated by the ratio between two values:

$$R_c \mid case\ B = \frac{263230.4699}{371732.4045} \times 100 = 70.81\%$$

The result shows case B has the highest covered area (70.81% of the total of plots' area), but this is less than for case A (79.82% overall of the plots' area). In Figure 5.15, the relationship between the two values; plot area and covered size slightly oscillate, especially when considering the large plot. However, across the whole of case B, both lines represent a degree of rapprochement. This means the plot is often entirely covered by buildings to allow the private edges to directly link with the public edge, where there are no intermediate spaces that might separate between the inside and outside areas.

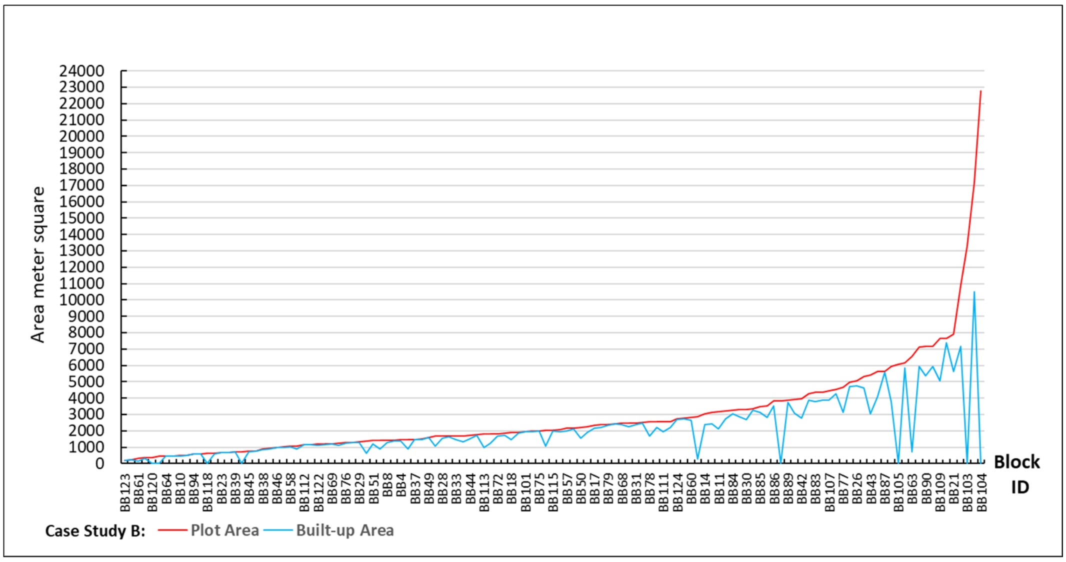


Figure 5.15. In case study B, the two trendlines (plot area and built-up area) are counted for each plot and arranged according to a particular block. The variation between the two values, such as case A, is small. Thus, most buildings cover the plot area with some exceptions for the large plot.

5.2.1.2.3 Case Study C: Paralleled Pattern

In study area C, within a 400 metres radius, there are 849 plots and 49 blocks. The selected area exhibits a more organised plot-block system in comparison with cases A and B. However, it includes a smaller number of plots and blocks. The values of plot size and covered area are computed for each single plot and then sorted per block. Also, in this case, the ratio of covered land is varied. Based on the three values; plot area, built-up and the ratio between them, the outcome is:

$$Pot\ area\ per\ block\ |\ case\ C = \sum_{P=1}^{849} 383441.5866$$

$$Plot\ built - up\ area\ per\ block\ |\ case\ C = \sum_{P=1}^{849} 167130.7305$$

The ratio of coverage in case study C is found by dividing the two values above:

$$R_c\ |\ case\ C = \frac{167130.7305}{383441.5866} \times 100 = 43.59\%$$

A comparison between the plot area and built-up is shown in Figure 5.16. The graph displays a considerable gap between the two values of the area; as such, most plots have been occupied partially by buildings. The existing metric depth in plots contributes to an increasing gap between the sheer plot size and the covered area. Furthermore, it leads to a decrease in the ratio of land use that reached 43.59%; this sample is subject to the plot-block system as a planned configuration of the neighbourhood that significantly determines the relationship between the private and public edge.

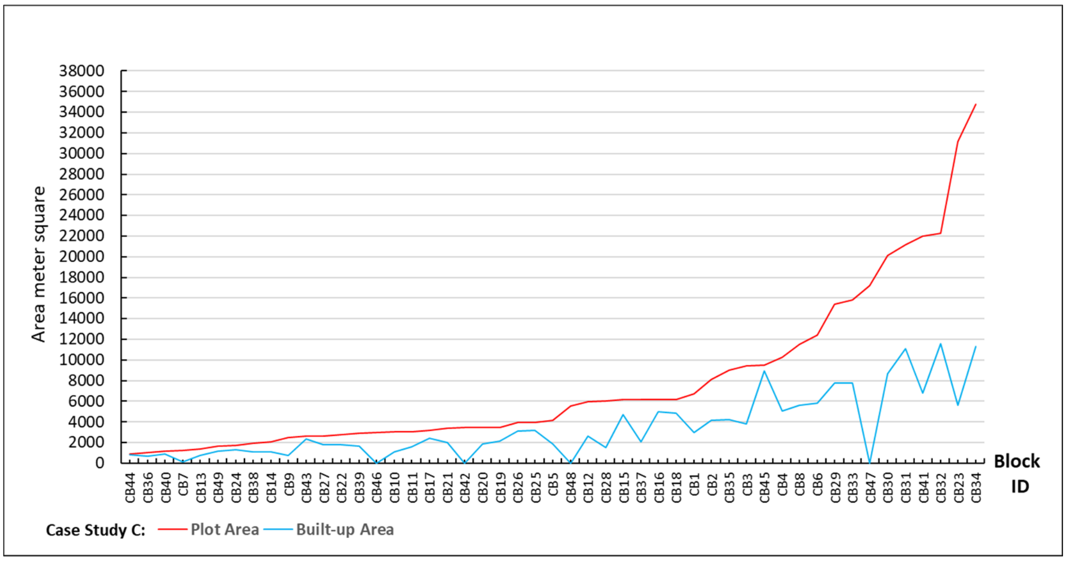


Figure 5.16. In case study C, the graph displays a considerable gap between the two values of the area; as such, most plots have been partly covered by houses.

5.2.1.2.4 Case Study D: Loop-grid Pattern

Sample D represents the loop-grid pattern for the spatial configuration of plots and blocks. The selected area consists of 55 blocks including 720 plots. In this regard, the case contains a smaller number of both plots and blocks among three cases, A, B, and C.

Based on the three values; plot area, built-up and the ratio between them, the outcome is:

$$Pot\ area\ per\ block \mid case\ D = \sum_{P=1}^{720} 332882.4300$$

$$Plot\ built-up\ area\ per\ block \mid case\ D = \sum_{P=1}^{720} 162880.4356$$

The ratio of coverage in case study D is computed by dividing the two values above:

$$R_c \mid case\ D = \frac{162880.4356}{332882.4300} \times 100 = 48.93\%$$

The graph in Figure 5.17 shows a significant gap between two values: plot area and built-up. In this example, most plots are partially covered by buildings. The metric depth works by maximising the differentiation between the plot size and covered area. Furthermore, it leads to a decline in the ratio of exploited land that reaches 48.93%.

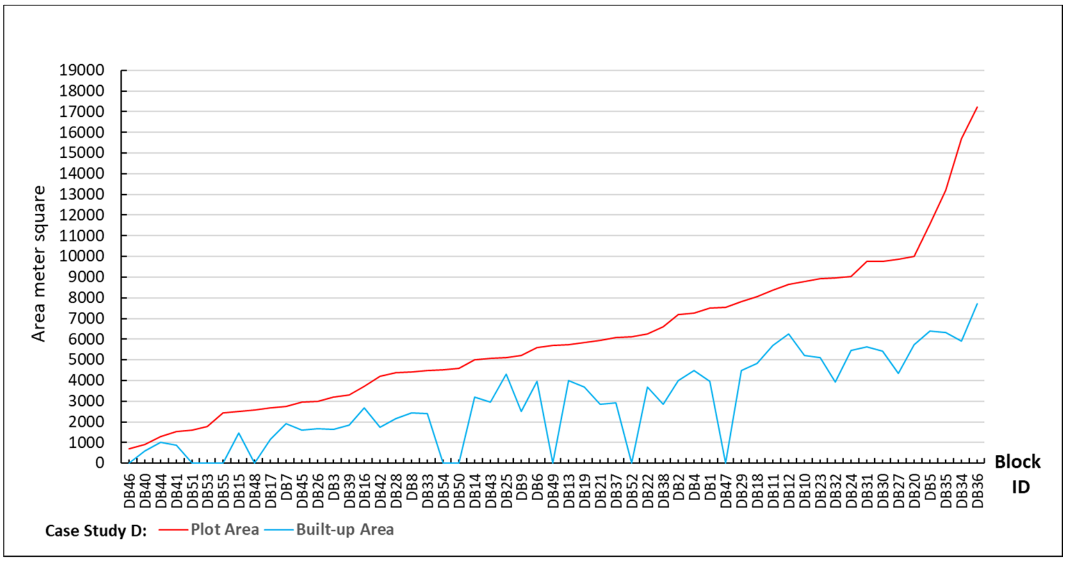


Figure 5.17. The graph displays an important gap between two values: plot area and built-up; in this instance most plots are partially covered by buildings.

5.2.2 Block

The second primary spatial configurational urban unit is a block; it is represented by the set of generative units of plots. Mostly, the main characteristics of the block derived from the plot's characteristics in terms of the nature of the arrangement, perimeter and size. The block is a significant urban unit to define the interrelationship between a private and public edge through an adjacent street. The block's edge, in this regard, plays a key role in formulating the degree of interaction between different aspects of street life: people, indoor and outdoor experiences. In this study, five variables are used in order to examine the block, namely: perimeter, size, dimension, density, and block to street ratio. Across the four samples of the selected urban area, the block's characteristics are quite varied, especially when considering case study A (as an organic pattern) and the more modern areas, such as D (loop-grid pattern). The great disparity among these examples resonates with the plot's assets as a generative component. To compute the block, the research identifies the block by giving an *ID* number for each single block; for example, *AB1*, *BB1*, *CB1*, and *DB1* refer to case study name (A, B, C, and D), the block (*B*), and the number of blocks (*1*), (Figures 5.18 and 5.19). The main concern in counting the block is the relationship with the extended block that exceeds the boundary of the case study. As long as the block represents the real dimension of the street edge, the blocks that intersect the border of the sample and extend beyond it are counted for all cases A, B, C, and D. Furthermore, land use is another consideration used in classifying whether a block is a developed area, or (as in this research) whether it is covered (structured and built) where both considerations are taken into account in this study.

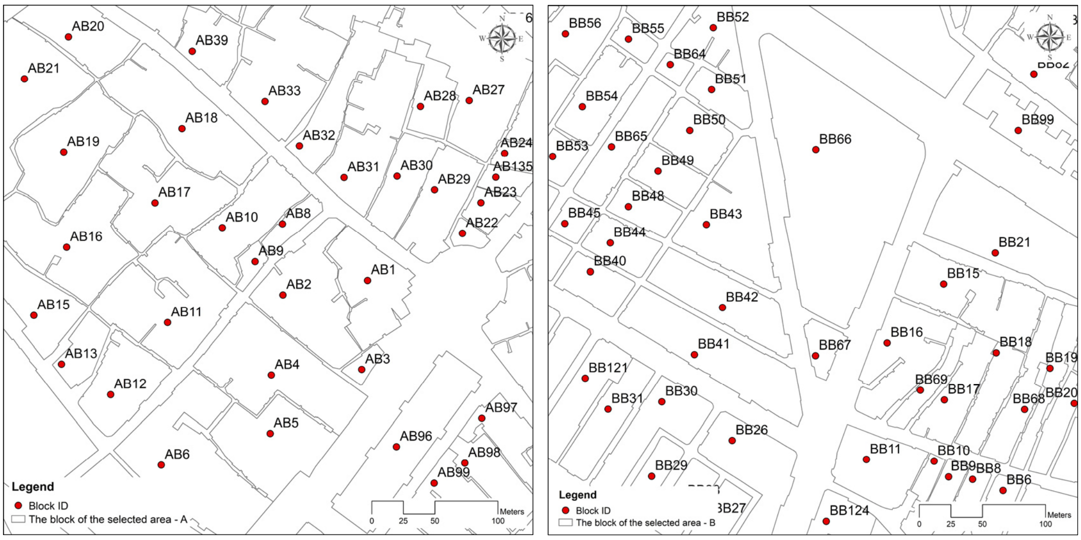


Figure 5.18. An example of the numbering system of blocks used in case study A - organic pattern (left) and B - mixed pattern (right). Each block contains three parts: two letters and a number. Thus, *AB* or *BB* means case *A* or *B* and block A or B. This is followed by a numeral as a block number. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

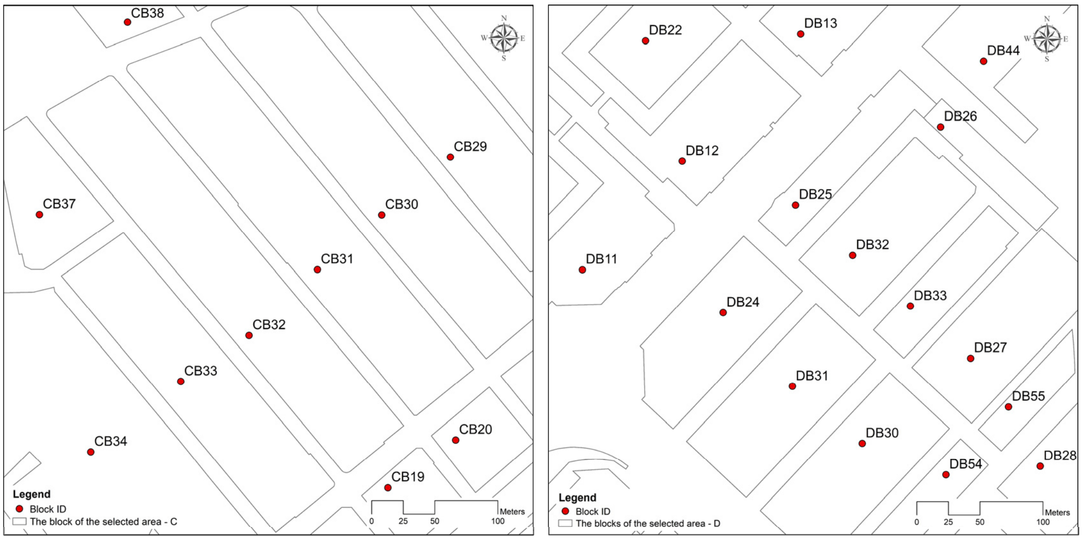


Figure 5.19. An example of the block numbering system, which is employed in case study C - paralleled pattern (left) and D - loop-grid pattern (right). Each block holds three characters: two letters and number. Thus, *AB* or *BB* means case *A* or *B* and A or B means block. This is followed by a numeral as a block number. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

5.2.2.1 Perimeter

The block perimeter is a simple indicator to designate the total extension of block boundaries adjacent to the streets. Dill (2004) relates the block perimeter with the block area or block size as they give the same meaning; using the block size measured by the area or perimeter as a standard would be more flexible than the block length for each side (Dill 2004). The shorter the block perimeter, the greater the intersections; this reduces the travel distance with high permeability (Remali 2014). In this study, the block perimeter is computed to disclose the degree of differentiation of the perimeter in each selected urban area. This is then compared among the four cases. All blocks within a 400-metre radius and those that intersect with the boundary of the case study are counted. The perimeter of the block is extracted and then organised into a table for all cases.

The formula to calculate the perimeter per case study is:

$$Block\ perimeter\ per\ case = \sum_{B=1}^{n} PB$$

Where B is block, n is number of block per selected area.

5.2.2.1.1 Case Study A: Organic Pattern

The periphery of the block in case study A takes an irregular edge and, in some parts, there are more than four sides for one block, or the two adjacent blocks met at a shared edge. In this sample, the edge of the block is calculated and listed in a table. Each single block is named with the value of its perimeter. Within the 400-meter radius of the selected area, there are 138 blocks, including the open spaces and riverbank. The blocks within the boundary of the selected area are examined, besides those that also intersected with the border (Figure 5.20).

The block perimeter of case study A is:

$$Block\ perimeter\ per\ case \mid A = \sum_{B=1}^{n} BP \rightarrow \sum_{B=1}^{138} 39011.64\ meter$$

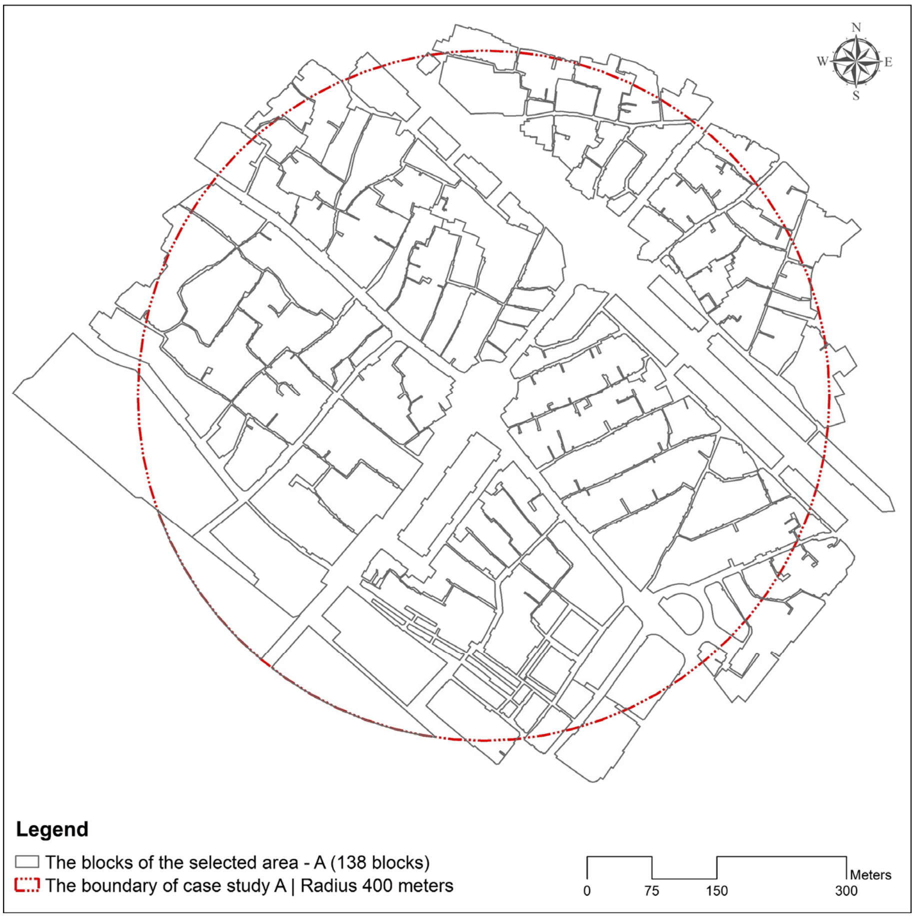


Figure 5.20. Case study A - the spatial configuration of blocks. The selected area includes 138 blocks within a 400-metre radius, with various perimeters which defines each single block. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 5.21 illustrates the perimeter value of each individual block, and the four statistical values: minimum, median, average, and maximum. The perimeter of the chosen blocks is represented in a continuous smooth line, except the last three blocks; AB137, AB21, AB87 and AB82, meaning that the case study A encompasses a great variety of blocks' perimeters. The other expression in Figure 5.21 is the values of minimum 60.07, medium 264.69, average 282.69, and maximum 913.46. The variation between the minimum and maximum is another indicator of the diversity of the perimeter in sample A. Furthermore; the blocks were generally created spontaneously, apart from the planned scheme or pre-prepared layout. Instead, they were customarily subjected to the interrelationship between the plots themselves and later determined the perimeter for each block.

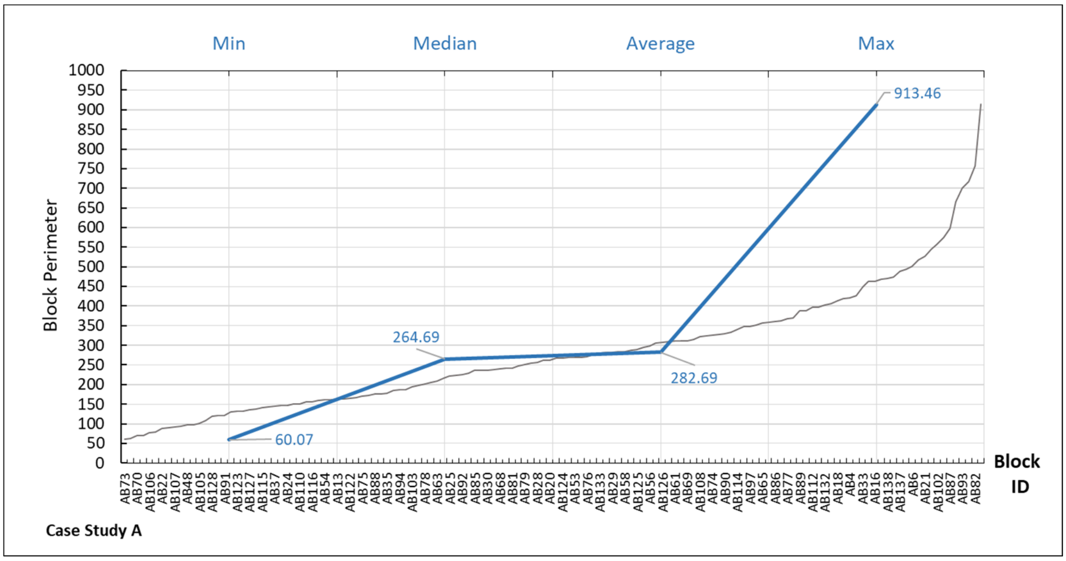


Figure 5.21. Illustrates the different perimeter values of blocks, and the four statistical functions: minimum, median, average, and maximum. The variation between the two values, minimum and maximum, is clear as another index of the perimeter diversity in the case study A (organic pattern).

5.2.2.1.2 Case Study B: Hybrid Pattern

In this sample (and as a mixed pattern), the blocks' perimeter is diverse, whether between the traditional and the remaining areas or within each sector of the selected sample (Figure 5.22). Case B presents a significant enlarged slice of the block of case study B and a high degree of differentiation among its blocks regarding their border. Like sample A, in some parts, there is no planned scheme to control the layout of a block and its relationship with the other surrounding neighbourhoods; however, it was generated from the plot properties themselves. The perimeter of each single block is computed depending on the two significant references G.I.S.Department (2016) and R.S.GIS.U (2017), with the tabulation of its value. In total, 125 blocks in sample B, and their perimeter ranged from the minimum value (about 84.66 metres) to the maximum (around 942.95 metres), where the median and average are 254.06, 287.91 metres, respectively. The high disparity between the greatest and lowest perimeter of the block also transpired in this case (Figure 5.23).

$$Block\ perimeter\ per\ case \mid B = \sum_{B=1}^{n} BP \rightarrow \sum_{B=1}^{125} 35988.27\ meter$$

Figure 5.22. Case study B: hybrid pattern presents 125 blocks settled in a spatial configuration of a 400-metre radius of the selected urban area. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

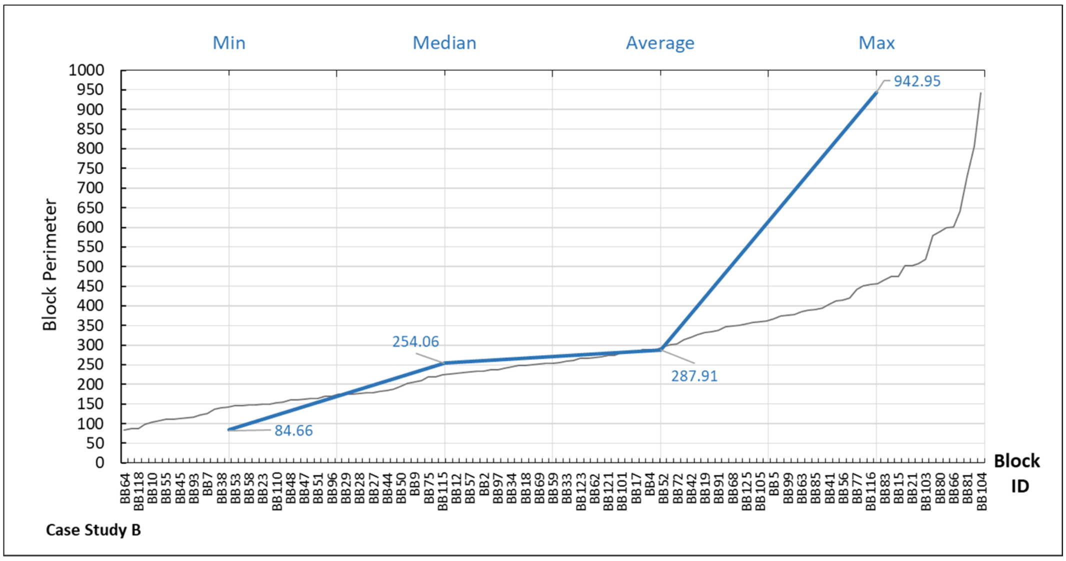


Figure 5.23. The graph displays the block perimeter values in case study B. There are 125 blocks in the selected urban area that exhibit a high diversity in the perimeter index through the lowest and greatest values (84.66 and 942.95 meters).

5.2.2.1.3 Case Study C: Paralleled Pattern

Case C differs from A and B. The block layout is more organised, and its interrelationship with the other adjacent blocks is paralleled, especially through a long edge. Mostly, the blocks reflect regular and rectangular shapes with an obvious four edges, excepting a few blocks. Notably, half of the selected area showed large blocks arranged to meet each other at the lengthiest edge, while it presented small blocks were also contiguous on the longest side (Figure 5.24).

In total, 49 blocks were counted within a 400-metre radius of the selected urban area. The value of the perimeter for the individual block was calculated and listed in a table. Figure 5.25 refers to the perimeter of the blocks across case D, besides the minimum, median, average, and maximum values. The smallest amount of perimeter is 144.57 metres, while the most significant value reached 1113.15 metres. The median and average values are 361.85 and 432.70 metres, respectively. These results are different from the previous two studies (A and B) in terms of the four statistical functions.

Figure 5.24. Case study C (paralleled pattern) illustrates 49 blocks arrayed in a parallel way opposite each other on the longest side. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

The total amount of block perimeter is:

$$Block\ perimeter\ per\ case\ |\ C = \sum_{B=1}^{n} BP \rightarrow \sum_{B=1}^{49} 21202.27\ meter$$

Like the earlier two samples, the value of the perimeter includes all blocks, even those that extend beyond the border of the case study.

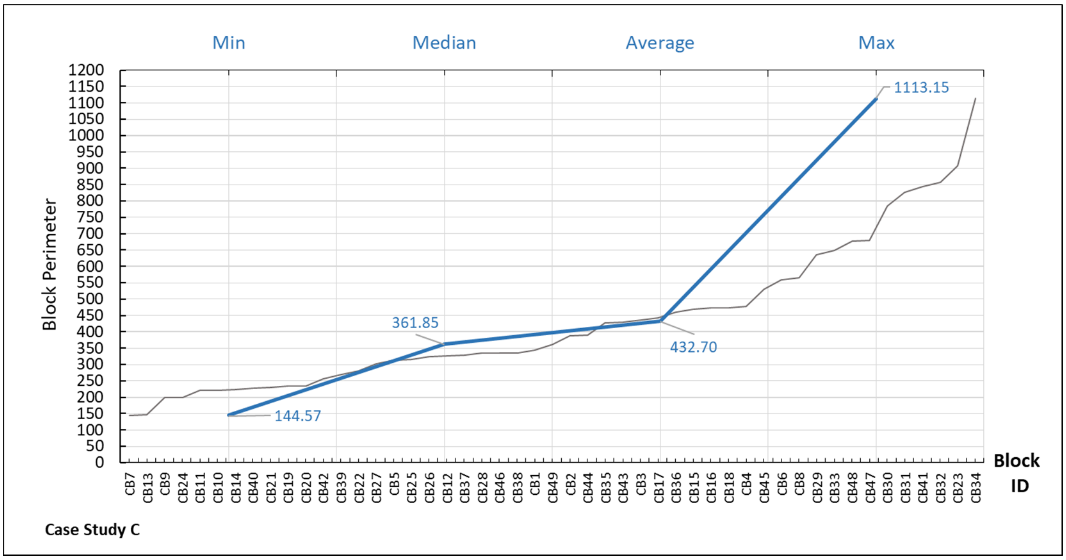


Figure 5.25. The chart shows the block perimeter values for case study C, where there are 49 blocks. Furthermore, the four statistical values, minimum, median, average, and maximum, illustrate the degree of differentiation between the lowest and highest perimeter value of the extracted blocks.

5.2.2.1.4 Case Study D: Loop-grid Pattern

The block in case study D adopts the rigorous orthogonal pattern. Also, the layout of the block reflects straight and regular edges to shape the street characteristics, which are similar for most streets in the selected area. The loop-grid system was employed to calculate the block position and its relationship to the other blocks. The set of blocks seem to be fragmented in comparison with cases A, B, and C. The different block orientation contributes significantly to the extent to which the street edge is to be continued or intermittent (Figure 5.26). In case study D, 55 blocks are classified according to their perimeter and sorted in a table. The graph in Figure 5.27 explains the value of the perimeter of the blocks over the sample D, besides the trendline of the four arithmetical standards of minimum, median, average, and maximum. Consequently, the greatest perimeter is about 791.49 metres as the highest block perimeter value among the 55 units. Meanwhile, the lowest perimeter is around 124.23 metres. The last two standards define the median value at 415.11 metres and the average at 414.93 metres of the total number of the blocks.

Figure 5.26. Case study D (loop-grid pattern). Showing 55 blocks organised in an orthogonal system, and their role in constituting the different characteristics of the street edge. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

The overall value of the perimeter for the case study D:

$$Block\ perimeter\ per\ case \mid D = \sum_{B=1}^{n} BP \rightarrow \sum_{B=1}^{55} 22821.32\ meter$$

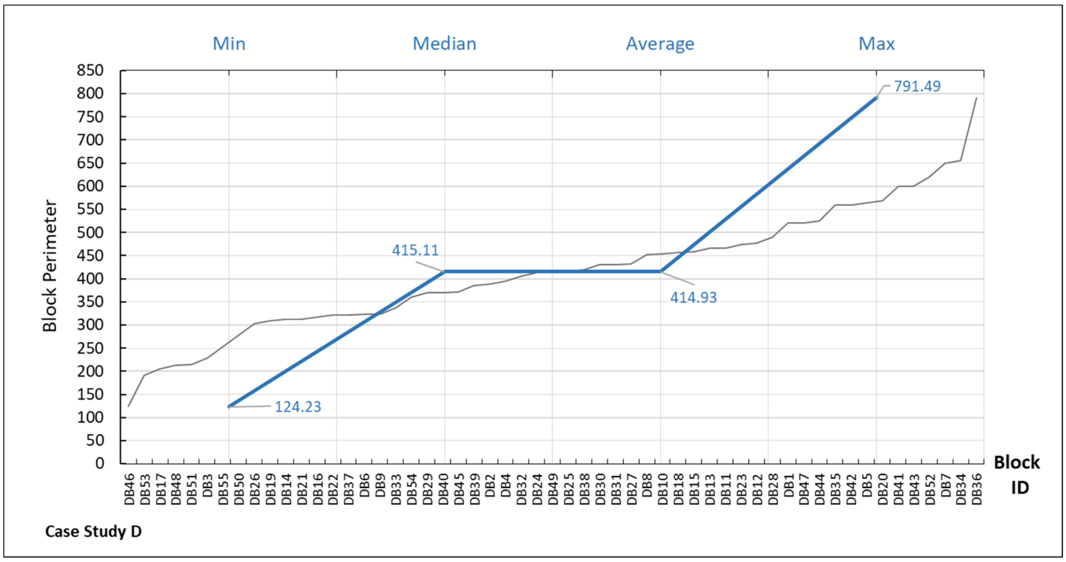


Figure 5.27. An arithmetical standard of the 55 blocks in case study D which explains the values of minimum, median, average, and the maximum of the perimeter of the block. It also displays the values of the blocks' perimeters.

5.2.2.2 Size

Block size deals with two dimensions rather than just the length of a block. This can be designated by the width and length, the area, or the perimeter Bentley et al. (1985), Dill (2004), Hess et al. (1999) and Kim (2007). According to Dill (2004), this measure can be more flexible than the block length, as different lengths and widths can represent a similar area. Therefore, priority should give to both areas of the block and its two dimensions (Dill 2004). This quantity affects the degree of permeability and porosity between blocks. Reilly et al. (2003) refer to the block size in terms of the larger block sizes, which leads to minimised land use and activity. For this reason, it is common to see small block sizes in older cities, large in communities, and huge at the urban edge (Reilly et al. 2003). (Figure 5.28).

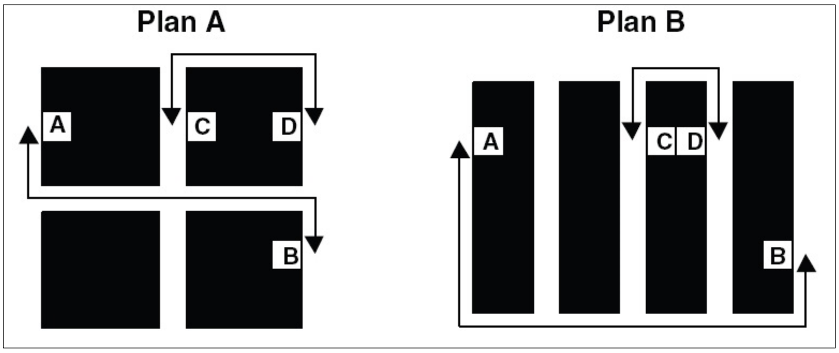


Figure 5.28. Under Plan A, each block face is the same length. In Plan B, the same four blocks are half as wide, but twice as long. The perimeters and areas of the blocks are the same in each plan. The walking distance between points A and B are shown. Located on opposite sides of the development, Plan A is shorter than Plan B. However, when the two points are located on the same block, near one end, the distance for Plan B is shorter, Dill (2004, p 3).

The size of a block is computed for all the four-selected urban areas and organised in a table (Appendix Three). The formula to calculate the block size per case study is:

$$Block\ size\ per\ case = \sum_{B=1}^{n} BS$$

Where *BS* is block size, *n* is number of blocks per selected area.

The block size includes all blocks, whether they are located completely inside the boundary of the sample or continued after the border. This procedure is adopted because the number of blocks classified as open areas (parks, green spaces, parking, squares or undeveloped land) are finite compared with the total blocks per case. Furthermore, this consideration will be addressed for the street analysis, such as street area, and the block examination of the density, mean area, and block to street ratio with other related info. The block size is examined in detail for each single case separately, and then compared among the four samples.

5.2.2.2.1 Case Study A: Organic Pattern

Case study A is evidence of the high variability in the block size. The block emerged spontaneously as a result of the accumulated set of the organic and irregular layout of plots. There are 138 blocks, and their size is calculated and listed in a table. The overall value of the block size of sample A is:

$$Block\ size\ per\ case \mid A = \sum_{B=1}^{n} BS \rightarrow \sum_{B=1}^{138} 444757.98\ m^2$$

The total value of the block size in this sample is 444757.98 m2, and the quantity of area for each block is exhibited in the graph, besides the statistical standards. In Figure 5.29 the differentiation between the greatest and lowest size is a significant value where they get 25326.18 m2 and 199.59 m2 respectively. The distinction between two these values: minimum and maximum is an indicator of the degree variety in block size in the oldest part of Baghdad. The other quantity is median that attains 2562.43 m2 and average which gets 3222.88 m2.

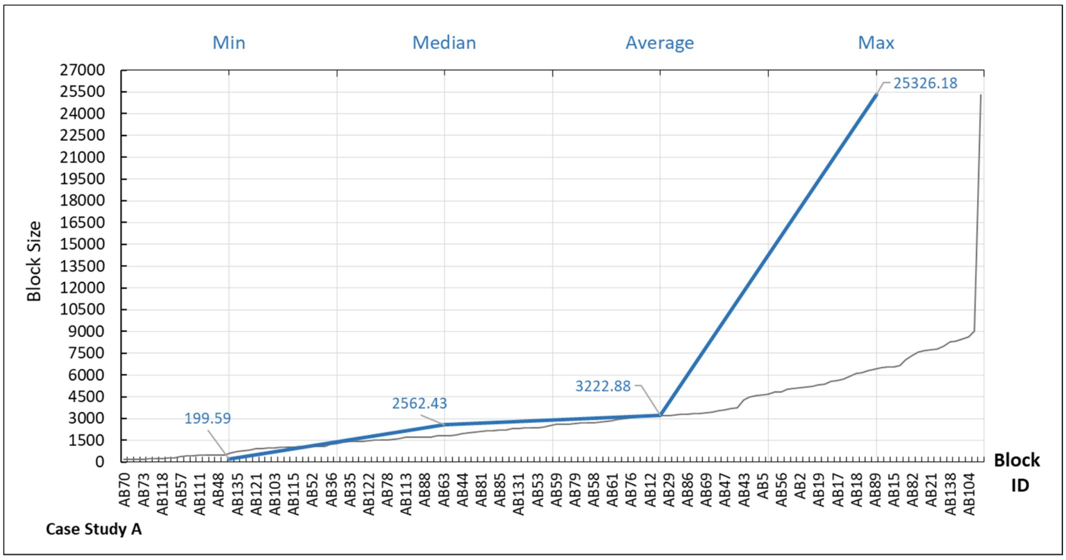


Figure 5.29. The value of the block size for case study A (organic pattern), as well as the primary arithmetical standards: minimum, median, average, and maximum. The differentiation between the highest and lowest value is an index on the degree of variety in block size for sample A.

5.2.2.2.2 Case Study B: Hybrid Pattern

The block size in sample B, like case study A, is wide-ranging as such there is a different configuration of blocks that some of them belong to the traditional part, whereas the remaining area can be classified in multiple patterns as mentioned earlier. In this example, all blocks 125 whether inside the boundary or these are intersected with it are counted, and their size is counted and inserted in a table. The total result of size is:

$$Block\ size\ per\ case \mid B = \sum_{B=1}^{n} BS \ \rightarrow \sum_{B=1}^{125} 404789.00\, m^2$$

In Figure 5.30, the trendline refers to the size of a block and the statistical line states the four values: minimum, median, average, and maximum. The different quantity between the smallest and greatest is enormous, where the values are 379.71 m^2 and 22788.34 m^2 respectively. The values of the median and average are 2374.46 m^2, 3238.31 m^2.

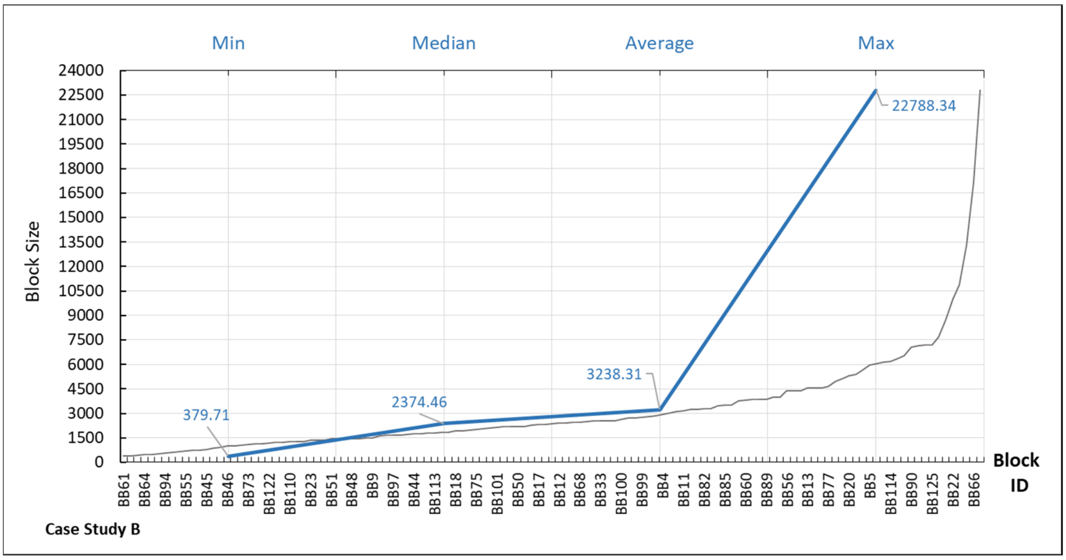


Figure 5.30. Case study B (hybrid pattern). The chart illustrates the value of the block size and the minimum, median, average, and maximum values. The high disparity between the lowest and highest size of the block is interesting.

5.2.2.2.3 Case Study C: Paralleled Pattern

The third case study is C; its blocks' size is more orderly and organised than samples A and B. The number of blocks in this instance is 49, including open and green areas, such as the other cases in this research. It represents the lowest number of blocks among the three cases, besides the different size of blocks. The overall of blocks' size in sample C is:

$$Block\ size\ per\ case \mid C = \sum_{B=1}^{n} BS \ \rightarrow \sum_{B=1}^{49} 444017.18\, m^2$$

The chart in Figure 5.31 displays the value of blocks across the case C and the four primary numerical quantities; the minimum is around 1227.05 m^2, the median is 6131.15 m^2, the average is 9061.58 m^2, and the maximum is about 40426.03 m^2. A significant gap between highest and lowest values provides a comparison with many blocks for both cases A and B that consist of 138 and 125 blocks, respectively.

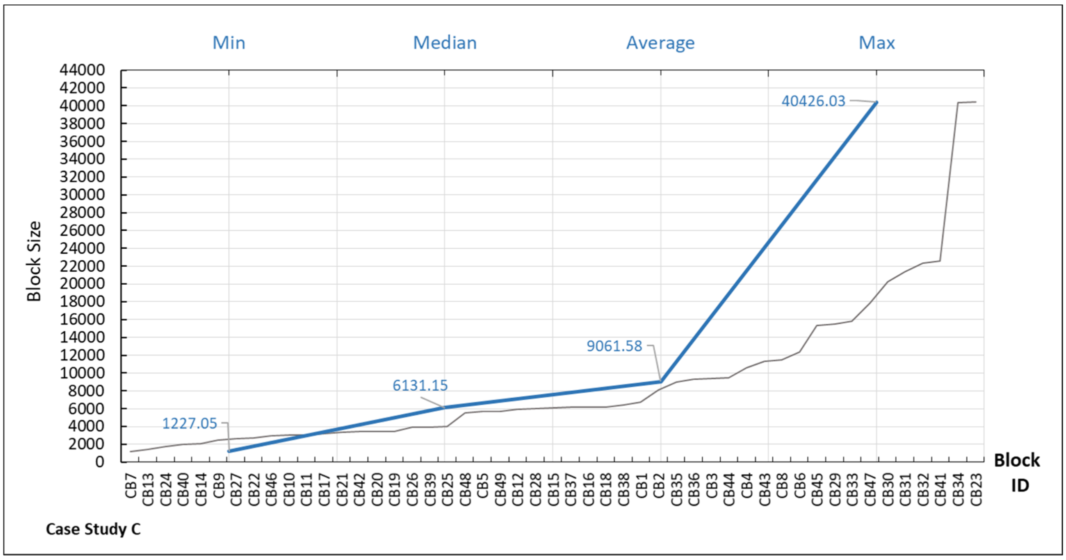


Figure 5.31. The values of the blocks' sizes in case study C (paralleled pattern) including the four primary numerical quantities; minimum, median, average, and maximum.

5.2.2.2.4 Case Study D: Loop-grid Pattern

The blocks are obvious and easy to track and count as they have the apparent edges. In total, 55 blocks are arranged in a perpendicular pattern. They also exhibit high variability in terms of their size even though they were designed and implemented according to the planned order. To account for the value of the overall size:

$$Block\ size\ per\ case\mid D=\sum_{B=1}^{n} BS\ \rightarrow \sum_{B=1}^{55} 424050.86\ m^2$$

The minimum block size is 688.47 m^2, while the maximum is 17466.05 m^2. Like the three cases above, the disparity value between the greatest and lowest value is also notable. The median and average standards are 7800.00 m^2 and 7710.02 m^2 respectively (Figure 5.32).

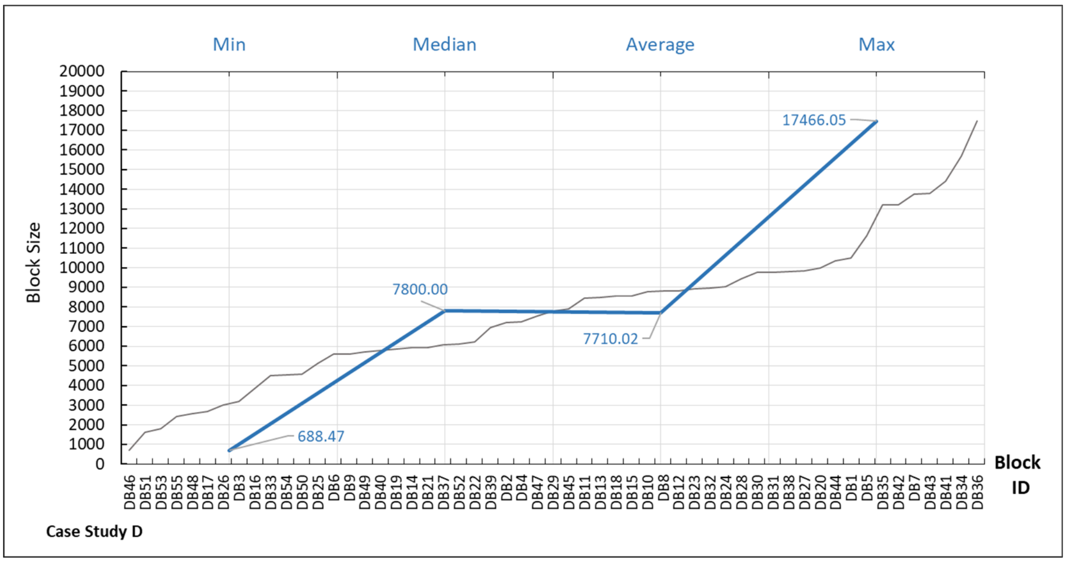


Figure 5.32. Case study D (loop-grid pattern): its block sizes as well as the four statistical standards (minimum, median, average, and maximum).

5.2.2.3 Dimension

Block length is an indicator to measure connectivity. It differs between areas according to, for example, the type of street network and urban fabric. The indicator was addressed by a considerable number of scholars Cervero et al. (1996), Cervero et al. (1997), Dill (2004) and Kim (2007). A block ranges from 300 to 600 feet (91.44 to 182.88) metres (Dill 2004); residential units per 100 metre (López 2003), 20 shops per 100 metres (Gehl 2010a), and short block (Jacobs 1961). The main goal is that shorter blocks lead to more intersections to give shorter travel distances and a greater number of links between the nodes, locations, and areas. The dimension of the block means not only the lengthiest edge of a block, but also the number of edges per block. This is evident in the oldest part of Baghdad, in case A and partially within case B. The decreasing number of edges is obvious in the other selected cases C and D, and moderately within case B. Meanwhile, in case A the blocks often emerge as a result of the set of plots that settled spontaneously with irregular edges. The degree of variation in the block edges, and their extent helps to determine the disparity between the number of edges per block and their values.

5.2.2.3.1 Case Study A: Organic Pattern

In case study A, the number of edges per block ranged from 3 – 15. The blocks that have just three sides are these confined between the riverbank and the boundary of the case study, and these totals only two blocks comprising 1.45%. The high number of blocks which consist of four edges is 37 blocks comprising 26.81% of the total number of blocks (138). Five-edges encompasses 20 blocks, at 14.49 per cent, whilst another high number of block margins is six, which covers 19 blocks at about 13.77%. Moreover, 11 blocks have a border with five edges which represents 7.97%. The remaining blocks are; 7 edges: 7 blocks, 5.07%; 8 edges: 9 blocks, 6.52%; 9 edges: 9 blocks 6.52%; 10 edges: 5 blocks, 3.62%; 11 edges: 8 blocks, 5.80%; 12 edges: 1 block, 0.72%; 13 edges: 3 blocks, 2.17%; and 14 edges: 7 blocks, 5.07% (Figure 5.33). Highlighting the primary statistical standards, such as the minimum, average and maximum, is essential to understand the differentiation across these 1112 edges of case A. In this regard, the shortest length is 2.81 meters, whilst the longest side is about 267.81 meters, and the average length is 35.01 meters (Table 5.1). Case study A shows not only the high number of the edges per block but also that the length of these sides is varied from one block to another.

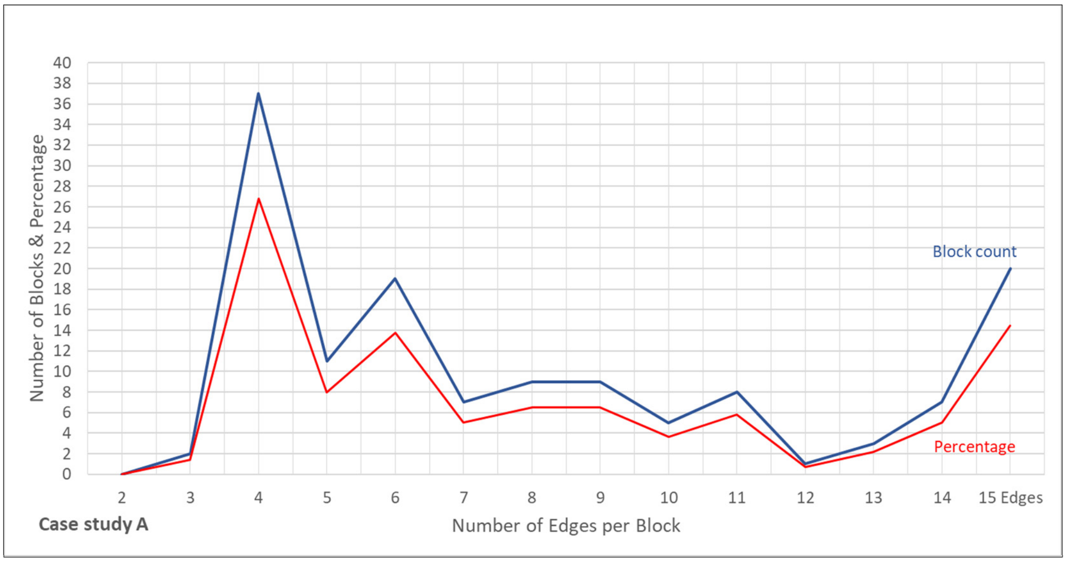


Figure 5.33. A graph illustrates the number of edges per block classified by 14 categories (2 - 15 sides), and the number of blocks for each category with their percentages.

Table 5.1. Case study A (organic pattern). The number of edges per block classified by 14 categories (2 - 15 sides), and the number of blocks for each category with their percentages. Also including the arithmetical values for the minimum, average, and maximum.

	Total number of edges	Number of edges per block	Number of blocks	Percentage %
Case A	0	2	0	0.00
	6	3	2	1.45
	148	4	37	26.81
	55	5	11	7.97
	114	6	19	13.77
	49	7	7	5.07
	72	8	9	6.52
	81	9	9	6.52
	50	10	5	3.62
	88	11	8	5.80
	12	12	1	0.72
	39	13	3	2.17
	98	14	7	5.07
	300	15	20	14.49
Overall	1112		138	100.00

Statistical standards for the length of block's edge		
Minimum	Average	Maximum
2.81 meters	35.01 meters	267.81 meters

5.2.2.3.2 Case Study B: Hybrid Pattern

The hybrid sample includes 125 blocks where some belong to the traditional part of the selected urban area. The number of edges per block is varied and listed from two to fifteen sides. The block with two edges is confined between the riverbank and the border of the case study; otherwise, the lowest number of block edges is three. In this case, the 4-edges covers 43 blocks at 34.4%, whilst both 5-edges and 15-edges total 16 blocks comprising 12.8% of the total number of blocks (125). The third per cent is 11.2% for 7-edges for 14 blocks in this selected area. With 6-edges, there are seven blocks, and their per cent is 5.6%, while with 4.8% and 10-edges, there are six blocks each. The lowest percentage among these groupings is 2.4% with just three blocks for each category: 3-edges, 9-edges, 11-edges, and 12-edges (Figure 5.34). There are 125 blocks, and the total number of their edges is 904. The shortest border is about 2.38 metres, while the longest is around 484.69 metres, whilst 40.37 metres is the average of the length of 904 borders (Table 5.2).

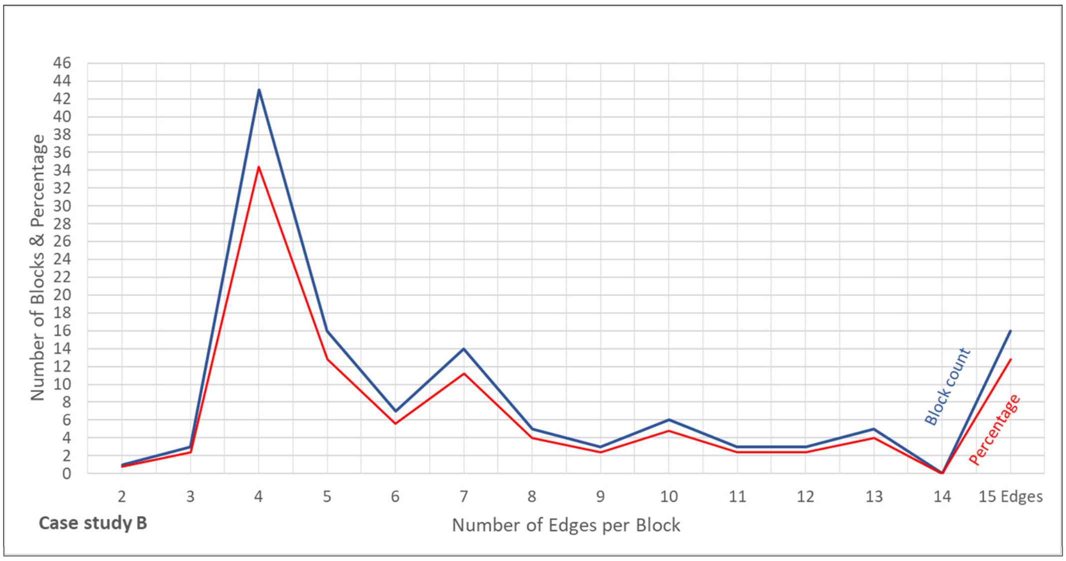


Figure 5.34. The number of edges per block defined by 14 categories (2 - 15 sides) and the number of blocks for each category beside their percentages.

Table 5.2. Case study B - hybrid pattern. The number of edges per block classified by 14 categories (2 - 15 sides), and the number of blocks for each category with their percentages. Also, the arithmetic standards: minimum, average, and maximum.

	Total number of edges	Number of edges per block	Number of blocks	Percentage %
Case B	2	2	1	0.80
	9	3	3	2.40
	172	4	43	34.40
	80	5	16	12.80
	42	6	7	5.60
	98	7	14	11.20
	40	8	5	4.00
	27	9	3	2.40
	60	10	6	4.80
	33	11	3	2.40
	36	12	3	2.40
	65	13	5	4.00
	0	14	0	0.00
	240	15	16	12.80
Overall	904		125	100.00

Statistical standards for the length of block's edge		
Minimum	Average	Maximum
2.38 meters	40.37 meters	484.69 meters

5.2.2.3.3 Case Study C: Paralleled Pattern

Sample C represents only 49 blocks, including open and green areas. The classification, which is based on the number of edges per block, is quite restricted between 2 and 8 sides. The 2-sided block comes from the boundary of the selected area the juxtaposition of the open space. The most significant percentage of the number of borders per block is the 4-edge blocks at about 75.51% with 37 blocks. The lowest per cent is 2.04% for only two blocks, which includes two categories: 2-edges and 7-edges. The 6-edges in this sample represents only 4.08% of two blocks. The percentage of 6.12% covers three blocks that consist of three edges. The second highest value is about 8.16%; this comprises four blocks that involve 5-edges (Figure 5.35). The statistical values of the minimum, average and maximum of the length are 10.01 metres, 101.45 metres, and 373.90 metres, respectively, to represent 209 edges as the total number of edges (Table 5.3). In this sample, the blocks that involve more than 4-edges are limited, only two blocks have 6-edges, one block has 7-edges, and one block includes 11 edges.

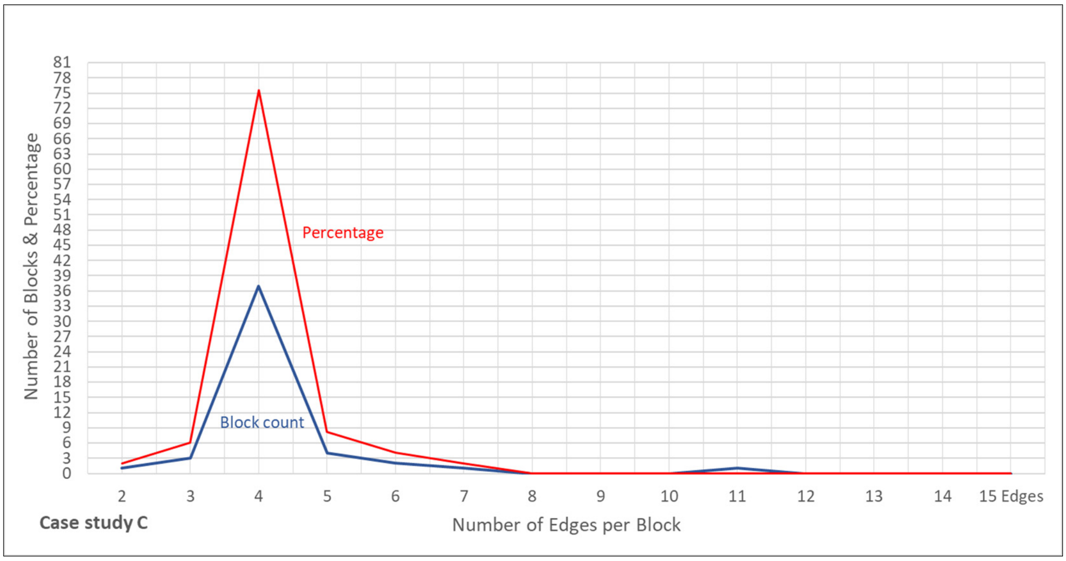


Figure 5.35. The number of edges per block defined by 14 categories (2 - 15 sides), and the number of blocks includes a percentage for each category.

Table 5.3. Case study C (hybrid pattern). The number of edges per block classified by 14 categories (2 - 15 sides), and the number of blocks for each category with their percentages. In addition, the arithmetic standards: minimum, average, and maximum.

	Total number of edges	Number of edges per block	Number of blocks	Percentage %
Case C	2	2	1	2.04
	9	3	3	6.12
	148	4	37	75.51
	20	5	4	8.16
	12	6	2	4.08
	7	7	1	2.04
	0	8	0	0.00
	0	9	0	0.00
	0	10	0	0.00
	11	11	1	0.00
	0	12	0	0.00
	0	13	0	0.00
	0	14	0	0.00
	0	15	0	0.00
Overall	209		49	97.96

Statistical standards for the length of block's edge		
Minimum	Average	Maximum
10.01 meters	101.45 meters	373.90 meters

5.2.2.3.4 Case Study D: Loop-grid Pattern

In this sample, 55 blocks, including open and green areas, constitute a small proportion of the total number of blocks. The blocks that exceed four edges were fewer. The four-edges-based block has a high percentage at 74.55% with 41 blocks out of 55. The second most prevalent is six edges comprising about 16.36%, and its blocks total 9. Five edges per block cover only 3.64% and two blocks, while the lowest percentage is 1.82% for each: 3-edges, 7-edges, and 8-edges and one block per category (Table 5.4). The amount of edges is 246; these are classified according to a minimum, average and maximum. The shortest length is 14.95 metres, while the longest is 275.00 metres, and the average is 92.70 metres (Figure 5.36). Case study D represents the newest sample among the four cases, and its planning follows the plot-block system to generate the block and street pattern.

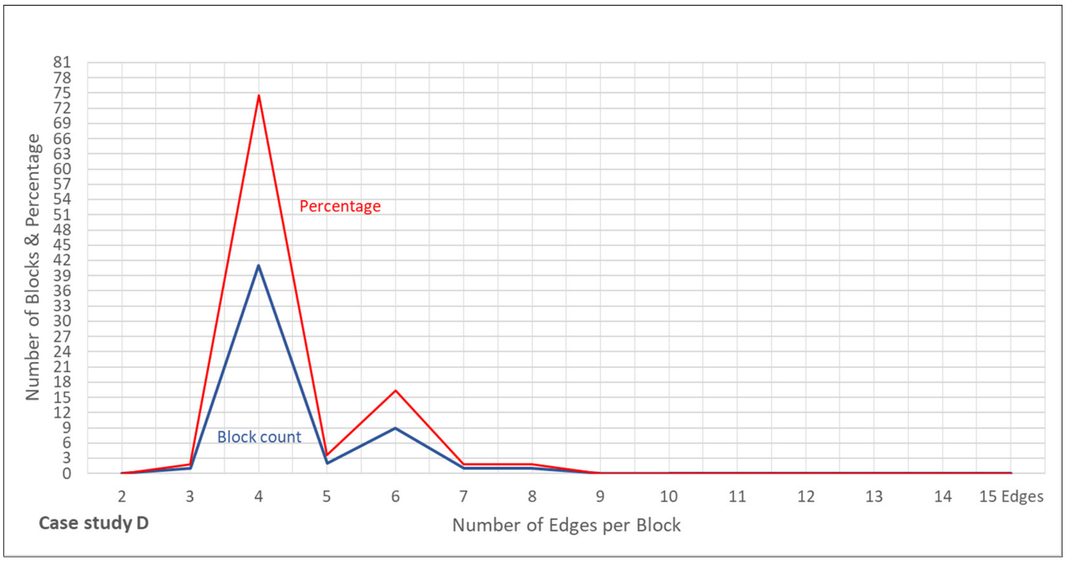


Figure 5.36. The number of edges per block defined by 14 categories (2 - 15 sides), and the number of blocks for each category beside their percentages.

Table 5.4. Case study D: loop-grid pattern. The number of edges per block classified by 14 categories (2 - 15 sides), and the number of blocks for each category with their percentages besides the minimum, average, and maximum statistical values.

	Total number of edges	Number of edges per block	Number of blocks	Percentage %
Case D	0	2	0	0.00
	3	3	1	1.82
	164	4	41	74.55
	10	5	2	3.64
	54	6	9	16.36
	7	7	1	1.82
	8	8	1	1.82
	0	9	0	0.00
	0	10	0	0.00
	0	11	0	0.00
	0	12	0	0.00
	0	13	0	0.00
	0	14	0	0.00
	0	15	0	0.00
Overall	246		55	100.00

Statistical standards for the length of block's edge		
Minimum	Average	Maximum
14.95 meters	92.70 meters	275.00 meters

5.2.2.4 Density, Area and Mean Area

Block density is an indicator to measure the ability of a street network to be connected and permeable. It determines the relationship between the total area of blocks excluding streets, squares, parks, and rivers and the entire area of land (or selected area) (Cervero et al. 1996); (Dill 2004). Block density can be measured by the mean number of blocks per square area (Frank et al. (2000). The density of a block can be represented as:

$$BD = B_{total}\ per\ A_{total}$$

Where BD is block density, B_{total} is the number of blocks in the case study, A_{total} is the total area of the case itself. It is a simple equation to illustrate the density of blocks in a certain area. The total number of blocks per case study is shown in Table 5.5. A block at this stage represents the covered and developed land and is designated by the boundary of the case study, meaning that the extended part of the block outside the border is ignored to calculate the real area of the selected street per sample and other related analysis.

Table 5.5. The block density per selected sample for each case study: A, B, C, and D. The block area (Total) includes all blocks regardless of their use, while the block area (Net) excludes the park, squares, parking, street, and river that are located within a real block.

Case ID	Number of Blocks (Total)	Number of Blocks (Net)	Case Study Area m^2	Block Density
Case A	138	136	502654.82	136 per 502654.82
Case B	125	116	502654.82	116 per 502654.82
Case C	49	45	502654.82	45 per 502654.82
Case D	55	47	502654.82	47 per 502654.82

The number of blocks includes all blocks that are covered by the boundary of the case study and those that intersect and expand beyond the border; this criterion is applied for all the chosen samples. Evidentially, case study A has a high density as its blocks numbered 138 Total/136 Net; case B is second most dense with 125 Total/116 Net blocks in a hybrid pattern. The lowest density is 49 Total/45 Net blocks, shown in case C and defined as a paralleled pattern, while the third most dense is 55 Total/47 Net blocks, which are located in case study D (the loop-grid pattern) (Table 5.5 and Figure 5.37).

Regarding the block's area for each case, in sample A the number of open spaces is limited, and no block can be recognised as an open area. Instead, often the open area or parking was confined within a block. Moreover, the most open or green space is located within a block rather than to a block itself, particularly in cases A and B.

$$BA = A_{block}\ per\ A_{total}$$

Where BA is block area, A_{block} is the total area of block (excepting: park, squares, river, parking, street and undeveloped land) and A_{total} is the total area of the case itself.

Two types of block area are used in this study; block area (All: regardless of the land use), block area (Covered: structured and built block). The largest area among the four samples is case A (All: 444757.98 m^2) and then in descending order for case C (All: 444017.18 m^2), case B (All: 404789.00 m^2), and D (All: 424050.86 m^2). Regarding the covered area by blocks, sample A has the greatest quantity of covered block at 422636.39 m^2 and then labelled in descending order, cases C, B, and D whose covered areas are 394608.89 m^2, 386439.15 m^2, and 384971.46 m^2 respectively. The lowest value is sample D.

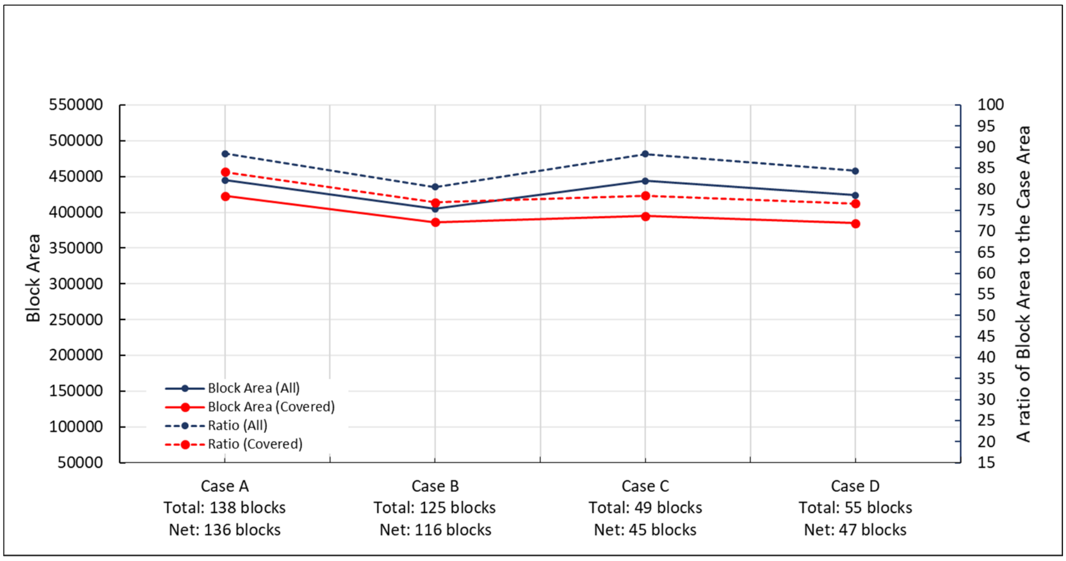


Figure 5.37. The block area (All and Covered) for each selected case besides the ratio of the block area to the case area.

In addition, the ratio of the blocks' areas (All and Covered) to the area of the case study is counted. Once more, sample A has the highest value at about 88.48% of 502654.82 m^2 for the All-block area, while case B has the lowest ratio by 80.53%. Both samples C and D attain 88.33% and 84.36% where case C represents the second most significant ratio. By using a covered block area, the trendline of the ratio takes the same sequence as the all block area. Case A reaches the highest rate at 84.08%, whereas sample D takes the lowest at about 76.59%. The other two cases B and C get 76.88% and 78.50%, respectively, as sample C is the second largest ratio (Figure 5.37 and Table 5.6).

Table 5.6. The block area (All and Covered), and the ratio of the block area to the area of the case study.

Case ID	Case Study Area m^2	Block Area m^2 (All)	Block Area m^2 (Covered)	Block area (All) to Case area Ratio	Block area (Covered) to Case area Ratio
Case A	502654.82	444757.98	422636.39	88.48	84.08
Case B	502654.82	404789.00	386439.15	80.53	76.88
Case C	502654.82	444017.18	394608.89	88.33	78.50
Case D	502654.82	424050.86	384971.46	84.36	76.59

The mean block area refers to the total area of blocks divided by the number of the same blocks in the selected case study:

$$BA_{mean} = A_{block}/B_{total}$$

Where BA_{mean} is the mean block area, A_{block} is the total area of blocks (Covered: structured and built), and B_{total} is the number of blocks included in the sample.

A number of scholars have studied the relationship between pedestrian flow and the mean block area, including Hess et al. (1999). Reilly et al. (2003) in their study on the influence of the built-form and land use on mode choice, concluded that both the block size and mean block area are less in the oldest cities, but greater amongst communities and the urban edge. Furthermore, the block density is greater in traditional compared with modern neighbourhoods. Block density and block area, also are employed by other scholars, such as Cervero et al. (1996), Frank et al. (2000) and Song (2003).

In this study, the mean block area among the four samples is varied between two groups (A: organic, and B: hybrid) and (C: paralleled, and D: loop-grid pattern). The highest value of BA_{mean} occurs in case C at 8769.09 m^2, while the lowest occur in case B at about 3049.42 m^2. Case D has the second greatest value at 8190.88 m^2, and sample A has the third mean block are, at 3107.62 m^2 (Table 5.7 and Figure 5.38).

Table 5.7. The mean block area, which derives from the total area of blocks (Covered: structured and built) and divided by the number of blocks.

Case study ID	Block Area (Covered)	Number of Blocks (Net)	Mean Block Area
Case A	422636.39	136	3107.62
Case B	386439.15	116	3331.37
Case C	394608.89	45	8769.09
Case D	384971.46	47	8190.88

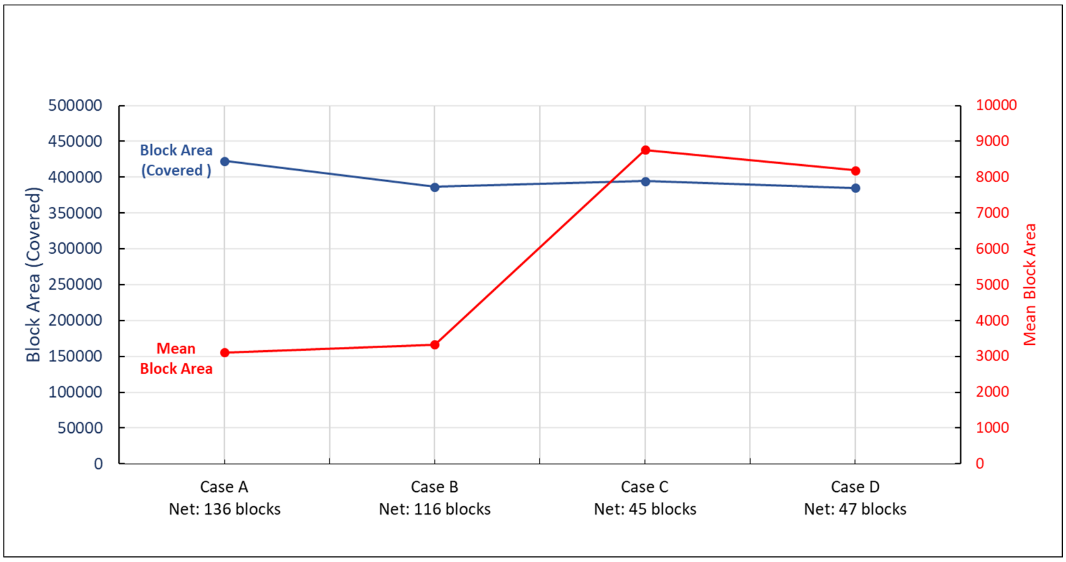


Figure 5.38. The differentiation in quantity for the mean block area of the four samples (A - organic; B - hybrid; C - paralleled, and D - loop-grid pattern). In addition, the total block area (Covered: structured and built), and the number of blocks per case study.

The number of blocks and their size play a significant role in determining the mean block area. The oldest area that is represented by sample A shows the second lowest mean block area value as it consists of 136 blocks that cover an area of about 363862.84 m^2. This is then followed by case B which also has a low mean at BA_{mean}: 3049.42 m^2; its block number is 116 and the block area is 353732.16 m^2. Both samples belong to the traditional area of Baghdad; this is due to the high density of blocks and narrow street network, especially in case A. Both cases C and D have the highest mean block area value where the number of the blocks decreases, and the size of the block extends. They signify the modern plot-block system and planned street network; their values are BA_{mean}: C is 8769.09 m^2 and D is 8190.88 m^2.

5.2.2.5 Block to Street Ratio

The block street ratio is an indicator that measures the ratio between the area of blocks in the selected sample and the area of streets; both are fundamental constituents of the urban context (Porta et al. 2010a). The indicator applies where streets bound the blocks within a developed area. Thus, the greater the ratio, the smaller the connectivity and vice versa. The indicator integrates with other variables of connectivity in order to raise the value of the relationship between the network system and the blocks (Remali 2014).

The equation of the block street ratio can be formulated as:

$$BSR = A_{block}/A_{street}$$

Where *BSR* is block street ratio, A_{block} is the total area of all land developed in blocks, and A_{street} is the overall area of the land that occupies streets and squares. To calculate the street area, the following formula is used:

$$A_{street} = A_{case} - A_{block}$$

Where A_{street} is street area (including squares and parking) and A_{case} is the area of the case study, which, in this regard is 502654.82 m^2 for each sample.

Connectivity is based on a block to street ratio and illustrates the amount of block area within a street area in a defined urban space. The connectivity measure also relates to the street pattern, particularly regarding the links and nodes, or the length of the street. In case study A, the blocks' area (trimmed: excludes open lands, parking and squares) is 365134.00 m^2 (Figure 5.39). For the area of case study A, that is 502654.82 m^2 and the block area is 365134.00 m^2. The area of the street (Net) is 120913.10 m^2, and 126426.96 m^2 (including parking and squares). Therefore, the block to street ratio is 2.89.

Figure 5.39. The block size to the street network area in case study A (organic pattern) that is surrounded by a circular boundary with a 400 metre radius. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

In sample B, the area of the selected zone is 502654.82 m2 and the total block area is 354054.33 m2 (trimmed: excludes open lands, parking and squares), while the street area is 131707.70 m2 and 133164.76 m2 (including parking and squares). From the preceding values, the block to the street ratio in this sample is about 2.66 (Figure 5.40).

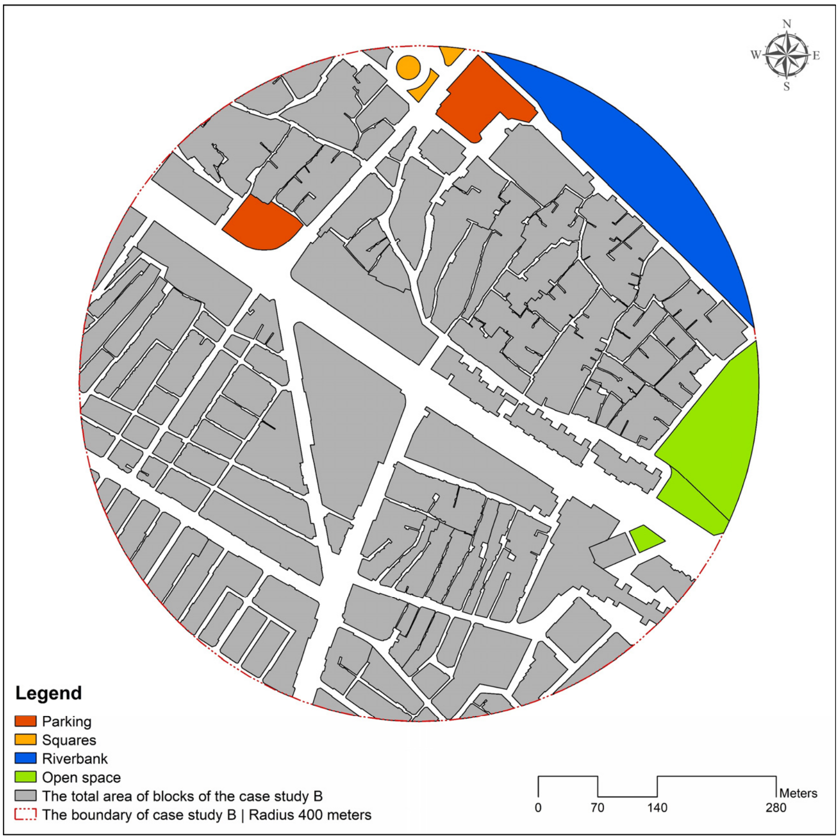


Figure 5.40. The ratio between the block area and the street network in case study B (Hybrid pattern) within the selected urban area (400-metre radius_. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

For case study C, the block to street area ratio reaches 2.78, whereas the street area is 119799.89 m^2, and block area is about 333446.64 m^2 (trimmed: excludes open lands, parking and squares) (Figure 5.41). For the last sample (D), the total block area is 274325.25 m^2 (trimmed: excludes open lands, parking and squares), and the street area is 189250.17 m^2. Therefore, the block to the street ratio in case D is around 1.45 (Figure 5.42). Across the four samples (A, B, C, and D), the differences are obvious in terms of the number of blocks, their areas and their street areas. The disparity of ratio (A_{block} / A_{street}) occurred to a significant degree among the four samples.

Figure 5.41. Proportion the block area to the street space within sample C (paralleled pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

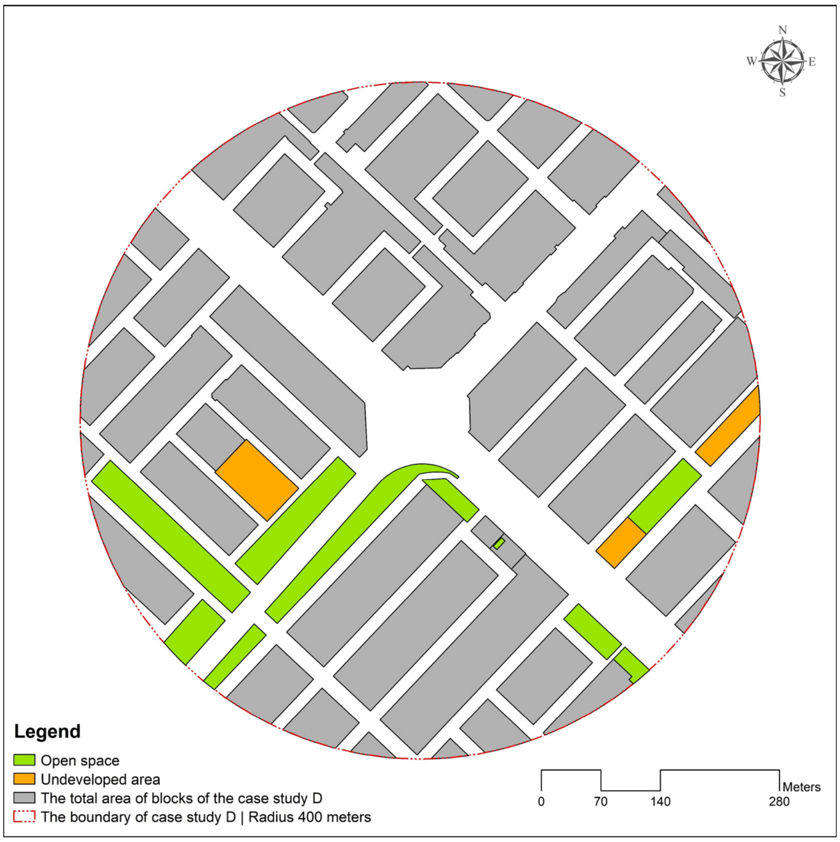


Figure 5.42. The blocks size to the street network area in case study D (loop-grid pattern) surrounded by the circular boundary with a 400 metre radius. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

There is a need to distinguish between different block area terms. Table 5.8 displays three types of block size that are used in this research: overall block area, covered block area, and block area without parking and squares. Also, the street area can be classified according to the pure street area or included parking and squares. A significant difference occurred throughout the four selected cases. Regarding block area (trimmed: excluding open lands, parking and squares), case study A has the highest quantity of the blocks' area at about 365134.00 m^2, while sample D has the lowest value with only 274325.25 m^2. The second largest quantity is case B at around 354054.33 m^2 and this is followed by sample C that covers 333446.64 m^2 (Figure 5.43).

Table 5.8. The blocks' area and street area, besides the block to street ratio. Block area (All) includes all continued blocks after the boundary. Block area (Trimmed) excludes the extended parts of blocks beyond the border of the case study.

Case study ID	Case study area	Block area (All)	Block area (Trimmed)	Blocks area trimmed excluding open lands and (parking & squares)	Street area (Net)	Street area including (parking & squares)	Block to street ratio
Case A	502654.82	444757.98	381741.73	365134.00	120913.10	126426.96	2.89
Case B	502654.82	404789.00	370947.12	354054.33	131707.70	133164.76	2.66
Case C	502654.82	444017.18	382854.93	333446.64	119799.89	119799.89	2.78
Case D	502654.82	424050.86	313404.65	274325.25	189250.17	189250.17	1.45

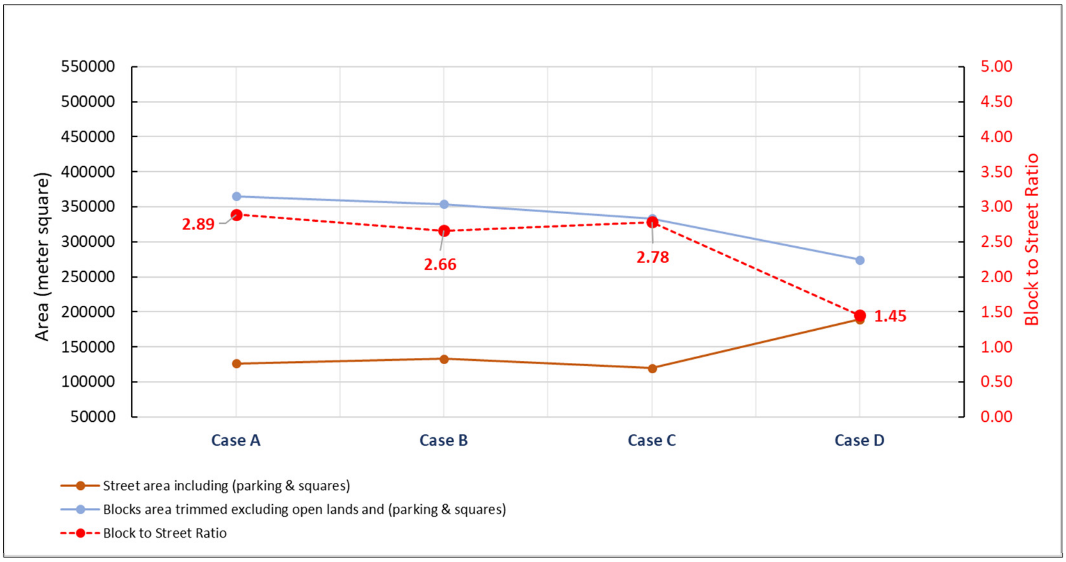


Figure 5.43. A chart illustrates a significant variation among the four samples A, B, C and D regarding the blocks area trimmed, excluding open lands and (parking & squares), street area including (parking & squares), and the block to street ratio.

In terms of the block area (extended: excludes open lands, parking and squares), case study A covers the maximum area of blocks at about 422636.39 m^2, whereas sample D has the minimum area at 384971.46 m^2. The block area of case C is ranked second at 394608.89 m^2 followed by sample B at 386439.15 m^2. The block area (trimmed: includes open lands, parking and squares) within case C reaches the highest value at around 382854.93 m^2, while sample A is 381741.73 m^2 and the remaining cases B and D are 370947.12 m^2 and 313404.65 m^2 respectively (Table 5.8). There are two considerations about the street area: the first is the street area (Net); it represents the area of the network apart from the squares and parking. The second deals with the parking and squares as part of the network system. Case study A covers the lowest amount of street area (Net) at about 120913.10 m^2, and maximum value occurs within case D at 189250.17 m^2. The second value is around 131707.70 m^2 for sample B, with 119799.89 m^2 for case C. By counting the parking and squares, the street area result became the lowest in case C, reaching 119799.89 m^2, while the highest value is for sample D at 189250.17 m^2. For cases A and B, their street area is 126426.96 m^2 and 133164.76 m^2 respectively (Table 5.8).

In these selected areas, A, B, C, and D, the ratio is varied. The lowest connectivity can be identified in sample A, where its block to street ratio is 2.89, while the greatest connectivity occurs in case D with a value of 1.45. Sample C had the second lowest connectivity at 2.78, whereas the second highest connectivity at 2.66 was case B. The difference between the two types of block size is recognised: (1) when the block continues beyond the boundary of the case study, and (2) where the extended part of the block is ignored. The former is used to extract the block size as an indicator to disclose the degree of disparity among the four samples, while the second derives the street area and block to the street ratio (Figure 5.44).

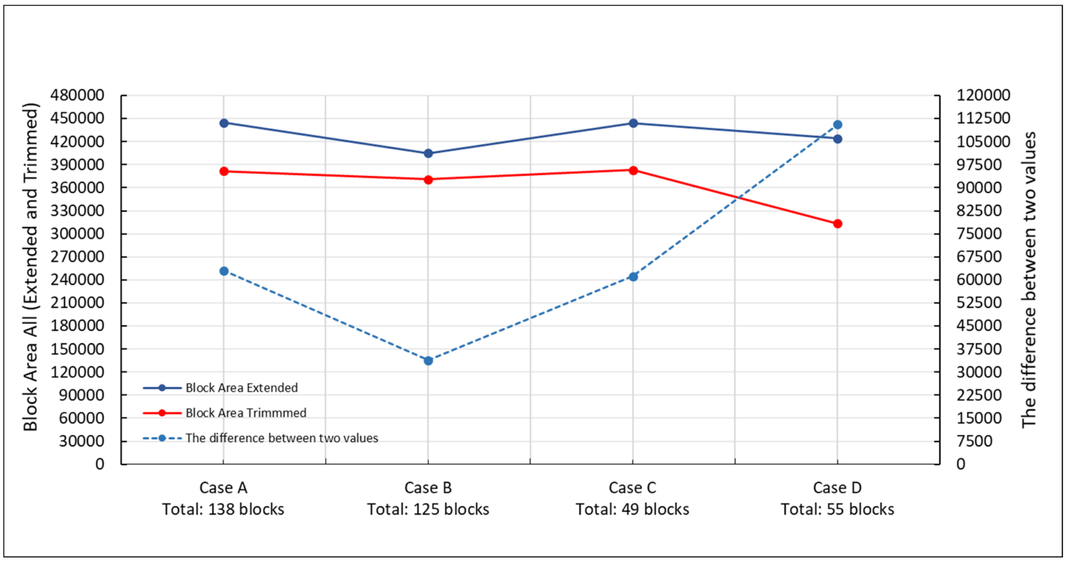


Figure 5.44. The two types of block area (size): First, the area includes the extended blocks beyond the boundary of the case study. Second, the area excludes the continued parts of blocks beyond the border. This also includes the difference (as a value) between them.

5.2.3 Street

The street includes nine variables that are tested in the four selected areas, namely: intersection density (*ID*), street density (*SD*), link-node ratio (*LNR*), internal node connectivity (*INC*), external point connectivity (*EPC*), grid pattern ratio (*GPR*), pedestrian route directness (*PRD*), and ped-shed (*PS*) and effective walking area (*EWA*).

5.2.3.1 Intersection Density | I_d

The intersection density is an indicator to measure the number of intersections per unit of a selected area. It refers to both permeability and connectivity. A higher number of intersections suggests higher permeability and connectivity Cervero et al. (1996), Dill (2004), Kim (2007) Reilly et al. (2003) and Remali (2014). Block sizes are inversely associated with the intersection density. The higher the number of street intersections, the smaller the average block in a selected area.

Intersection density I_d can be measured by:

$$I_d = N_4 + N_3 - N_1$$

Where I_d is the intersection density, N_4 is the number of four-way nodes or more, N_3 is the number of three-way nodes, and N_1 is the number of cul-de-sacs.

The idea of I_d is employed in the centrality analysis of the network in terms of the degree of "*Integration*" in Space Syntax (Hillier et al. (1976) and "*Closeness*" in the Multiple Centrality Assessment (MCA) (Porta et al. (2006a)). Bourdic et al. (2012) offer another definition to describe the density of the intersection; *Cyclomatic* refers to the degree of complexity of the street network in terms of the number of links and nodes. Intersection density is weighted differently according to the purpose of the study; for instance, based on the type (4-way, 3-way, and 1-way) different weights are applied (1, 0, and -1 respectively). The four-way node has the greatest weight as it is more important than others, whereas the one-way node has less weight.

Remali (2014) adopts a different weight for the intersection by using 3 for 4-way, 2 for 3-way, and -1 for one-way. In this regard, the current research tends to use the sheer number of nodes and its percentage, which is tested in the four-selected areas with their radius of 400 metres, and each type of intersection is named individually. Furthermore, the weighted values respond to the degree of connectivity, accessibility, and permeability, where the four-way I_d (or more) has 2 degrees, three-way has 1 degree, and one-way is equal to -1. Thus, the formula is:

$$I_d = 2N_4 + 1N_3 - \ 1N_1$$

The number preceding the letter *N* is the weight value for each type of intersection. This weight is a relative value when it is compared with different selected samples that hold the same size, such as the current study.

The node (intersection) is one of the more fundamental urban entities that enables a calculation of the ability of a network to be accessible, permeable, and connectable. Quantifying nodes in a specific area is an indicator of the street edge length and, in turn, the potential interface between the public and private realm. Increasing the number of links per node maximises the movement-through, while minimising the number of streets per intersection leads a reduce flow for both pedestrians and motorised means (Cervero et al. 1996); (Dill 2004).

Bourdic et al. (2012) refer to another indicator that measures the connectivity of the network, namely the Connectivity Index (*CI*). This is an indicator to measure the mobility of the urban form in terms of its connectivity. The higher the *CI*, the higher the connectivity; thus, a higher number of intersections leads to greater permeability in the urban fabric. The formula to measure *CI* is:

$$CI = N_i/A_{total}$$

Where *CI* is the connectivity index, Ni is the number of intersections, and A_{total} is the total area of the sample. Hence, Bourdic et al. (2012) tend to use the sheer number of intersections regardless of their type and without a weighed value. In this study, both indicators are considered: Intersection Density and the Connectivity Index, and they are addressed for each sample separately. These are then compared amongst the four cases.

5.2.3.1.1 Case Study A: Organic Pattern

In sample A, the total number of nodes is 387, which includes cul-de-sacs (at 111 nodes), three-way nodes total 249, and four-way nodes is total 27 (Figure 5.45). By employing the I_d equation:

$$I_d \mid case\ A = 2N_4 + 1N_3 - \ 1N_1 \rightarrow (2 \times 27) + (1 \times 249) - (1 \times 111)$$

$$I_d \mid case\ A = 54 + 249 - 111 = 192$$

The I_d of case study A is 192. A large number of the intersections are three-way nodes, while the four-way comprises the lowest amount. The one-way node has the highest quantity as cul-de-sacs are dominant links in the oldest part of Baghdad (Figure 5.45).

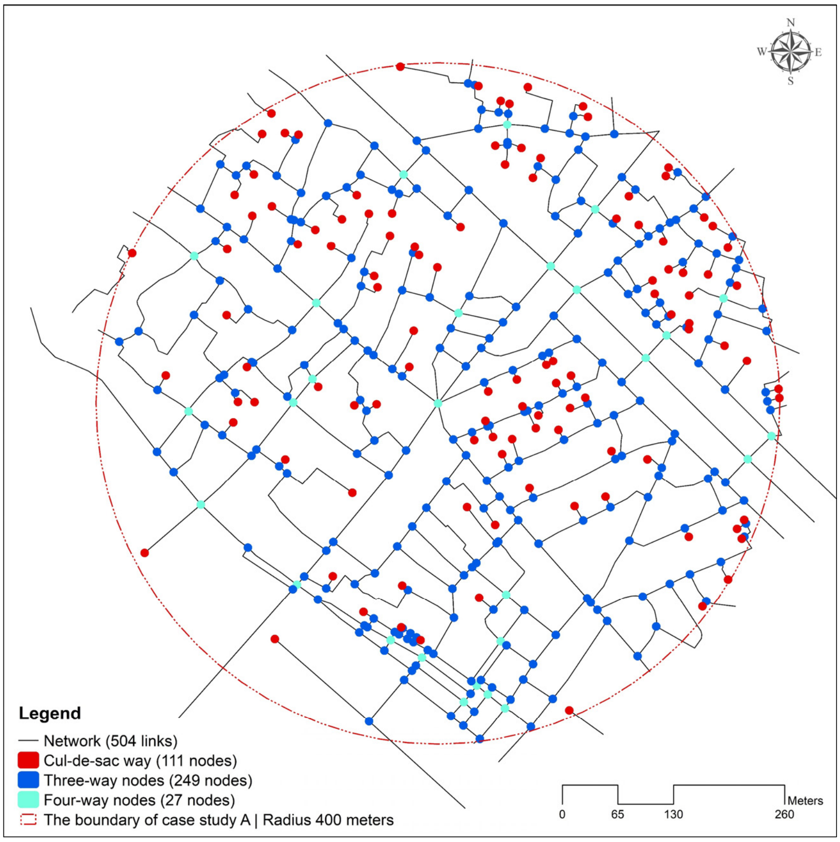


Figure 5.45. Sample A (organic pattern), the total number of intersections classified according to the number of links per node: 4-way nodes, 3-way nodes, and 1-way nodes (cul-de-sac). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

5.2.3.1.2 Case Study B: Hybrid Pattern

The area consists of 314 nodes, which are divided into the following: 97 nodes are cul-de-sacs, 183 nodes are three-way intersections, and 34 nodes are four-way intersections (Figure 5.46). The value of I_d in this respect is:

$$I_d \mid case\ B = 2N_4 + 1N_3 - \ 1N_1 \rightarrow (2 \times 34) + (1 \times 183) - (1 \times 97)$$

$$I_d \mid case\ B = 68 + 183 - 97 = 154$$

Like sample A, the most significant number of nodes is for three-way intersections; this is followed by cul-de-sacs, whilst the 4-way comprise the fewest intersections.

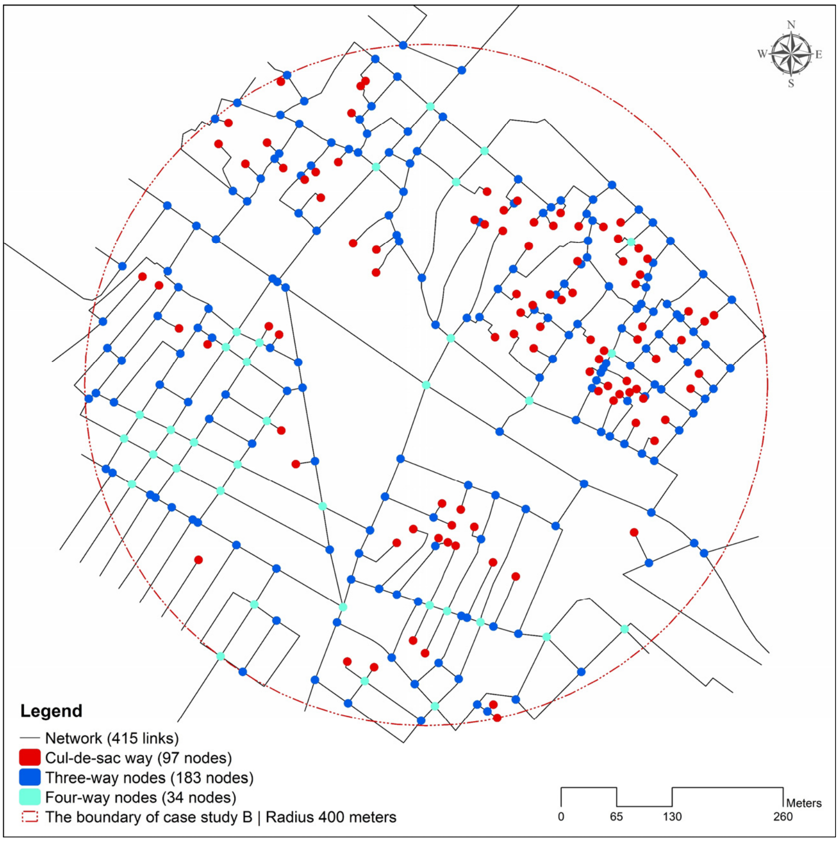


Figure 5.46. Case study B (hybrid pattern) that illustrates the number of intersections per type: cul-de-sac, three-way, and four-way node, and the location of the nodes in this sample. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

5.2.3.1.3 Case Study C: Paralleled Pattern

The case includes 70 intersections where the cul-de-sac totals 3 nodes, the 3-way node numbers 52, and the four-way intersection comprise 15 nodes.

The I_d (Intersection Density) of the case C is:

$$I_d \mid case\ C = 2N_4 + 1N_3 - \ 1N_1 \rightarrow (2 \times 15) + (1 \times 52) - (1 \times 3)$$

$$I_d \mid case\ C = 30 + 52 - 3 = 79$$

Case C exhibits the smallest number of 4-way nodes, meaning that the block size is quite large in comparison with cases A and B. This is also the same for the 3-way nodes. Also, reducing the number of intersections (4-way and 3-way) helps to maximise the block area and consequently minimise the number of blocks (Figure 5.47).

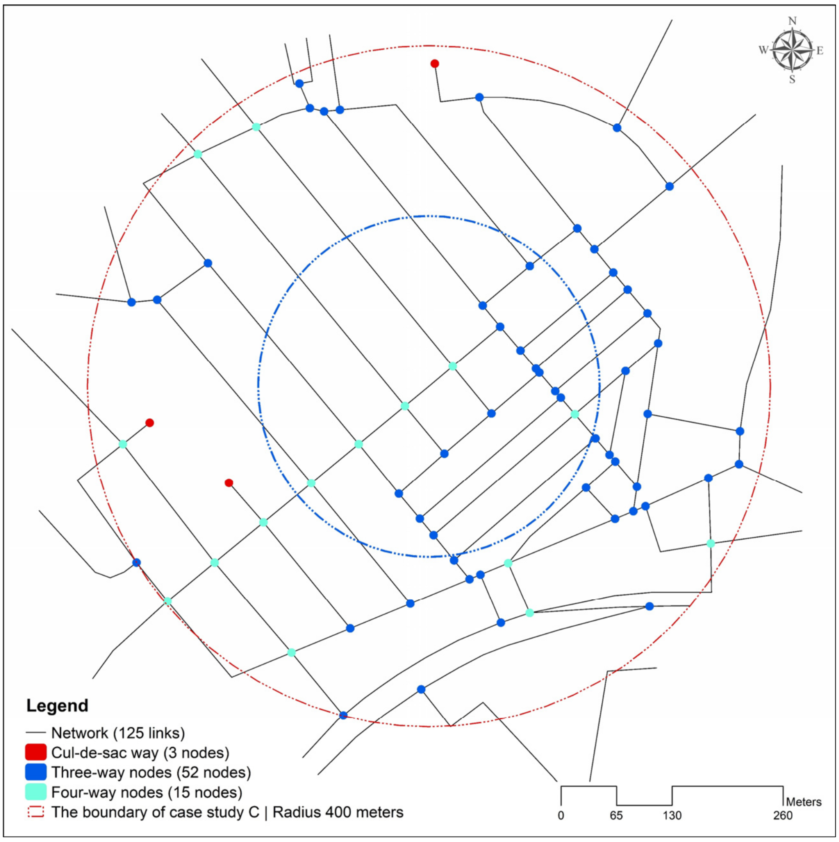


Figure 5.47. Case study C: paralleled pattern exhibits the number of intersections for the selected area and their arrangement within the street network. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

5.2.3.1.4 Case Study D: Loop-grid Pattern

In sample D, the total number of intersections is 62; the cul-de-sac node total 0, the three-way node number 54, and the 4-way total 8 nodes.

In this regard, the I_d of case D is:

$$I_d \mid case\ D = 2N_4 + 1N_3 - \ 1N_1 \rightarrow (2 \times 8) + (1 \times 54) - (1 \times 0)$$

$$I_d \mid case\ D = 16 + 54 - 0 = 70$$

Case D has a lower quantity of intersections overall; also, the intersection density is the lowest among the four samples (Figure 5.48).

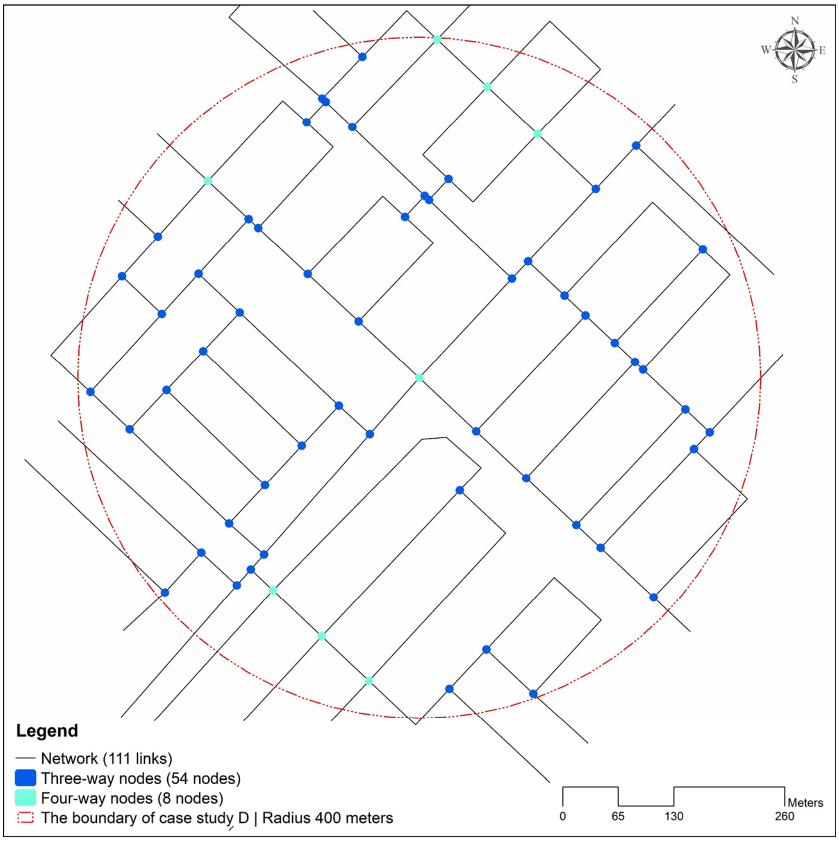


Figure 5.48. Case study D (loop-grid pattern), shows two types of intersection: three-way and four-way nodes, while the cul-de-sac disappears completely. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

5.2.3.2 Street Density | S_d

Street density is an indicator to measure the number of streets per unit of an area. A higher number refers to more streets and means higher connectivity and permeability within the network. This indicator is addressed by scholars, for example, Handy (1996) studied urban form and pedestrian choices in six neighbourhoods, Crane et al. (1998) correlated neighbourhood design and travel behaviour, and Matley et al. (2000) studied pedestrian travel potential in Northern New Jersey. Dill (2004) adopted the indicator in measuring network connectivity for bicycling and walking, whilst Kim (2007) tested the street connectivity of new urbanism projects and their surroundings. Tal et al. (2012) measured nonmotorised accessibility and connectivity in a robust pedestrian network within nine neighbourhoods in Davis, California. Meanwhile, Bourdic et al. (2012) tested a set of indicators for a new system of cross-scale spatial indicators, and Remali (2014) investigated the street density of three types of neighbourhoods in the city centre of Tripoli, Libya. Street density is influenced by block characteristics and the number of intersections that take different patterns, such as 1-way, 3-way, and 4-way nodes. Three formulas for extracting the street density per selected area are tested: (1) based on street length, (2) by using street area and (3) by considering the total number of streets per chosen sample.

$S_{d1} = SL_{total}/A_{total}$

Where S_d is the street density, SL_{total} is the total length of all streets in the select sample, and A_{total} is the total area of the sample.

And

Where S_d is street density, A_{street} is the total area of all streets in the select sample, and A_{total} is the total area of the sample.

And

$S_{d3} = N_{street}/A_{total}$

Where S_d is street density, N_{street} is the total number of streets in the select sample, and A_{total} is the total area of the sample.

The main concern is for these streets that extend beyond the boundary of the case study. In this regard, the research deals with the real length of the street, meaning that the street that intersects with the border is counted, while the area of the street is subjected to the area of the sample itself. Starting with the case study A, the total length of the street is 18163.31 metres for a total of 504 links. The entire area of the selected streets in sample A is 122184.26 m^2 including squares and parking (Figure 5.49). This uses the three equations of S_d:

$S_{d1}|\ case\ A = 18163.31\ m\ per\ 502654.82\ m^2$

$S_{d2}|\ case\ A = 122184.26\ m^2/502654.82\ m^2 \times 100 = 24.31\%$

$S_{d3}|\ case\ A = 504\ per\ 502654.82\ m^2$

In sample B (Figure 5.50) within the selected area of about 502654.82 m^2, there are 415 links, and their total length is 17816.78 metres. The area of the selected streets is 143075.38 m^2 which includes squares and parking. The value of the street density for case B is:

$S_{d1}|\ case\ B = 17816.78\ m\ per\ 502654.82\ m^2$

$S_{d2}|\ case\ B = 143075.38\ m^2/502654.82\ m^2 \times 100 = 28.46\%$

$S_{d3}|\ case\ B = 415\ per\ 502654.82\ m^2$

Figure 5.49. Case study A (organic pattern) which includes 504 links within the selected urban area (502654.82 m^2). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 5.50. Case study B (hybrid pattern) that includes 415 links within the selected urban area (502654.82 m^2). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Case study C consists of 125 streets within a total length of about 12351.05 meters, and their area is 119825.13 m^2. Like all selected samples, the unified area is 502654.82 m^2 (Figure 5.51). For the street density, the values of *Sd* are:

$S_{d1}|\, case\ C = 12351.05\, m\, per\ 502654.82\, m^2$

$S_{d2}|\, case\ C = 119825.13\, m^2/502654.82\, m^2 \times 100 = 23.84\%$

$S_{d3}|\, case\ C = 125\, per\ 502654.82\, m^2$

Figure 5.51. Case study C (paralleled pattern) consists of 125 links in the selected area (502654.82 m^2). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Regarding case study D, the total number of streets is 111, which covers 189250.17 m2. The entire length is around 12049.69 metres (Figure 5.52). The street density can be calculated as follows:

$S_{d1}|\, case\ D = 12049.69\, m\, per\ 502654.82\, m^2$

$S_{d2}|\, case\ D = 189250.17\, m^2/502654.82\, m^2 \times 100 = 37.65\%$

$S_{d3}|\, case\ D = 111\, per\ 502654.82\, m^2$

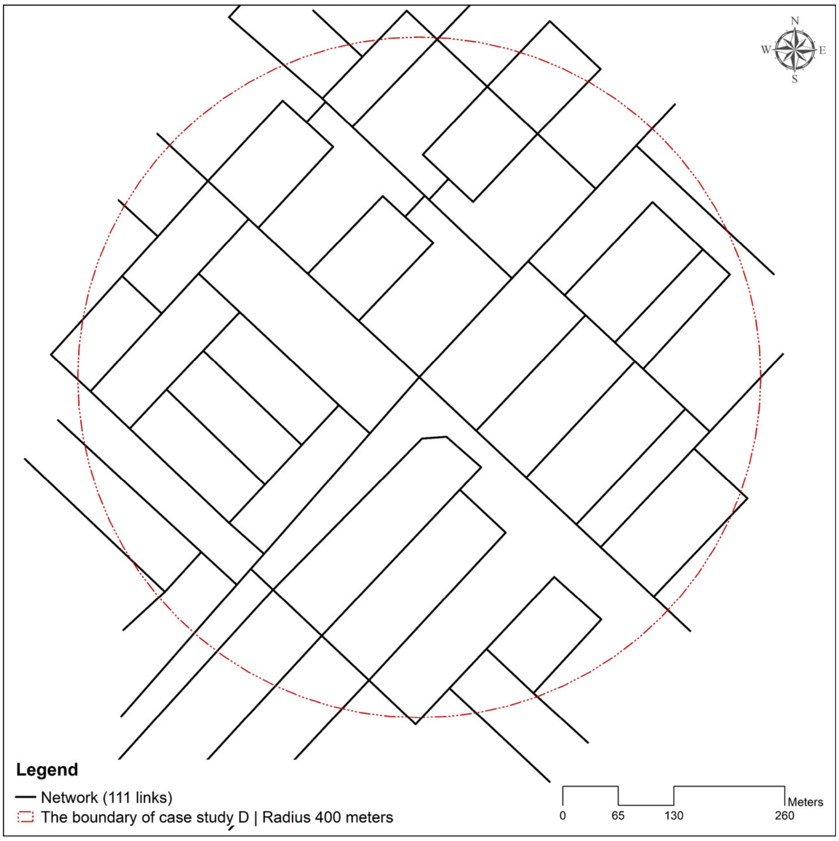


Figure 5.52. Case study D includes 111 links with a total length of about 12049.69 metres. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

5.2.3.3 Link to Node Ratio | LNR

The Link-Node Ratio is an indicator based on the number of links divided by the number of nodes within the selected area; a higher ratio signifies higher permeability and connectivity (Figure 5.53) Through his analysis of pedestrian- and transit-friendly features, Ewing (1996); (1999) refers to the fine-grained pattern of the street network and suggests that this necessitates a simultaneously increase in the number of streets and intersections with short and medium length blocks. Handy et al. (2003) also refer to the interrelationship between the intersection and street and their influence on connectivity.

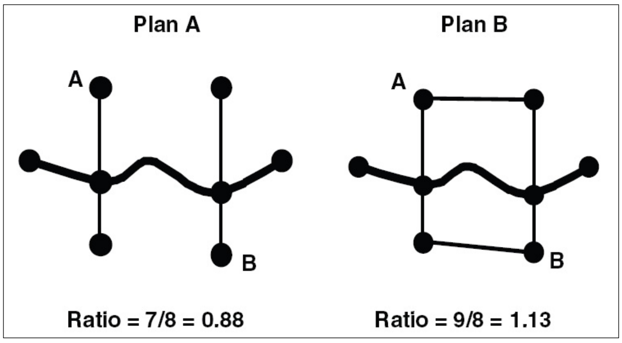


Figure 5.53. Both plans have the same number of nodes. Plan B has two added links, resulting in a link-node ratio of 1.13 versus 0.88 for Plan A. Under Plan A there is only one route between points A and B. Under Plan B there are three potential routes. Source: Dill (2004, p 4).

Dill (2004, p 4) states that the, “Link-Node Ratio is an index of connectivity equal to the number of links divided by the number of nodes within a study area. Links are defined as roadway or pathway segments between two nodes. Nodes are intersections or the end of a cul-de-sac”. Kim (2007) uses a link to streets ratio to test the connectivity of streets in five neighbourhoods across the Metro Atlanta region. Also, Tal et al. (2012) employ *LNR* to measure the non-motorised accessibility and connectivity of the network in nine neighbourhoods in the city of Davis, California. Furthermore, Remali (2014) study of Tripoli, Libya employed the *LNR* to examine three different street patterns (Figure 5.54).

The formula to measure the *LNR* is:

$$LNR = L_{total}/N_{total}$$

Where *LNR* represents a link to node ratio, L_{total} is the total number of links in a selected area, and N_{total} is the total number of nodes (including cul-de-sacs) for the same area.

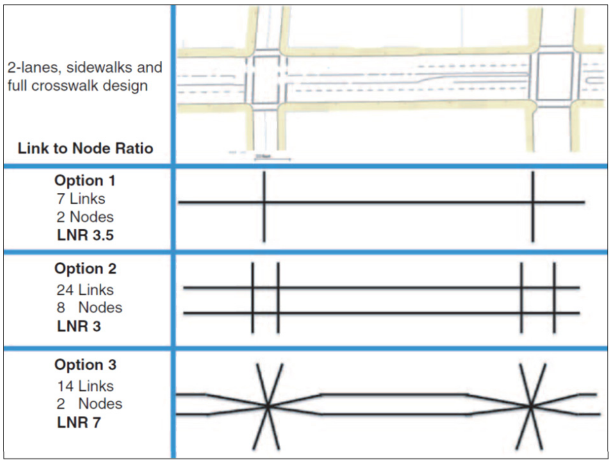


Figure 5.54. Three options to determine the ratio of the link to node. Source: Tal et al. (2012, p 51).

In the current study, both quantities of links and nodes are varied among the four selected areas. After applying *LNR*, the results exhibit some differences between the two groups of samples (A-B and C-D), where each group includes an approximate value. In case A, the *LNR* represents the lowest ratio at about 1.302 with a moderate increase to 1.322 for case B. The degree of variance between A and B is slight. The trendline of *LNR* for case C is 1.786 and reaches the highest value for case D at around 1.790. Also, the degree of disparity between cases C and D is minor. The number of cul-de-sacs play a significant role in reducing the number of links and increasing the number of nodes; this affects the *LNR* value for samples A and B. On the other hand, both samples C and D have the lowest number of cul-de-sacs;

therefore, their *LNR* is higher than those in samples A and B. Throughout the four samples, the total number of links are higher than the gross quantity of nodes for each single case: A, B, C, and D (Figure 5.55 and Table 5.9).

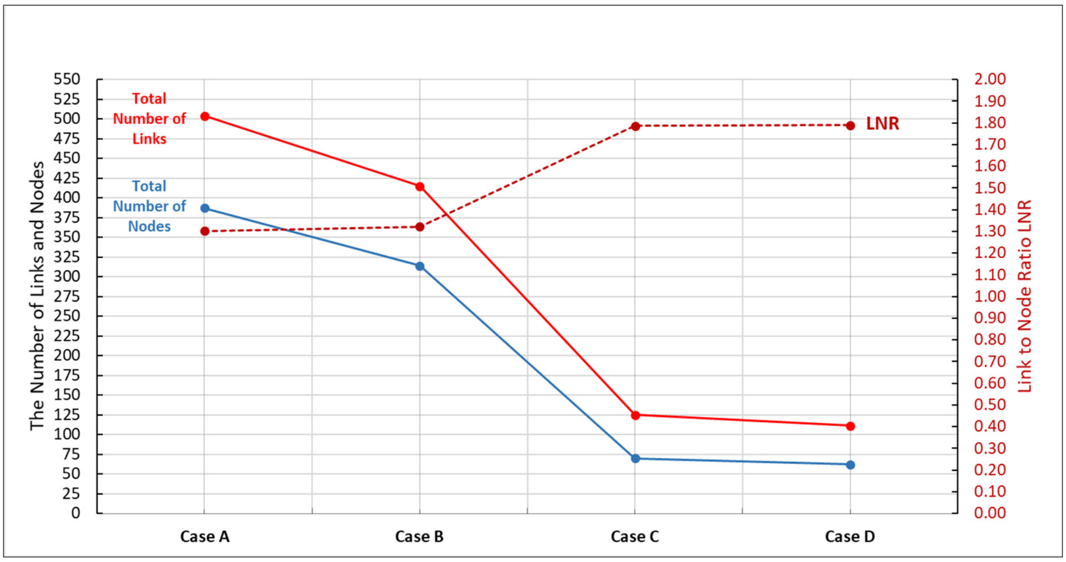


Figure 5.55. A chart shows the total number of links and nodes with the Link to Node Ratio (*LNR)* in the four cases studies. A significant disparity occurs between the two groups, A-B and C-D.

Table 5.9. The four samples of the case study besides the total number of links and nodes, and the value of the LNR (Link to Node Ratio).

Case Study ID	Total Number of Links	Total Number of Nodes	LNR
Case A	504	387	1.30
Case B	415	314	1.32
Case C	125	70	1.79
Case D	111	62	1.79

The number of the street itself is essential in combining the *LNR* to test the network's connectivity. For example, *LNR*-case A (1.302) is less than *LNR*-case D (1.790), but the former has the highest number of streets in contrast with sample D. Additionally, the one-way node works to decrease the number of links wherever it is located, such as cases A and B, and a little in sample C.

5.2.3.4 Internal Node Connectivity | INC

Dill (2004) refers to *INC* in their study, which also known as the *Connected Node Ratio (CNR)* or the *Connected Intersection Ratio (CIR)*. All terms have the same meaning in that they evaluate the connectivity by dividing the total number of nodes (excepting cul-de-sacs) by the total number of intersections (including cul-de-sacs). The higher value (1.0) indicates that there is no cul-de-sac, and accordingly, the network has more connectivity.

The formula of the Internal Street Connectivity (INC) is:

$$INC = N_{total} - N_{cul}/N_{total}$$

Where *INC* is internal node connectivity, N_{total} is the total number of nodes, and N_{cul} is the total number of cul-de-sacs.

Kim (2007) employed the measure in testing five different neighbourhoods in Metro Atlanta region, Georgia, USA. Allen (1997) and (Song 2003) adopted the *INC* indicator in computing new urbanism with community indicators and the influences of urban evolution management on the urban form. Also, Remali (2014) used this indicator in his research on three neighbourhoods in the city centre of Tripoli, Libya.

By applying the INC formula, the internal node connectivity result for each selected case is:

$$INC \mid case\ A = 387 - 111/387 = 0.71$$

$$INC \mid case\ B = 314 - 97/314 = 0.69$$

$$INC \mid case\ C = 70 - 3/70 = 0.96$$

$$INC \mid case\ D = 62 - 0/62 = 1.00$$

In this study, case study D shows the highest *INC* value at 1.00, meaning that the number of cul-de-sacs is zero. Meanwhile, the lowest value is for case B at about 0.69. Case C is calculated at 0.96, whereas case A is about 0.71 and the smallest value after B. In the oldest area (A), the total number of intersections is higher than for other cases, which have 387 (including cul-de-sacs at 111 nodes), and 276 junctions (excluding cul-de-sacs). Therefore, the high number of streets in A maximises the connectivity value more than in the three cases (B, C, and D). In contrast with case study A, case D has the maximum *INC* value of 1.00, but it also has the lowest number of intersections and streets. Consequently, sample D might be less connected than case A (Figure 5.56 and Table 5.10).

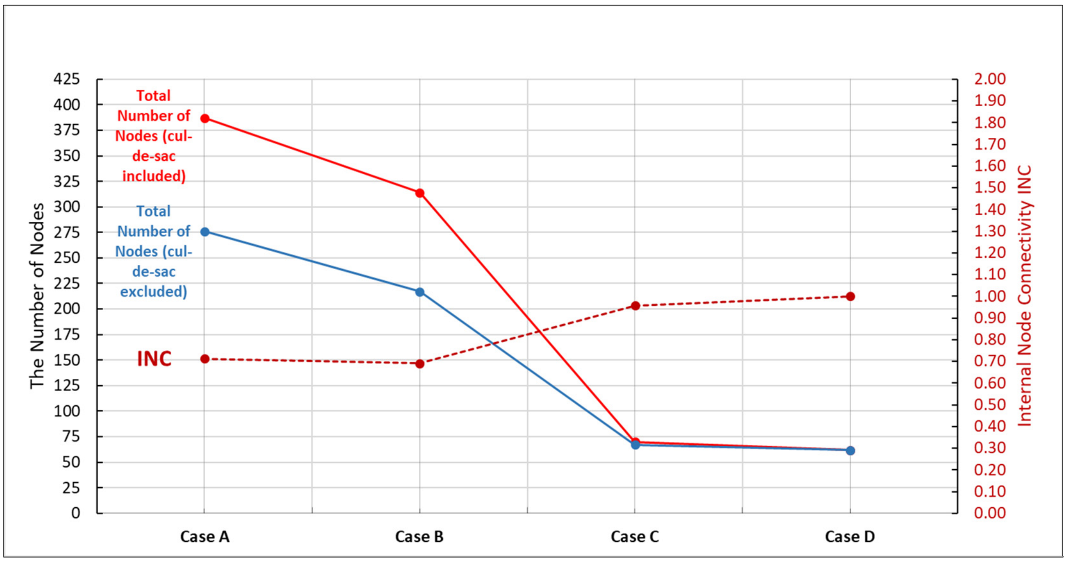


Figure 5.56. The total number of nodes (including and excluding cul-de-sacs) besides the value of the Internal Node Connectivity.

Table 5.10. The total number of nodes (including and excluding cul-de-sacs) for each case study Also, the INC (Internal Node Connectivity).

Case Study ID	Total Number of Nodes	Cul-de-sac	Total Number of Nodes (cul-de-sac excluded)	Internal Node Connectivity INC
Case A	387	111	276	0.71
Case B	314	97	217	0.69
Case C	70	3	67	0.96
Case D	62	0	62	1.00

5.2.3.5 External Point Connectivity | EPC

The External Node Connectivity (*EPC*) is an indicator to measure the mean distance between ingress/egress points located by all the intersections between all streets in the selected area and its boundary (Remali 2014). The lower the number of ingress/egress points, the longer the distance between these points, and the less the external connectivity and vice versa. The indicator represents the degree of integration of the network in a selected area within the whole urban context. In this sense, the boundary of the case study can be identified as a nodal border where the number of nodes governs the degree of connectivity and accessibility between a designated part and its surroundings. The indicator was used by Nystuen et al. (1961), whilst Song et al. (2004) employed *EPC* with several measures of urban form to appraise progress patterns and trends of single-family residential neighbourhoods in the Portland, Oregon, metropolitan area. Betanzo (2009) used *EPC* in his study on density and liveability in three neighbourhoods, and Remali (2014) employs *EPC* to examine three different patterns of neighbourhoods.

The *EPC* equation can be formulated as:

$$EPC = L_{total}/P_{total}$$

Where *EPC* is external node connectivity of a selected area, L_{total} is the total length of the boundary of the case study, and P_{total} is the total number of ingress/egress points. The total length of the boundary is 2513.27 metres. The ingress/egress points are mapped on the boundary of each single case. Case study A includes 42 points of egress/ingress (Figure 5.57).

By using the *EPC* formula, the level of external connectivity in sample A is:

$$EPC \mid case\ A = 2513.27/42 = 59.84\ m$$

Where the mean distance between the egress/ingress points is 59.84 metres.

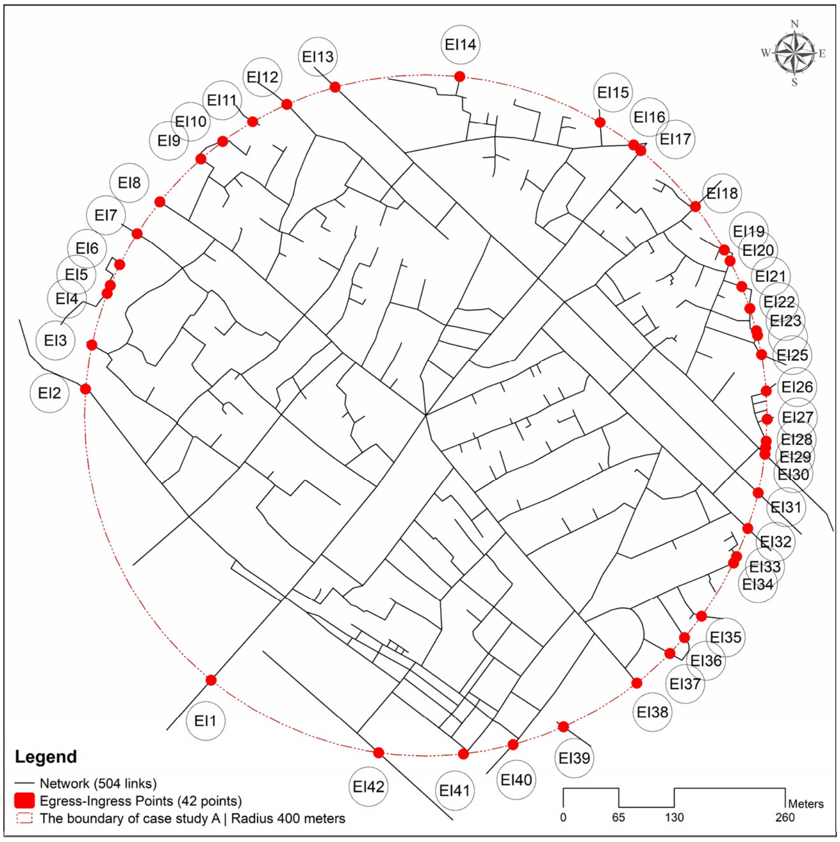


Figure 5.57. Ingress and egress points of the case study A (organic pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

In sample B, the total number of ingress/egress points is 48 points. In this regard, the value of *EPC* is:

$$EPC \mid case\ B = 2513.27/48 = 52.36\ m$$

Where the mean distance between the ingress/egress points is 52.36 metres.

In sample B the range between crossing points are lower than for case A, and this is due to the different number of ingress/egress points located on the boundary of each case (Figure 5.58).

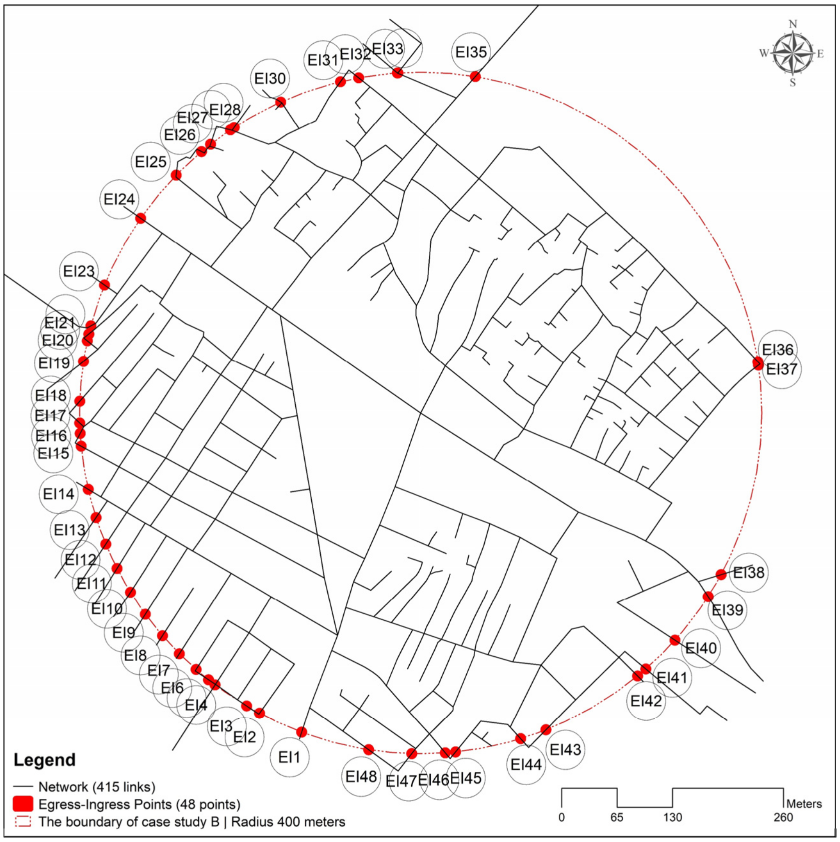


Figure 5.58. Ingress and egress points of case study B (hybrid pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

In comparison, the level of external connectivity in sample C comes from 30 ingress/egress points, (Figure 5.59). With the total length of the boundary about at 2513.27 metres, the *EPC* for case C is:

$$EPC \mid case\ C = 2513.27/30 = 83.78\ m$$

Where the mean distance between the ingress/egress points is 83.78 metres.

Case study D is the last sample, and its boundary encompasses 28 grossing points of ingress/egress (Figure 5.60). Accordingly, the degree of external connectivity is:

$$EPC \mid case\ D = 2513.27/28 = 89.76\ m$$

Where the mean distance between ingress/egress points is 89.76 metres.

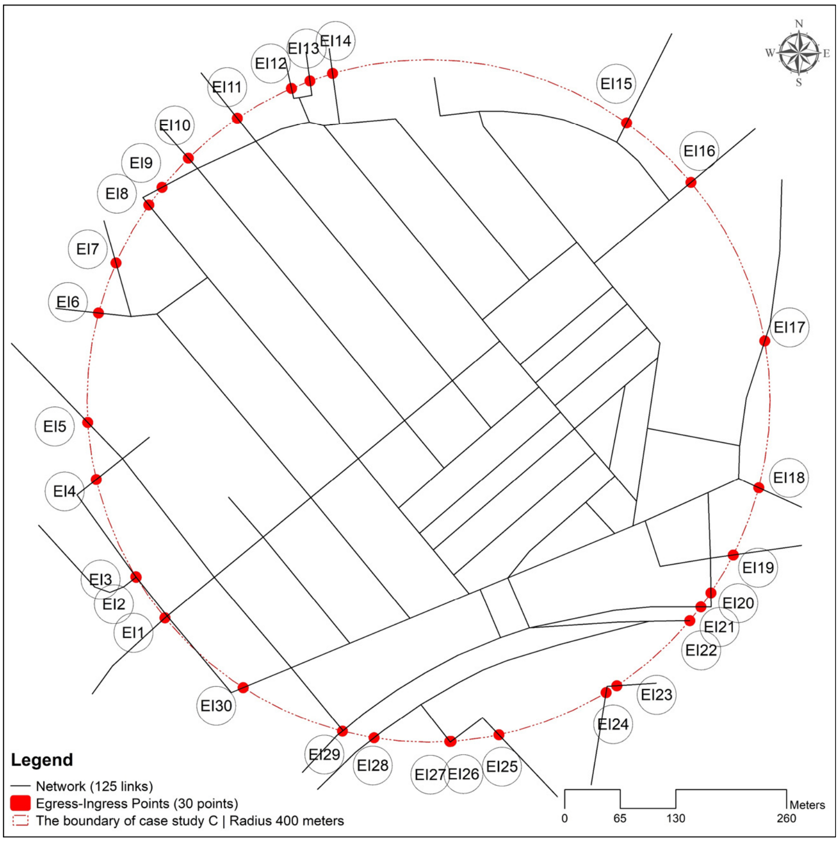


Figure 5.59. The total number of ingress/egress points of case study C (paralleled pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

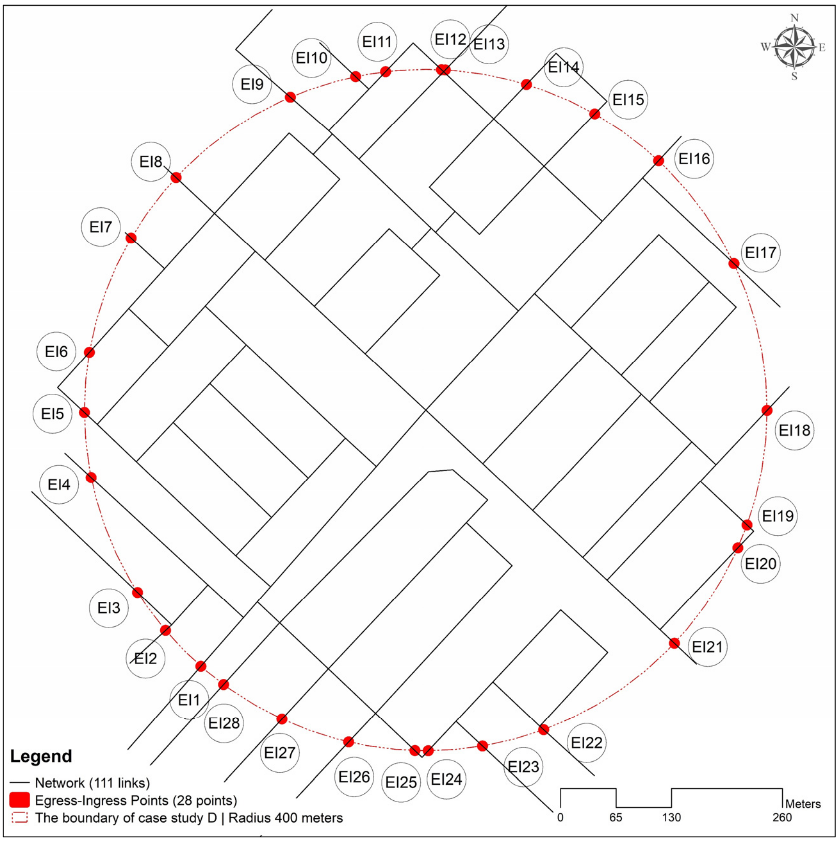


Figure 5.60. The total number of ingress/egress points of case study D (loop-grid pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

5.2.3.6 Grid Pattern Ratio | GPR

This indicator is designed to measure the extent to which the street network is 'griddy'; this defines all the blocks in a selected area that converge into 4-way intersections located at the blocks' corners. If a block consists of a 4-way intersection at each corner, the block is defined as 'strongly griddy'. If the block is defined by a 4-way intersection at only three corners and one has 3-way or less, the block described as a 'weakly griddy'. The indicator integrates with other block variables, such as block size and intersection density. In their study on the influence of land use on travel behaviour, Boarnet et al. (2001) refer to the street pattern as an indicator in determining the travel behaviour, where they classified the network into three patterns: grid, cul-de-sac, and mixed. Greenwald et al. (2001) examine the role of the built environment in walking behaviour in Portland, Oregon. Street crossing, sidewalk continuity and street connectivity (grid versus cul-de-sac) were three variables used in their study. Porta et al. (2010a) employed the *GPR* to study several neighbourhoods in the city of Glasgow, UK. These factors work relatively with other built environment indicators in optimising street life (Sun et al. 2012).

The formula of Grid Pattern Ratio *GRR* is:

$$GPR_{stong} = A_{strong}/A_{total}$$
$$GPR_{weak} = A_{weak}/A_{total}$$

Where A_{strong} is the total area of blocks defined by all 4-way intersections, A_{weak} is the total area of blocks defined by all 4-ways crossing except one 3-ways crossing, and A_{total} is the total area of the sample.

By applying *GPR* to the four samples, the result is varied in terms of the level of griddy pattern. Case study A has the highest amount of A_{weak} at about 407960.6334 m^2, and its GPR_{weak} is 0.81. Sample D has the second largest quantity of A_{weak} at around 372559.10 m^2 with a GPR_{weak} of 0.74. Case B comes after case D regarding A_{weak} and GPR_{weak} at 320279.89 m^2 and 0.64 respectively; while case C has only 281300.23 m^2 which is A_{weak} besides 0.56 which is GPR_{weak}. In terms of A_{strong} and GPR_{strong}, sample A has the lowest value of both A_{strong} and GPR_{strong} at about 36797.35 m^2 and 0.07, whereas case C has the greatest level of A_{strong} at 162716.95 m^2 and 0.32 for GPR_{strong}. Also, sample B reaches the largest amount of A_{strong} and GPR_{strong}, with values at 84509.11 m^2 and 0.17 respectively. In case D, both values of A_{strong} and GPR_{strong} are minimal compared with B and C, which falls to 51491.76 m^2 with GPR_{strong} at about 0.10 (Table 5.11).

Table 5.11. The data of the Grid Pattern Ratio for the four selected areas. Open areas are excluded (riverbank, green spaces, parking, squares, and undeveloped land).

Case study ID	Case Area	Total number of blocks	Number of blocks with 4-way crossing	Strong area	Weak area	GPR strong	GPR weak
Case A	502654.82	138	7	36797.35	407960.63	0.07	0.81
Case B	502654.82	125	16	84509.11	320279.89	0.17	0.64
Case C	502654.82	49	8	162716.95	281300.23	0.32	0.56
Case D	502654.82	55	1	51491.76	372559.10	0.10	0.74

5.2.3.7 Pedestrian Route Directness Factor | PRD/PRF

The Pedestrian Route Directness is an indicator that defines the ratio of the route distance to the straight-line distance between two selected points. The lowest value equal to 1.00, confirms that the route has the same length as the direct line between these two points. The indicator measures the most direct pedestrian route to the centre of the selected area, and it is compared to the distance between these origins and the centre, measured as the bird flies (Hess 1997); (Moudon et al. 1997). (Figure 5.61).

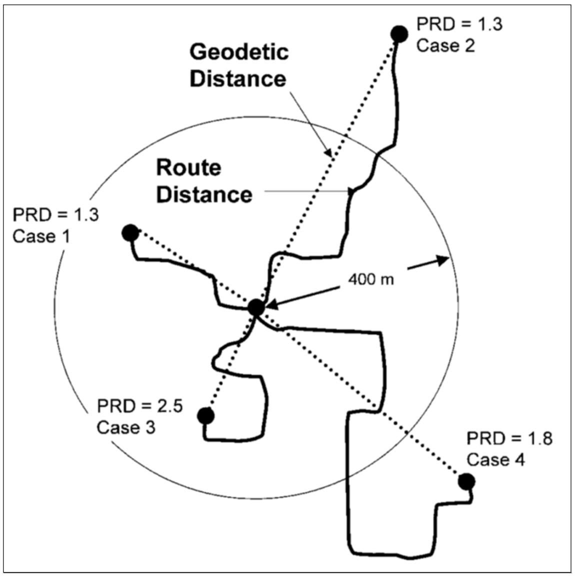


Figure 5.61. An example of the Pedestrian Route Directness *PRD* to illustrate the two types of distance: route distance and geodetic distance. Source: Randall et al. (2001, p 5).

Pedestrian walkability is more likely to be affected by the route length and walk purpose than by the trip time (Crane 1996). Randall et al. (2001) refer to the *PRD* as measuring pedestrian connectivity; they state that it is an indicator of how accessible, in respects to walking, a neighbourhood is to its residents. The measure assesses pedestrian connectivity is the pedestrian route directness (*PRD*) ratio.

The *PRD* ratio is the ratio between the route distance and the geodetic (or straight-line) distance, given by:

$$PRD = D_{route}/D_{geodetic}$$

Where *PRD* is the pedestrian route directness, D_{route} is the formal route distance along existing sidewalks, footpaths, or trails, where informal routes are those on streets without sidewalks, and $D_{geodetic}$ is the straight line where it links between the ends of the same direction.

The *PRD* was applied by Hess (1997) when examining two neighbourhoods, Wallingford and Crossroads, in Seattle. Randall et al. (2001) used the measure to evaluate pedestrian connectivity in the Berrisfield neighbourhood, in Hamilton, Ontario, Canada. Their study aimed to generate and evaluate potential retrofitting alternatives for pedestrian movement. Also, Dill (2004) in computing the network connectivity for bicycling and walking, applied the *PRD* to measure the connectivity of the network in the Portland, Oregon region. Kim (2007) used *PRD* in making comparison amongst the five new urbanism areas in order to test the network connectivity in the Metro Atlanta Region. The term *PRD* is known as the "*Circuity Factor*" and is a multiplier factor to coordinate-calculated, or straight-line, distances to estimated real travel distances; as such, travel distances cannot be shorter than a straight-line. Therefore the circuity factor must be 1 or larger (Ballou et al. 2002); (Levinson et al. 2009) and (Huang et al. 2015) (Figure 5.62). The circuity factor is calculated as follows:

$$CF_{ij} = \frac{D_{ij}^{n}}{D_{ij}^{e}}$$

Where C_{ij} is the circuity factor between the origin *i* and the destination j, D_{ij}^{n} denotes the short distance between i and j, and D_{ij}^{e} represents the Euclidean distance between *i* (origin) and j (destination). Like the *PRD*, the hypothetical minimal value of circuity is 1 when the shortest network distance equals the Euclidean distance.

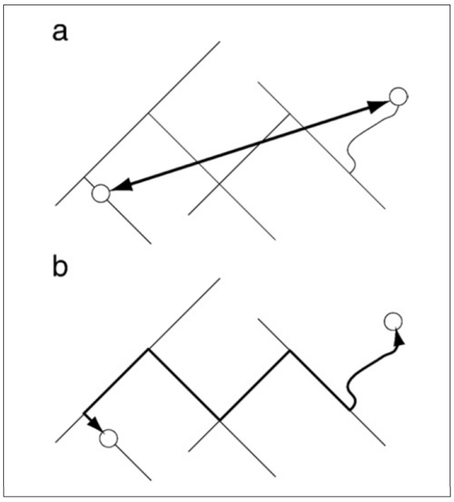


Figure 5.62. A diagram displays the difference between the Euclidean distance (a) and the network distance (b). Source: Levinson et al. (2009, p 733).

In this study, the *PRD* and *CF* are re-formulated to meet the research purpose. Each single case has a 400-metre radius boundary that intersects with the street network in the External Point Connectivity (*EPC*) to represent later the ingress/egress points along the borderline. The *EPC* is mapped and labelled to generate and define the destination points, and the centre point of the sample represents the origin. The aim is to disclose the level of disparity and difference between these two types of distance for each case and its quantity; furthermore, there is a comparison of values between the selected samples. In this respect the *PRD* as a *PRF* is computed as follows:

$$PRF = \frac{D_{c\,|\,epc}}{R}$$

Where *PRF* is pedestrian route factor, $D_{c\,|\,epc}$ denotes the shortest distance between the centre point of the selected area and the External Point Connectivity *EPC* (Egress/Ingress), and *R* is the radius of the sample (in this research this is 400 metres). The shortest distance is computed by using GIS, ArcMap 10.2.2 through the network analyst in order to track the shortest link between the external point (ingress/egress points) and the centre of the case study.

Also, in the current research, the D_{mean} is calculated to discover the value of the mean of the total shortest distances which are characterised by the routes that link between the external nodes and the centre of each selected area. The D_{mean} is formulated as shown below:

$$D_{mean} = \frac{\sum D_{c\,|\,epc}}{N_{route}}$$

Where D_{mean} is the mean value of the route's distance (network distance) per selected area, $D_{c\,|\,epc}$ is the shortest distance between the centre point of the selected area and the external point connectivity EPC (egress/ingress), and N_{route} is the total number of routes, excluding egress/ingress points that do not reach the centre of the sample. If the D_{mean} value is closer to the radius of the selected area, the routes offer the shortest distance between the border and the centre of the sample itself.

5.2.3.7.1 Case Study A: Organic Pattern

In sample A, there are 42 *EPC* (ingress/egress points) which are located along the boundary of sample A; they denote the destinations points reaching to the centre (origin) of the case study (Figure 5.63). The value of *PRF* is computed and listed in Table 5.12. Most external points (42) reach to the centre of sample except for five, namely: (EI4, RDID4), (EI5, RDID5), (EI6, RDID6), (EI11, RDID11) and (EI39, RDID39). After applying the *PRF* formula, the result of the ratio of two distances manifests quite a difference among the 42 routes.

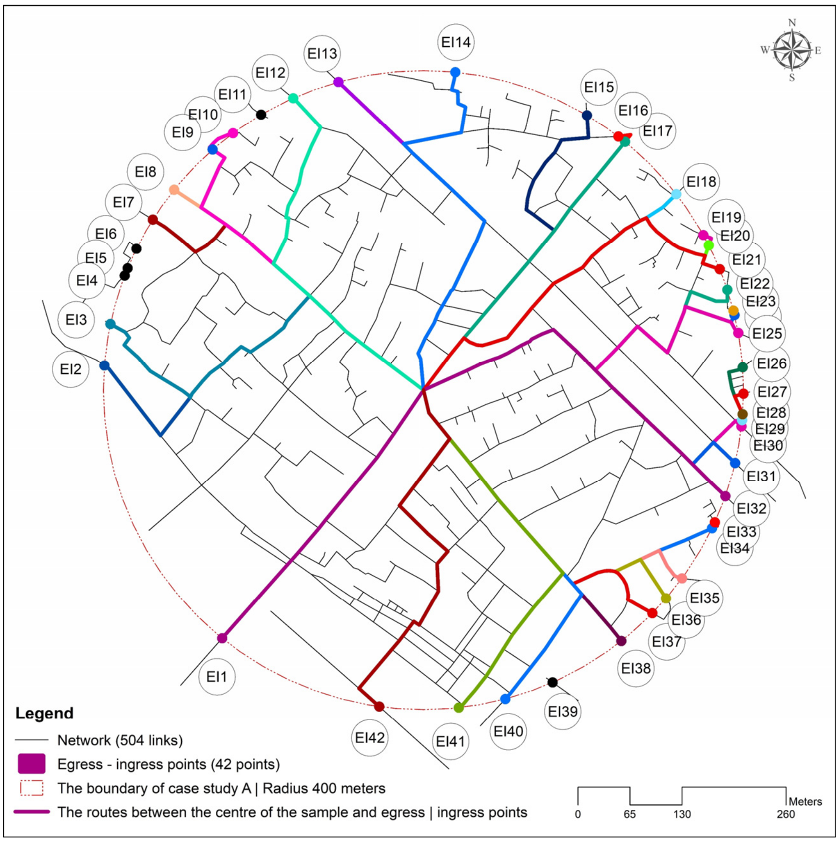


Figure 5.63. The route of the shortest distance (network distance) between the centre of sample A and the external (egress/ingress) points. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Table 5.12. The values of the route distance (network distance), the radius of the sample (Geodetic/Euclidean distance), and the Pedestrian Route Factor (*PRF*) of 42 routes for case study A.

Route ID	The route distance (network distance)	The radius of the sample (Geodetic | Euclidean distance)	Pedestrian Route Factor PRF
RDID01	400.46	400	1.00
RDID02	565.19	400	1.41
RDID03	540.14	400	1.35
RDID04	0.00	400	0.00
RDID05	0.00	400	0.00
RDID06	0.00	400	0.00
RDID07	441.76	400	1.10
RDID08	400.80	400	1.00
RDID09	447.61	400	1.12
RDID10	487.50	400	1.22
RDID11	0.00	400	0.00
RDID12	481.91	400	1.20
RDID13	485.07	400	1.21
RDID14	534.51	400	1.34
RDID15	463.81	400	1.16
RDID16	426.71	400	1.07
RDID17	400.14	400	1.00
RDID18	421.31	400	1.05
RDID19	497.55	400	1.24
RDID20	477.61	400	1.19
RDID21	496.73	400	1.24
RDID22	522.58	400	1.31
RDID23	519.19	400	1.30
RDID24	510.82	400	1.28
RDID25	517.46	400	1.29
RDID26	592.16	400	1.48
RDID27	553.93	400	1.38
RDID28	517.86	400	1.29
RDID29	506.41	400	1.27
RDID30	508.43	400	1.27
RDID31	497.04	400	1.24
RDID32	479.24	400	1.20
RDID33	510.79	400	1.28
RDID34	498.24	400	1.25
RDID35	473.82	400	1.18
RDID36	459.02	400	1.15
RDID37	441.56	400	1.10
RDID38	402.96	400	1.01
RDID39	0.00	400	0.00
RDID40	488.57	400	1.22
RDID41	504.40	400	1.26
RDID42	512.83	400	1.28

The shortest distance is equal to the radius of the 400-metre sample, and the *PRF* is labelled RDID01, RDID08, and RDID17 (the value zero means the external point does not reach to the sample centre). The longest distance is 592.16 meters for RDID26 with a *PRF* of about 1.48. The median value of the *PRF* is 1.22, and the ratio average is 1.07; these responded to 486.283 metres and 428.24 metres as medians and averages of the route distances (network distances) respectively (Figures 5.64 and 5.65). The value of D_{mean} in sample A is about 486.11 meters for 37 routes that correspond to the shortest distance between the external point (egress/ingress) and the centre. The D_{mean} is closer to the radius of the selected sample (400 metres), meaning that the case study with its routes gives the shortest distance for the movement between its boundary and the centre of the sample.

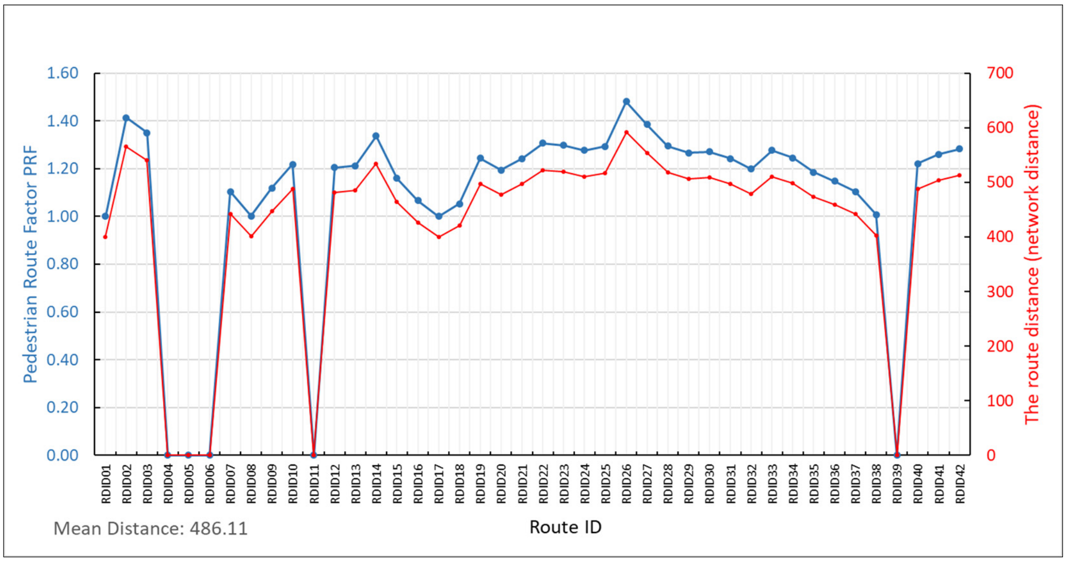


Figure 5.64. The values of the Pedestrian Route Factor (*PRF*) and the shortest distance for 42 links that reach between the external points and the centre of case study A (organic pattern).

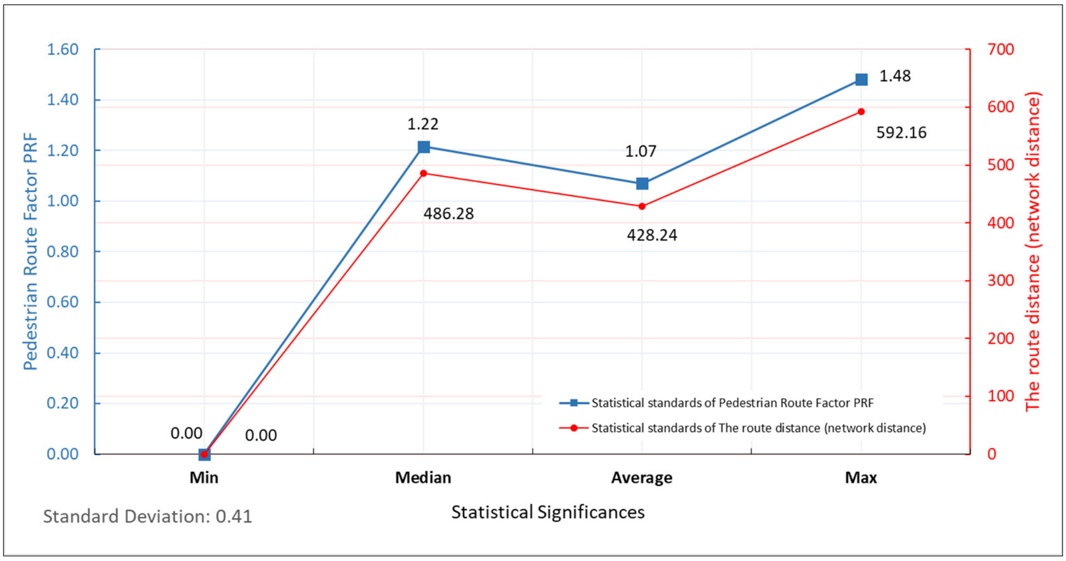


Figure 5.65. The statistical standards (minimum, median, average and maximum) of the Pedestrian Route Factor (*PRF*) and the route distance (network distance) of 42 links for case study A.

5.2.3.7.2 Case Study B: Hybrid Pattern

In this case, there are 48 external points (egress/ingress) where they intersect the frontier of case B (Figure 5.66). The route distance (network distance) responds to the shortest path that links the peripheral point to the centre of the sample. From 48 egress/ingress points, one (RDID08) does not join the centre. The related values are calculated and listed in Table 5.13. The highest value of *PRF* is about 1.55 times as long as the radius, as the length of the route is about 620.14 metres (RDID41). The *PRF* for both the median and average are 1.29 and 1.26 respectively; for the route distance (network distance) the *PRF* is 514.57 and 503.50 metres correspondingly. The D_{mean} is 514.21 meters (Figures 5.67 and 5.68). The north-east of sample B, like the south-west of case A, has limited egress/ingress points and that is due to the presence of the riverbank. Therefore, there are only three external points for both samples A, and B. Of the bordering points in case B, two are considerably closer to each other (RDID36 and RDID37).

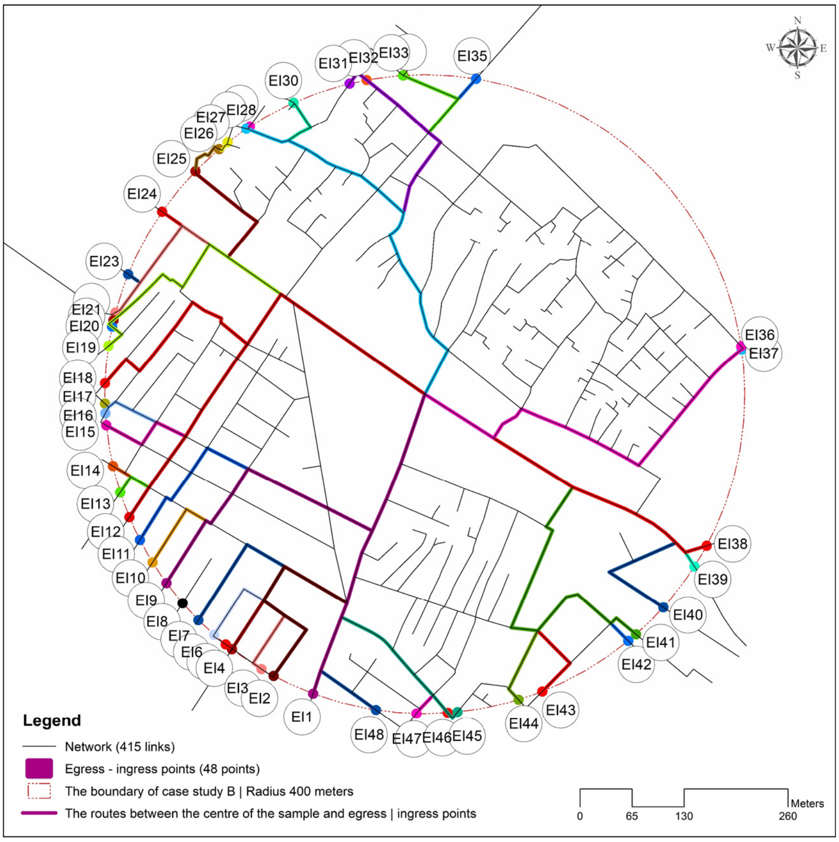


Figure 5.66. The route of the shortest distance (network distance) between the centre of sample B and the peripheral (egress/ingress) points. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

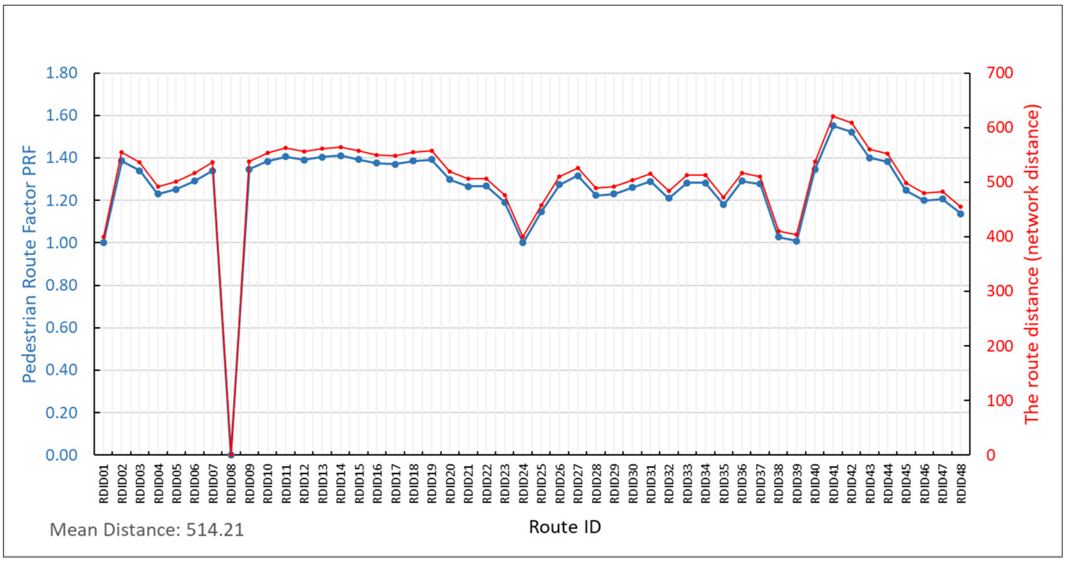


Figure 5.67. The values of Pedestrian Route Factor *PRF* and the shortest distance for 48 links that reach between the peripheral points and the centre of case study B (hybrid pattern).

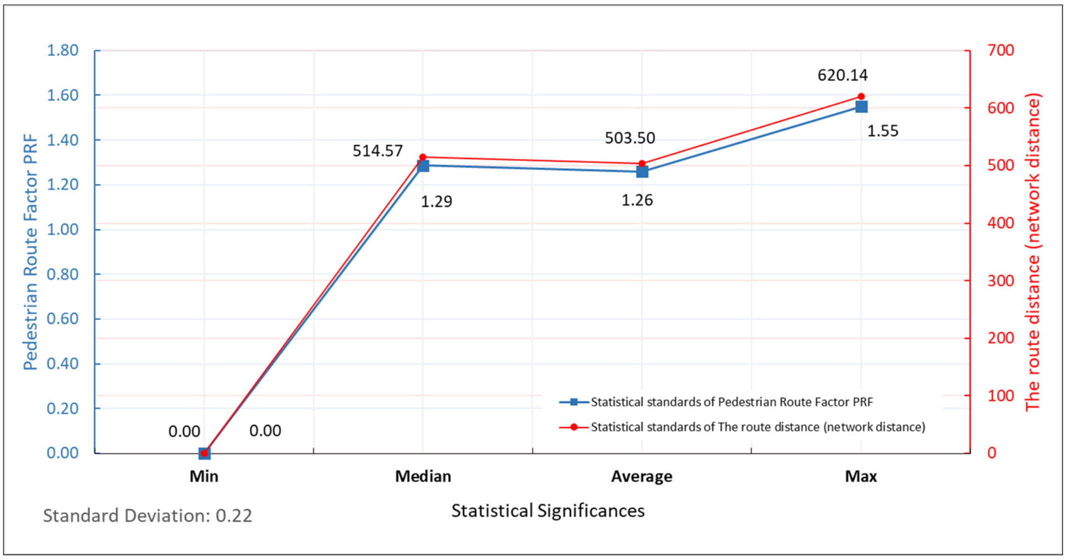


Figure 5.68. The arithmetical values: minimum, median, average and maximum of Pedestrian Route Factor *PRF* and the route distance (network distance) for 48 links. Case study B.

Table 5.13. The values of the route distance (network distance), the radius of the sample (Geodetic/Euclidean distance), and the Pedestrian Route Factor (*PRF*) of 48 routes for case study B.

Route ID	The route distance (network distance)	The radius of the sample (Geodetic | Euclidean distance)	Pedestrian Route Factor PRF
RDID01	400.45	400	1.00
RDID02	554.59	400	1.39
RDID03	535.99	400	1.34
RDID04	492.16	400	1.23
RDID05	501.22	400	1.25
RDID06	516.67	400	1.29
RDID07	536.18	400	1.34
RDID08	0.00	400	0.00
RDID09	538.48	400	1.35
RDID10	553.39	400	1.38
RDID11	562.57	400	1.41
RDID12	556.19	400	1.39
RDID13	561.72	400	1.40
RDID14	564.16	400	1.41
RDID15	557.28	400	1.39
RDID16	550.35	400	1.38
RDID17	547.95	400	1.37
RDID18	554.40	400	1.39
RDID19	557.00	400	1.39
RDID20	519.07	400	1.30
RDID21	506.34	400	1.27
RDID22	506.92	400	1.27
RDID23	476.32	400	1.19
RDID24	400.00	400	1.00
RDID25	458.18	400	1.15
RDID26	509.70	400	1.27
RDID27	526.34	400	1.32
RDID28	489.71	400	1.22
RDID29	491.91	400	1.23
RDID30	504.37	400	1.26
RDID31	515.76	400	1.29
RDID32	484.19	400	1.21
RDID33	513.39	400	1.28
RDID34	513.36	400	1.28
RDID35	471.98	400	1.18
RDID36	516.59	400	1.29
RDID37	510.76	400	1.28
RDID38	410.74	400	1.03
RDID39	403.92	400	1.01
RDID40	538.25	400	1.35
RDID41	620.14	400	1.55
RDID42	609.30	400	1.52
RDID43	560.34	400	1.40
RDID44	552.94	400	1.38
RDID45	498.99	400	1.25
RDID46	480.12	400	1.20
RDID47	482.32	400	1.21
RDID48	455.15	400	1.14

5.2.3.7.3 Case Study C: Paralleled Pattern

The network in sample C is composed of directly straight lines and clear pedestrian-oriented routes. The number of external points decreases to 30 egress/ingress nodes, compared with samples A and B (Figure 5.69). The shortest path between the centre of the sample and the peripheral nodes is designated and then computed in Table 5.14.

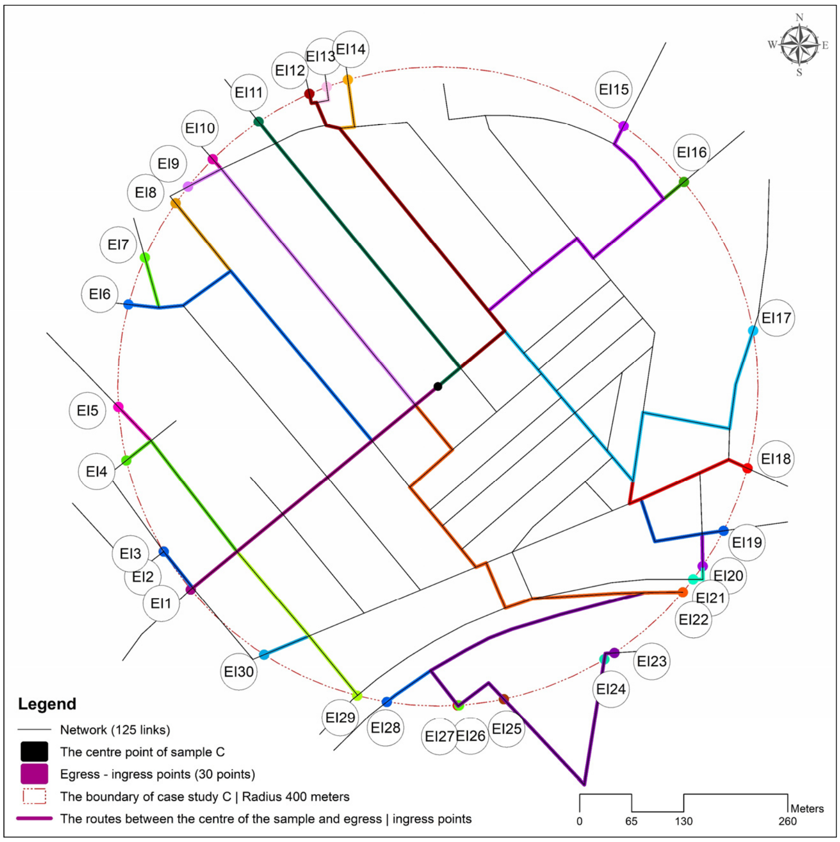


Figure 5.69. The route of the shortest distance (network distance) between the centre of sample C and the marginal (egress/ingress) points. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

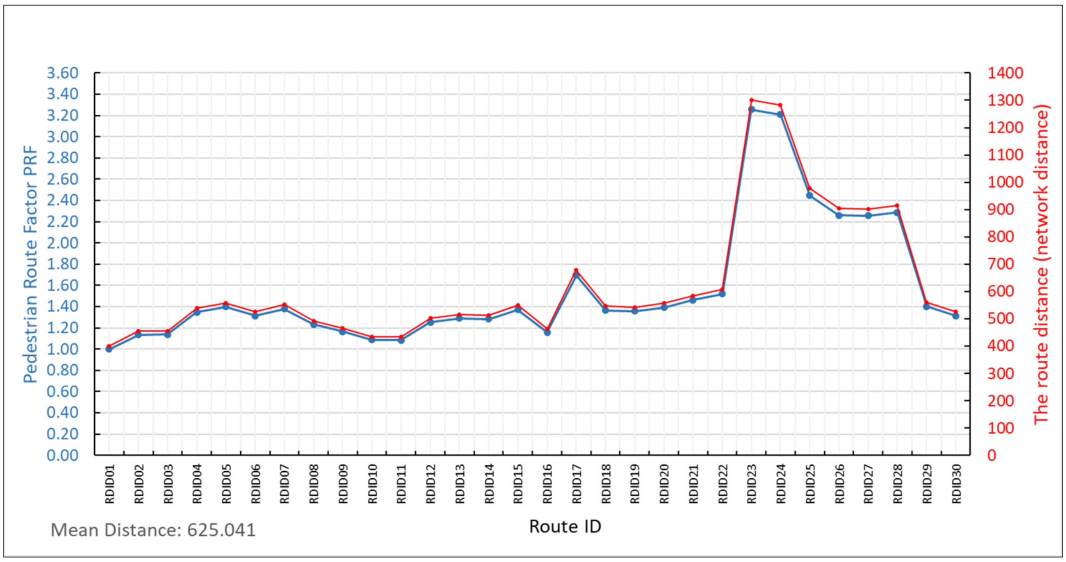


Figure 5.70. The values of Pedestrian Route Factor (*PRF*) and the shortest distance for 30 links that reach between the peripheral points and the centre of case study C (paralleled pattern).

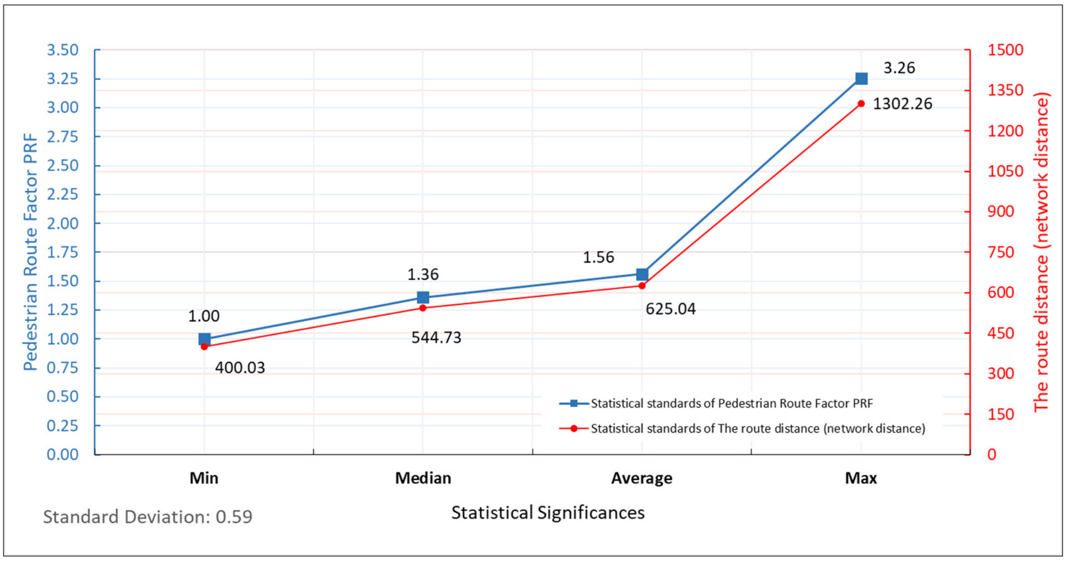


Figure 5.71. The statistical standards: minimum, median, average and maximum of the Pedestrian Route Factor (*PRF*) and the route distance (network distance) of 30 links for case study C.

PRF in sample C (Table 5.14) indicates a significant difference in its statistical values: minimum, median, average, and maximum, besides the shortest length of routes. RDID23 is the longest distance between EI23 and the centre, where its *PRF* is more than three times as long as the radius. The external points (egress/ingress) and all their routes reach the centre by tracking the shortest path (Figure 5.70). The median and average value of the *PRF* is 1.36 and 1.56, which corresponds to 544.73 and 625.04 metres respectively as the median and average of the route distance (network distance). The value of D_{mean} is about 625.04 metres; it is higher than cases A and B, as the value exceeded the radius by more than 200 metres (Figure 5.71).

Table 5.14. The values of the route distance (network distance), the radius of the sample (Geodetic/Euclidean distance), and the Pedestrian Route Factor (*PRF*) of 30 routes for case study C.

Route ID	The route distance (network distance)	The radius of the sample (Geodetic | Euclidean distance)	Pedestrian Route Factor PRF
RDID01	400.03	400	1.00
RDID02	454.73	400	1.14
RDID03	455.44	400	1.14
RDID04	539.65	400	1.35
RDID05	559.06	400	1.40
RDID06	525.42	400	1.31
RDID07	552.03	400	1.38
RDID08	492.94	400	1.23
RDID09	466.02	400	1.17
RDID10	435.12	400	1.09
RDID11	434.32	400	1.09
RDID12	501.82	400	1.25
RDID13	515.94	400	1.29
RDID14	513.43	400	1.28
RDID15	548.92	400	1.37
RDID16	464.27	400	1.16
RDID17	678.97	400	1.70
RDID18	546.36	400	1.37
RDID19	543.11	400	1.36
RDID20	556.67	400	1.39
RDID21	585.26	400	1.46
RDID22	608.65	400	1.52
RDID23	1302.26	400	3.26
RDID24	1283.57	400	3.21
RDID25	978.78	400	2.45
RDID26	904.61	400	2.26
RDID27	902.43	400	2.26
RDID28	914.69	400	2.29
RDID29	561.18	400	1.40
RDID30	525.58	400	1.31

5.2.3.7.4 Case Study D: Loop-grid Pattern

The street pattern in sample D reflects the straight-looped routes with 28 external points (egress/ingress). It includes 28 routes characterised by the shortest distance between these bordering nodes and the centre of the sample (Figure 5.72). The *PRF* besides the route distance (network distance) values both are computed and entered in Table 5.15 and Figure 5.73. The maximum of *PRF* is about 1.92 and responds to 768.02 metres of the route distance (network distance).

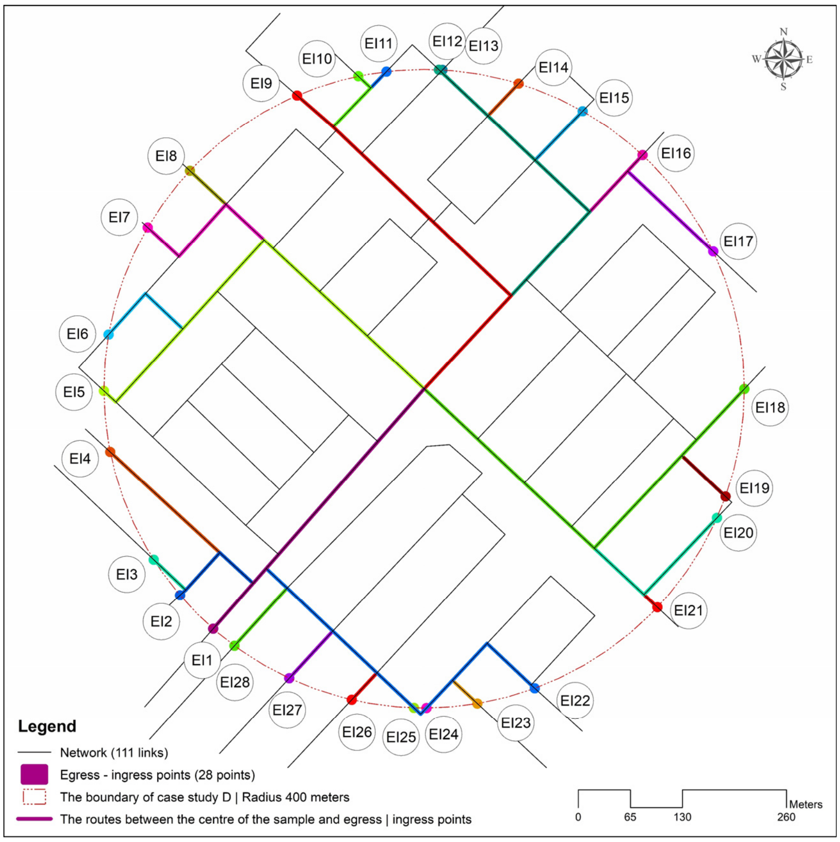


Figure 5.72. The route of the shortest distance (network distance) between the centre of sample D and peripheral (egress/ingress) nodes. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

The median and average as indicators refer to the significant quantity for both the *PRF* and the path length; their values are 1.33 and 1.31 for the *PRF*; and 530.08 metres and 523.40 metres respectively (Figure 5.73). Regarding the D_{mean} value, the result is 523.40 metres (Figure 5.74). The street pattern can be acknowledged as the first factor that shapes, not only the spatial configuration of the urban elements, but also the number of external points. In this research, this is located on the boundary of the case study. Theoretically, the egress/ingress nodes are the connection points between the frontier of the selected sample and its centre, and it controls the link between the sample and the other surrounding neighbourhoods. It is possible to identify the significant differences between the four selected neighbourhoods where each sample expresses the street pattern that reflects the different reading of the Pedestrian Route Directness. Within the upcoming chapters, comparisons will reveal where the four samples might meet or diverge. Furthermore, the comparison helps to determine the disparity between the organic/spontaneous pattern (sample A) and other samples that follow the geometric/pre-planned pattern (C, D, and partially B).

Table 5.15. The values of the route distance (network distance), the radius of the sample (Geodetic | Euclidean distance), and Pedestrian Route Factor *PRF* for 28 routes. Case study D.

Route ID	The route distance (network distance)	The radius of the sample (Geodetic | Euclidean distance)	Pedestrian Route Factor PRF
RDID01	400.00	400	1.00
RDID02	453.97	400	1.13
RDID03	499.54	400	1.25
RDID04	567.33	400	1.42
RDID05	568.30	400	1.42
RDID06	557.13	400	1.39
RDID07	479.24	400	1.20
RDID08	400.00	400	1.00
RDID09	525.73	400	1.31
RDID10	555.13	400	1.39
RDID11	562.01	400	1.41
RDID12	562.26	400	1.41
RDID13	561.76	400	1.40
RDID14	533.79	400	1.33
RDID15	482.54	400	1.21
RDID16	400.00	400	1.00
RDID17	519.29	400	1.30
RDID18	565.40	400	1.41
RDID19	526.37	400	1.32
RDID20	509.54	400	1.27
RDID21	400.00	400	1.00
RDID22	768.02	400	1.92
RDID23	665.55	400	1.66
RDID24	575.62	400	1.44
RDID25	553.51	400	1.38
RDID26	535.95	400	1.34
RDID27	494.04	400	1.24
RDID28	433.07	400	1.08

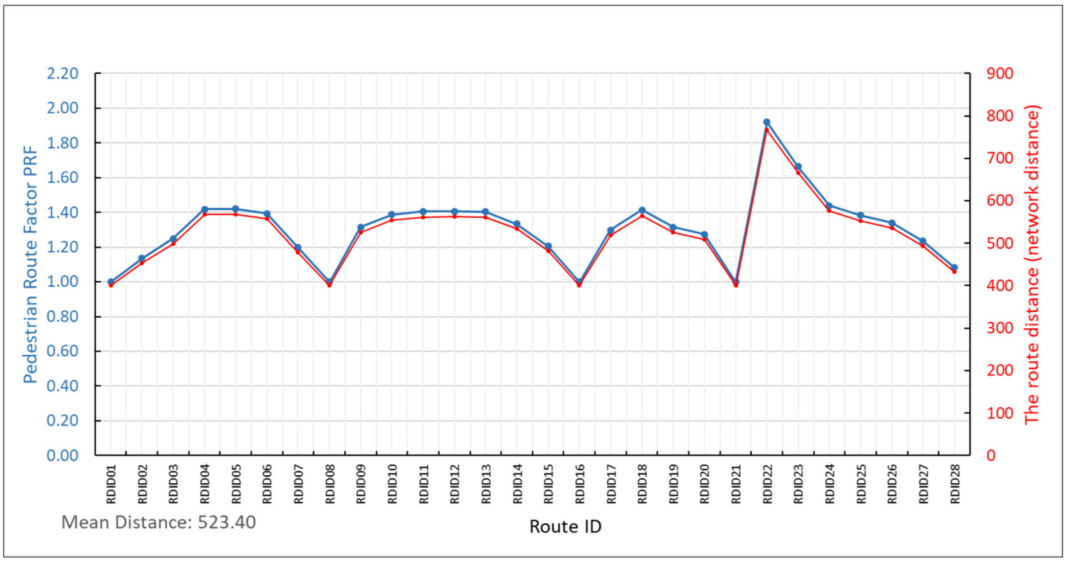


Figure 5.73. The Pedestrian Route Factor (*PRF*) values and the shortest distance for 28 links that link the peripheral points and the centre of case study D (loop-grid pattern).

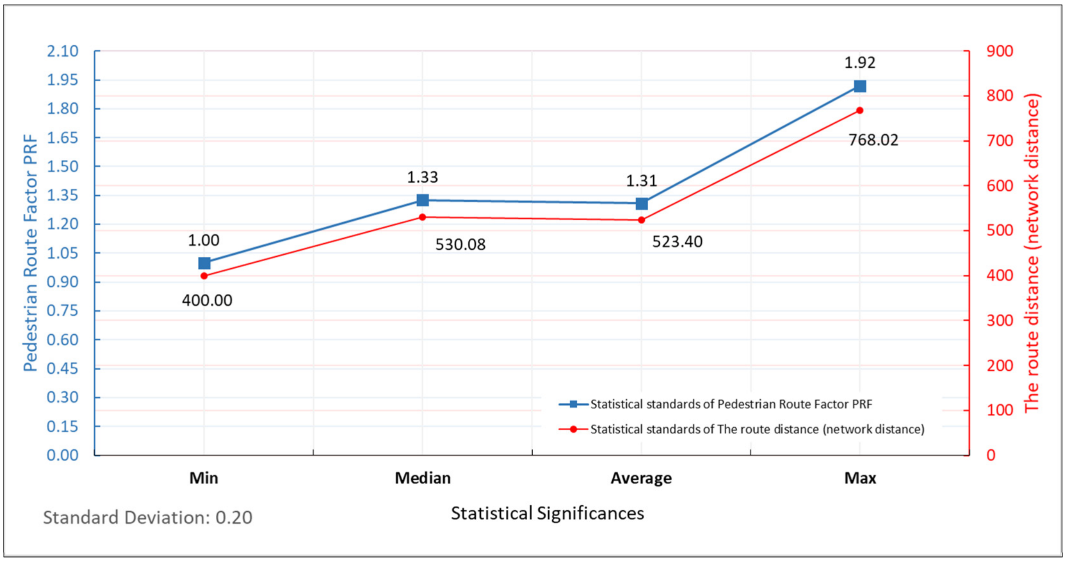


Figure 5.74. The minimum, median, average and maximum statistical standards of the Pedestrian Route Factor (*PRF*) and the route distance (network distance) of 28 links for case study D.

5.2.3.8 Ped-shed and Effective Walking Area | PS and EWA

Ped-shed (walkable catchment) is an indicator to measure the extent to which an area is reachable from the centre of the selected sample through the more usable streets (routes). The indicator deals with the land (plot, parcel) that is located along the adjacent street within a defined distance. Ped-shed includes developed lands, whereas the streets, parking, large green spaces, and river are excluded. The technique is to track the plots on both sides of a selected street which is defined by the centre of the sample and its boundary in order to determine the coverage area for a walking distance (five minutes) from and to the centre of a neighbourhood. It refers to the percentage of the area, which is reachable from the adjacent streets within walking distance. The Ped-shed indicator is formulated as follows:

$$PS_{built} = \frac{BL_{net}}{BL_{fly}}$$

$$PS_{plot} = \frac{PL_{net}}{PL_{fly}}$$

Where PS_{built} is the Ped-shed for the built-up area, BL_{net} is the accessible developed land as a built-up area along the street which connects the centre of the sample and a destination (walking or network distance), and BL_{fly} is the same technique using the bird's flight (geodetic or Euclidean distance). PS_{plot} is the Ped-shed for plot area, PL_{net} is the reachable developed plots along the street which link the centre of the case study and a destination (walking or network distance), PL_{fly} is the same method via the bird's flight (geodetic or Euclidean distance). The BL_{fly} and PL_{fly} in this study represent the radius that equals 400 metres, and the BL_{net} and PL_{net} denote the routes that are examined within 400 metres, starting from the centre of the sample toward the boundary of the sample based on the walking distance. Moudon et al. (1997) refer to the effects of neighbourhood design on pedestrian movement; this study involved twelve sites within one-half-mile radius area as this distance explains an area of approximately 500 acres, which is suitable for pedestrian travel. The main finding is that small blocks, by continuous and connected sidewalks, play a crucial role in promoting pedestrian travel (Hess et al. 1999).

Hess (1997) uses the same technique under a different term, *"walking shed"* to measure the connectivity of streets and pedestrian networks and their role in activities and the quality of life in six different neighbourhoods. This measure is applied by Commission (2000); (2007) as an indicator to examine the livable neighbourhood in order to prepare a community design code. Jones (2001) examines two neighbourhoods (Ballajura and Shenton Park) in Western Australia by applying Ped-shed. Porta et al. (2005) employ Ped-shed (walkable catchment) in testing two urban centres in the Perth metropolitan area. The Ped-shed technique is also applied by Tal et al. (2012) to evaluate the walkability in nine neighbourhoods in the city of Davis, California. Remali (2014) adopted the same method in studying three different urban areas in the City Centre of Tripoli, Libya.

The Effective Walking Area (EWA) is another indicator that deals with the number of plots or developed land rather than the area. It is a ratio of the number of parcels (plots) within a (one-quarter mile) walking distance of a known node to the total number of parcels (plots) within a (one-quarter mile) radius of that node. Its values range between 0 and 1, where a higher value implies that more plots are within walking distance of the pre-defined point, indicating a more connected network (Dill 2004); (Tal et al. 2012).

$$EWA = \frac{N_{net}}{N_{total}}$$

Where EWA is the effective walking area, N_{net} is the number of plots within a given distance (400 metres - walking distance) from a node (centre), and N_{total} total is the total number of plots within a selected area with (400 meters – radius) from the same node (centre).

Effective walking area (EWA) is used by Dill (2004) in measuring network connectivity in Portland, Oregon region, for bicycling and walking. Also, Tresidder (2005) refers to EWA as an indicator to study the different approaches to calculating connectivity. Tal et al. (2012) denote the indicator in their study on the nonmotorized accessibility and connectivity of the pedestrian network. In this current research, the pedestrian route is already computed by ArcMap 10.2.2, as the shortest distance between the centre of the sample and the external nodes along with the boundary of the case study. These routes are addressed within a 400-metre walking distance (network distance) starting from the centre of the case study. All adjacent plots are calculated, and some of the selected streets that are examined in *PS* and *EWA*, also connect the centre of the sample and the outer area through the external nodes (egress/ingress). After mapping the plots located within a 400 metres walking distance (network distance) from the centre of each single sample, the value of both Ped-shed and the Effective Walking Area are computed. The Ped-shed indicator is calculated according to two methods; the plot area and the built-up area. The Effective Walking Area deals with the ratio of the number of plots covered by a 400 metre-based walking distance to the number of plots reached within a 400-metre radius. In case study A (Figure 5.75), the Ped-shed based on the plot area is 0.66 and on the built-up area, it is about 0.69.

Figure 5.75. Ped-shed and Effective Walking Area of case study A. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and G.I.S.Department (2016).

In terms of the number of the plots that refers to the Effective Walking Area, the total number of Ped-shed is 1164 plots of 1753 as the overall plots of sample A; therefore, the ratio is 0.66. The plot number is a significant factor in determining the value of the EWA wherein sample A represents the organic pattern, and the plots' area is quite small with an irregular layout. Additionally, the interrelationship between the network and the adjacent plots are more coherent, as the street width is narrow and the metric distance between the plot and street is reduced.

In sample B, the Ped-shed covers about 0.57 as the plot area, while its value regarding the built-up area is 0.60. The number of plots involved is 1067 of the total number of 1976 plots; accordingly, the ratio of EWA is 0.54 (Figure 5.76). The plot size in case study B is varied and combines the organic layout and planned plots. The oldest area (north-east) seems an isolated land as it is enclosed by the riverbank and the newest street with high-rise buildings. In this regard, the degree of connectivity between this area and the remaining places of sample B also seem weak as only two streets link the main street and the oldest part (Figure 5.76).

Figure 5.76. Ped-shed and Effective Walking Area of case study B. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

In case study C, the land covered by Ped-shed within a 400-metre walking distance is about 0.64 (plot area) and 0.69 (built-up area). In total, 579 plots are subjected to the network distance (400 metres), whereas the total number of the plots in sample C is 849, and EWA is 0.68 (Figure 5.77). Sample C exhibits a regular plot pattern, and the relationship between the street and adjacent plots is governed by the metric distance, besides the straight network. The plots' area increases compared with the earlier two samples A and B, while the number of plots is reduced (Figure 5.77).

Figure 5.77. Ped-shed and Effective Walking Area of case study C. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

In sample D, the walking distance starting from the centre and proceeding for 400 metres encompasses PS_{built} at 0.49 and PS_{plot} at 0.45. The value of EWA is 0.44 (Figure 5.78). The low density of the plot numbers is the main distinguishing characteristic of case study D; furthermore, the quarter of the selected area in the south-west is out of the Ped-shed and Effective Walking Area.

Figure 5.78. Ped-shed and Effective Walking Area of case study D. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

This phenomenon is due to the street pattern, and the mechanism used to link the network and plots differ from what is adopted in the other three cases A, B, and C. Although case study D (loop-grid pattern) is based on the pre-planned system, according to PS_{built} at 0.49 and PS_{plot}, the EWA reflects the lowest value of those three indicators.

5.2.4 Land Use: Density and Diversity

Land use is a key factor in developing and growing the density and diversity of a city pattern, although mono-function activities, such as residential areas, are likely to be located with lower movement. Hillier (1999b) describes the urban network as a sustainability concern, and not just a configurational shell in to contain human activity. Land use is an indicator that affects the urban built environment, particularly social life, human activities, the uniform use of urban space, and even the value system of the community. The nature of land use can be integrated with these considerations in order to promote the quality of street life and social interactions (Carmona et al. 2010). Hillier (1999a) tends to use the term ‘movement economy’ which is based on natural movement. The movement explains that, “evolving space organisation in settlements first generates movement patterns, which then influence land use choices, and these in turn generate multiplier effects on movement with further feed-back on land use choices and the local grid as it adapt itself to more intensive development” (Hillier 1999a, p 2). Thus, a significant correlation between movement patterns and the distribution patterns of land use are evident in a place.

Land use is a more critical factor in formulating the value of a place at different levels that range from the micro to the local scale. A focus on land use considers the value of activities that can considerably contribute to the increase in controlled density and diversity (Couch et al. 2000). Since the main dramatic changes in the morphology of a city influenced by the industrial revolution, “the growth of cities has been shaped by the development of their transport facilities” [therefore] “the pattern of activities and land uses in the city, and the transport system, existed in some kind of symbiotic relationship” (Hall 2014, p 39). According to Shay et al. (2003), there are two dominant groups of variables; accessibility and mixed land use. The proximity of mixed-use should preferably be within ½ mile of residential use. This is important as diversity enables self-improvement and small-scale investment in properties (Montgomery 1998). Jacobs et al. (1987) suggest some prerequisites to ascertain effective urban space, which are: (1) livable streets and neighbourhoods; (2) an integration of activities in terms of living, working, shopping, and social activities; (3) focusing on buildings which define the urban public space as a humanmade environment (Jacobs et al. 1987).

The density, according to Wang et al. (2011) relates to the degree of accessibility and connectivity of the network that links a dense location to other places in a city. Hence, priority is given to the street centrality and its role in defining the validity of a place’s intensity. Porta et al. (2009) refer to the street centrality indices as indicators in formulating the urban structure and the density of land use. In this study, land use is categorised and mapped by using two formal sources of information that are authorised by the G.I.S.Department (2016) and R.S.GIS.U (2017). The value of density and diversity is extracted in detail for the four-selected urban areas. Two indicators of land use represent a crucial criterion in evaluating each sample separately and in comparing them. The technique of tracing the land use of the four samples depends on the Mayoralty of Baghdad and the direct observation. Land use maps from the Mayoralty of Baghdad partially refer to the general uses apart from the specific details of use; therefore, through observation one can designate the definite use of land in the selected samples.

5.2.4.1 Case Study A: Organic Pattern

In sample A the distribution pattern of land use is highly overlapping, and the streets are named according to the activities they accommodate. The oldest region in the city is a more attractive location for diverse activities and functions, and for those who come for different purposes, such as shopping, entertainment, or participation in social activities. A high percentage of the central region of the city (including case study A) is occupied by commercial and business activities with 14 types of land use (listed in Table 5.16).

Table 5.16. The number of plots, the built-up and plot area per land use. In addition, the ratio of these categories is tabled. Case study A: organic pattern.

Land use	Total number of plots	Total built-up area	Total plots area	Numerical ratio %	Percentage of total built-up area %	Percentage of total plots area %
Administrative and commercial use	70	29809.4376	30452.4565	3.99	9.05	7.78
Commercial and business use	545	119740.18	122282.85	31.09	36.36	31.23
Educational and utilities use	6	3886.38	6143.37	0.34	1.18	1.57
Heritage and historical buildings	8	15018.61	31480.18	0.46	4.56	8.04
Industrial use	62	8837.48	8968.92	3.54	2.68	2.29
Mixed use CBAI (Commercial, Business, Administrative and Industrial use)	317	54574.40	55453.64	18.08	16.57	14.16
Parking	8	0.00	6924.00	0.46	0.00	1.77
Public facilities	2	2143.54	2415.80	0.11	0.65	0.62
Religious use	10	8823.96	13389.37	0.57	2.68	3.42
Residential and commercial use	136	17846.23	18294.20	7.76	5.42	4.67
Residential and industrial use	36	7144.15	7307.03	2.05	2.17	1.87
Residential use	477	52144.42	55571.15	27.21	15.84	14.19
Riverbank	2	0.00	16607.72	0.11	0.00	4.24
Vacant buildings	74	9312.82	16325.24	4.22	2.83	4.17
Total	**1753**	**329281.60**	**391615.93**	**100.00**	**100.00**	**100.00**

The research addresses the size of each type of land use (Figure 5.79), starting with the total number of plots per type of land use. This shows that commercial and business uses dominate other activities by 545 plots. The second most significant quantity is residential use; this uses 477 plots. Mixed-use CBAI (commercial, business, administrative and industrial use) ranked third most common at 317 plots, whilst the lowest number of the plots (only two) are for public facilities with six for educational and utility uses. The final type of land use shares the plots and ranges from eight to 136 commercial activity occupies some of these plots (Figure 5.80). The ratio of the coverage area is an indicator to determine the degree of use; this enables a comparison between the plot areas and the built-up area. In this regard, the three largest areas are commercial and business use, residential use, and mixed-use CBAI (commercial, business, administrative and industrial use) whose areas are 122282.85 m^2, 55571.15 m^2 and 55453.64 m^2 respectively. Regarding the built-up area, the result is slightly different; residential use is the third most prevalent (52144.42 m^2) whereas mixed-use CBAI is the second (54574.40 m^2). In contrast, the commercial and business use comprise the largest built-up area (119740.18 m^2). The plot and built-up area for the remaining activities are varied; (2415.80 m^2 - 31480.18 m^2 | plot area) and (2143.54 m^2 - 29809.44 m^2 | built-up), shown in Figure 5.81.

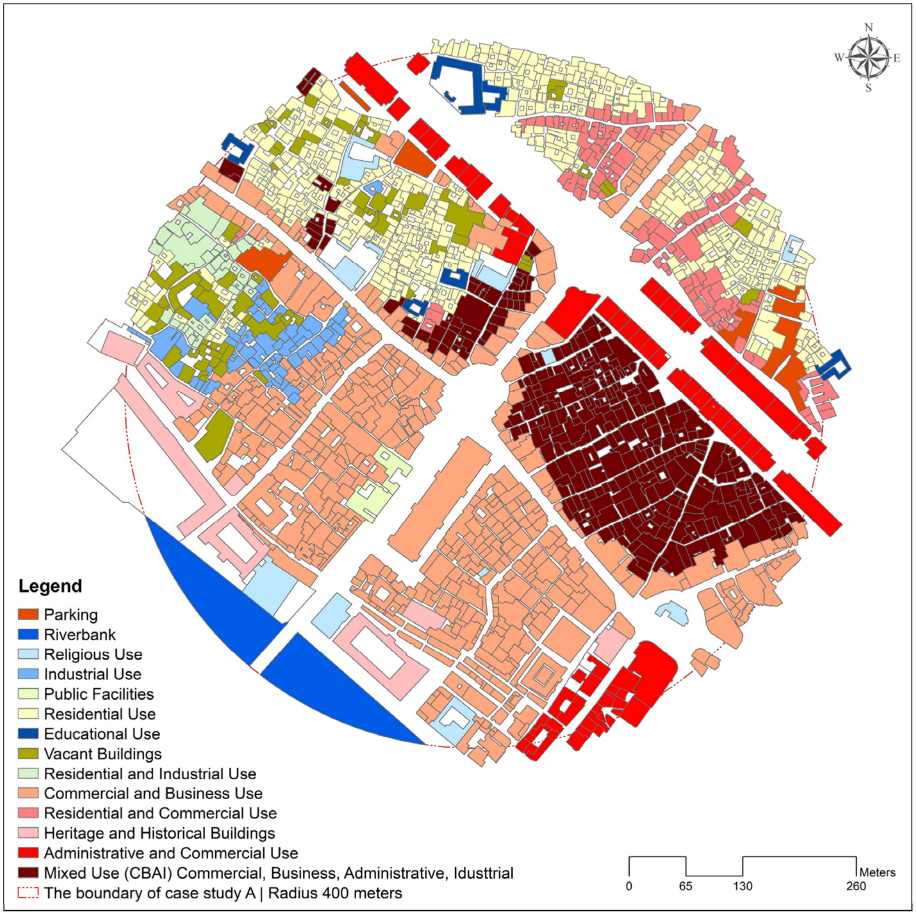


Figure 5.79. Land use of case study A (organic pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

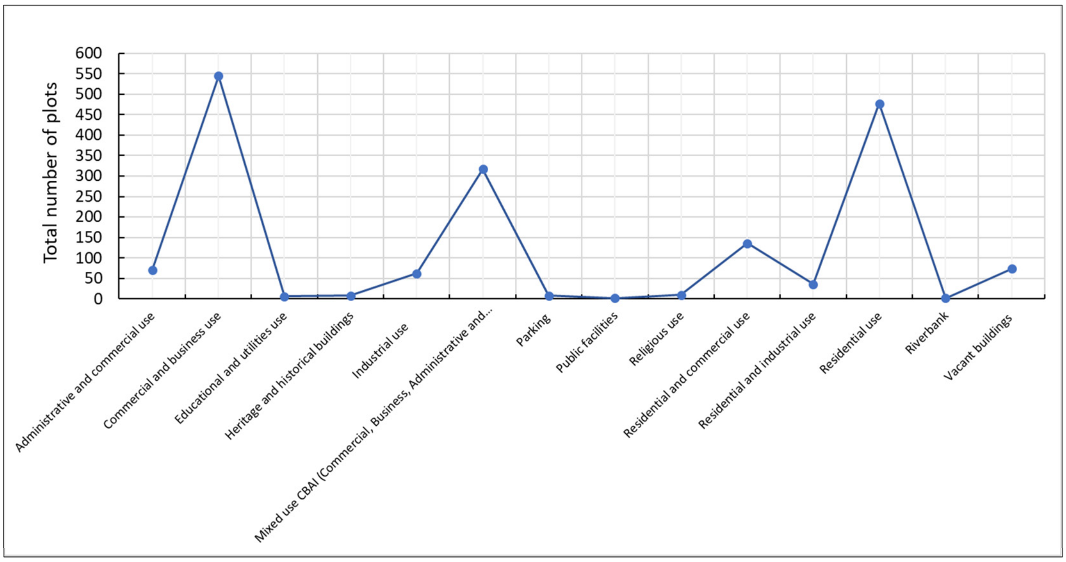


Figure 5.80. The total number of plots per land use for sample A. It displays the most significant quantity of commercial and business use, residential use and mixed-use CBAI (commercial, business, administrative and industrial use).

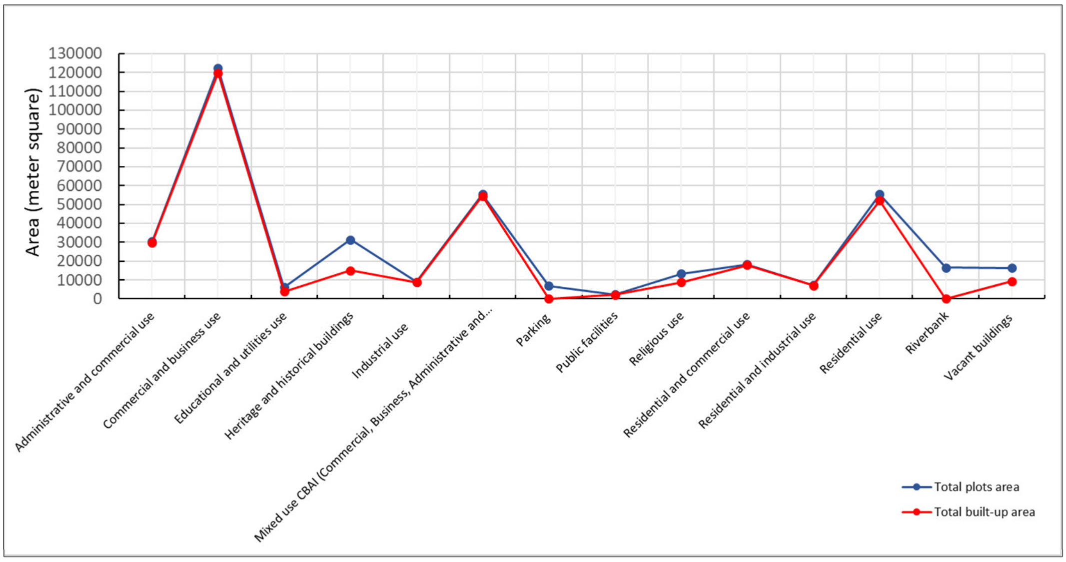


Figure 5.81. The plot and built-up area of land use for case study A (organic pattern). The degree of differentiation between two areas is moderate.

The number of plots, the plot area, the built-up area, and the percentage per land use are computed. The outcomes correspond to the three classes in terms of high and low ratios. Commercial and business use reaches comprise the highest value for the three categories (namely, number, area, and built-up) at it 31.09%, 31.23%, and 36.36% respectively. Residential use has a high percentage for only two categories, number and area, where the values are 27.21% and 14.19%, while its built-up area is 15.84%. This is less than the ratio for the mixed-use CBAI (commercial, business, administrative and industrial use) which is calculated at about 16.57%. In comparison, the proportions for the number and area of plots are 18.08% and 14.16% respectively. The other land uses fluctuate, such as: 0.11% - 7.76% numerical ratio; 0.62% - 8.04% plot area, and 0.65% - 9.05% built-up. The built-up area of the riverbank, parking and other open spaces are equal to zero (Figure 5.82).

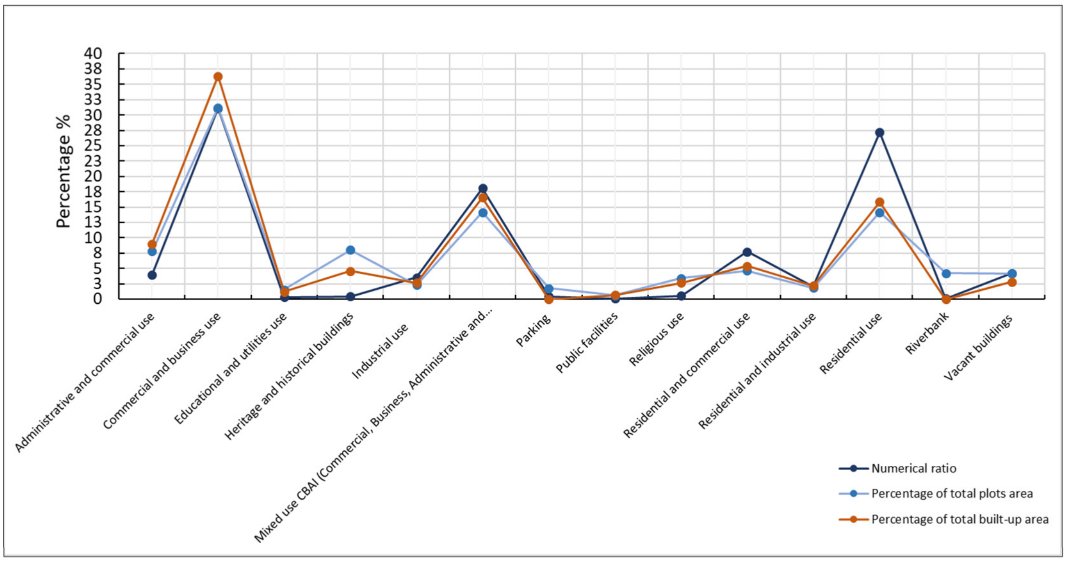


Figure 5.82. The ratio of land use based on the total number of plots, the plot areas, and the built-up area for case study A (organic pattern).

Case study A presents a greater concentration of the commercial and business activities; furthermore, the other uses tend to be more marketable and related to the commercial actions compared with the remaining land uses. The public facilities and parking are quite limited, which leads to increasing the exhaustion of land resource and the overcrowding of people. Even though this selected area is a sample extracted from the whole city, it shows the maladjustment of the distribution pattern of land use. This causes significant damage to the infrastructure of the urban structure. Moreover, the organic pattern and the street network emerge spontaneously and independently of the pre-planned and plot-block system, and that, to a large extent, is not appropriate with the modern and motorised-based movement.

5.2.4.2 Case Study B: Hybrid Pattern

The land use in sample B presents the traditional area (north-east) between the riverbank and the most modern street (Haifa street) and its multi-storey residential buildings. This area has kept on the same uses for residential purposes (Figure 5.83).

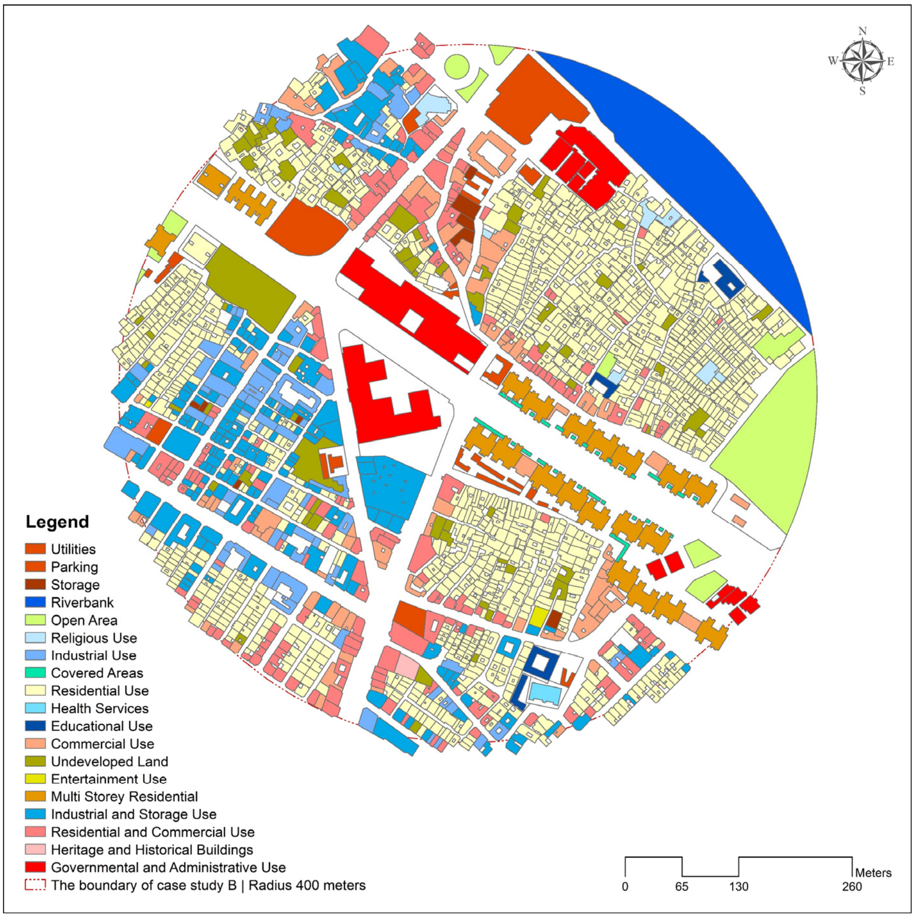


Figure 5.83. Land use for case study B (hybrid pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and G.I.S.Department (2016).

Like sample A, this part belongs to the oldest area of Baghdad, but it is also distinct as most traditional houses have been turned into different uses in sample A. However, the area shows a range of colours of depicting diverse land use and activities (Figure 5.83). Nineteen uses and their sizes are calculated and sorted for each kind of land use (Table 5.17). A significant number of plots (at 1298) are for residential purposes, and most are located within the traditional area. The residential and commercial uses hold the second highest quantity of plots at about 185, and the third use includes 179 plots for industrial and storage uses. The lowest number of plots fall between 1 to 86 for other purposes (Figure 5.84).

Table 5.17. The land use of case study B (hybrid pattern) and their quantities: number of plots, plot areas, and the built-up area.

Land use	Total number of plots	Total built-up area	Total plots area	Numerical ratio %	Percentage of total built-up area %	Percentage of total plots area %
Commercial use	86	19257.5796	24100.9887	4.35	7.30	6.48
Covered areas	6	1145.20	1145.20	0.30	0.43	0.31
Educational use	4	2295.35	4054.72	0.20	0.87	1.09
Entertainment use	2	408.41	408.41	0.10	0.15	0.11
Governmental and administrative use	13	19754.55	30175.93	0.66	7.49	8.12
Health services	1	634.87	1177.95	0.05	0.24	0.32
Heritage sites	1	556.01	556.01	0.05	0.21	0.15
Industrial and storage use	179	34713.95	36586.63	9.06	13.16	9.84
Industrial use	72	16024.93	18779.73	3.64	6.08	5.05
Multi storey - residential use	21	16097.13	16708.44	1.06	6.10	4.49
Open area	11	0.00	18605.17	0.56	0.00	5.00
Parking	10	1436.20	16145.23	0.51	0.54	4.34
Religious use	8	2441.38	3110.59	0.40	0.93	0.84
Residential and commercial use	185	29141.18	30130.51	9.36	11.05	8.11
Residential use	1298	116540.53	124571.56	65.69	44.18	33.51
Riverbank	1	0.00	22788.34	0.05	0.00	6.13
Storage	9	1785.28	1785.28	0.46	0.68	0.48
Undeveloped areas	63	0.00	17341.43	3.19	0.00	4.67
Utilities	6	1546.65	3560.29	0.30	0.59	0.96
Total	**1976**	**263779.19**	**371732.40**	**100.00**	**100.00**	**100.00**

The built-up area of the residential use is about 116540.53 m^2 of 124571.56 m^2, which denotes the plots' area. Both quantities stand for the highest value over other land uses. Industrial and storage use is the second most prevalent regarding the plot and built-up area at 36586.63 m^2 and 34713.95 $m^{2,}$ respectively. The third most considerable value is governmental and administrative use, with a plot area of 30175.93 m^2. However, residential and commercial use is the third most common in the built-up area at 29141.18 m^2. The values of other uses in terms of the plot area are between 408.41 m^2 and 24100.99 m^2, and 408.41 m^2 to 19257.58 m^2 for the built-up area (Figure 5.85).

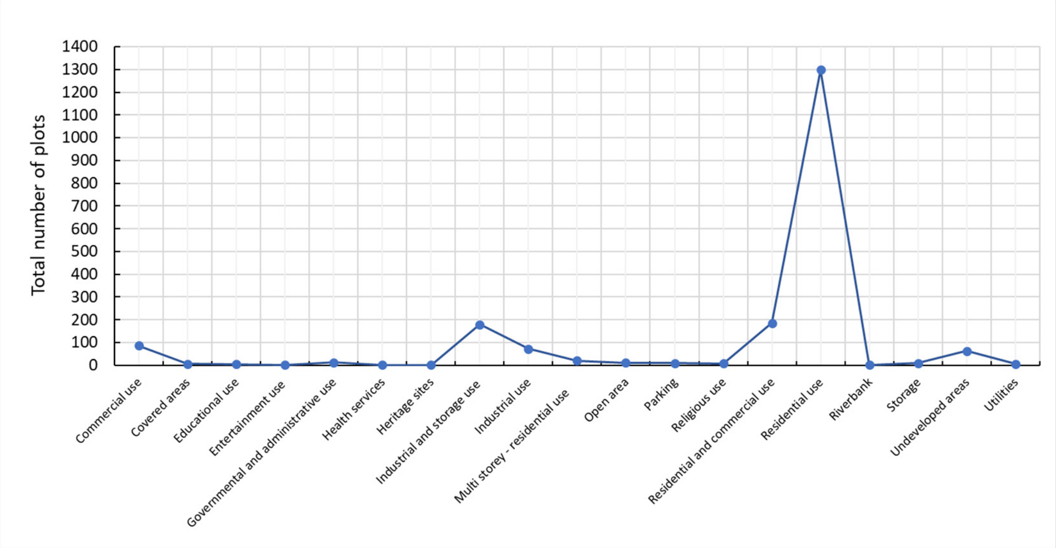


Figure 5.84. The total number of plots for each use in case study B (hybrid pattern). Residential use is dominant over other land uses.

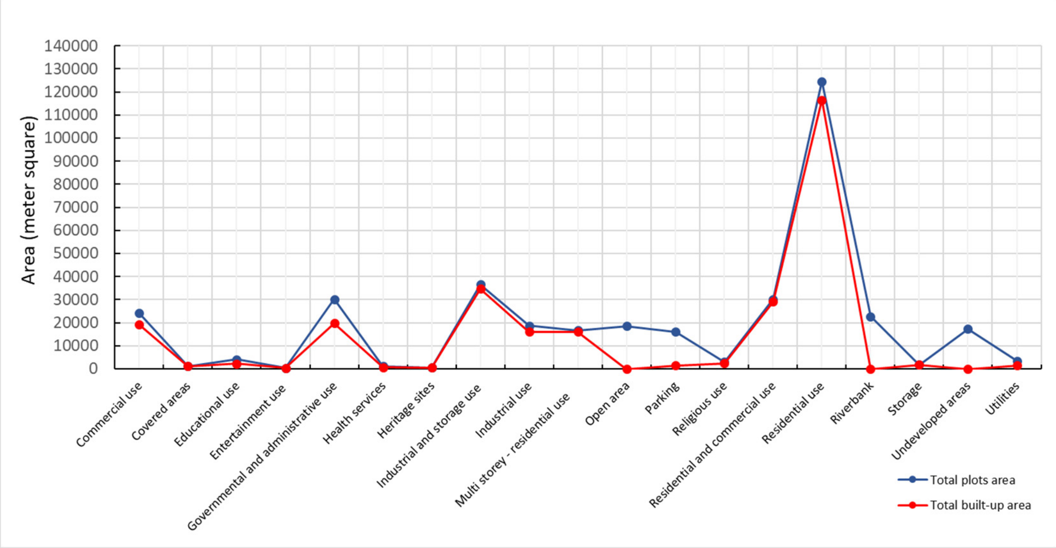


Figure 5.85. The two values of the occupied area: plot area and built-up area of the land use for case study B (hybrid pattern).

The proportional values of the three categories (number, plot area, and built-up area are calculated and listed in Table 5.17. The highest percentage is covered by residential use (65.69% for numerical ratio, 33.51% and 44.18 for plot and built-up area respectively). The ratio of these three categories for the other land uses are varied; for instance, residential and commercial use is calculated at 9.36% for the total number of plots (1976 plots) and comprises the second large ratio. The same purpose makes up 8.11% of the entire area of the plots (371732.40 m^2) and is the fourth most common use. In comparison, its built-up area is about 11.05% of the overall built-up area (263779.19 m^2) and is the third most prevalent (Figure 5.86).

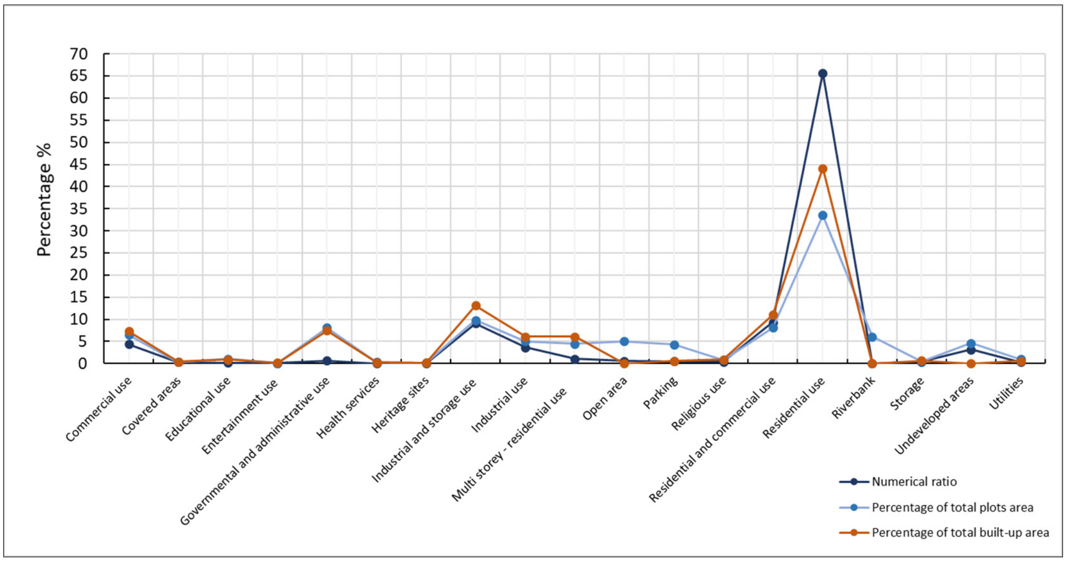


Figure 5.86. The percentages for the three categories (number, plot area, and built-up area) of the land use in sample B (hybrid pattern).

5.2.4.3 Case Study C: Paralleled Pattern

The selected area is designated for residential use where most plots are arranged within a parallel distribution pattern of the blocks (Figure 5.87), (Table 5.18).

Figure 5.87. The land use of case study C (paralleled pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Table 5.18. The land use of case study C (paralleled pattern) and their quantities: number of plots, plot areas, and the built-up area.

Land use	Total number of plots	Total built-up area	Total plots area	Numerical ratio %	Percentage of total built-up area %	Percentage of total plots area %
Commercial use	24	4958.0379	8005.3113	2.83	2.97	2.09
Educational use	11	7916.97	25332.67	1.30	4.74	6.61
Governmental use	6	3341.47	6297.39	0.71	2.00	1.64
Health services	2	1460.14	2098.04	0.24	0.87	0.55
Industrial use	33	11444.97	24579.00	3.89	6.85	6.41
Palm tree land	4	0.00	12749.79	0.47	0.00	3.33
Park	5	94.90	37790.65	0.59	0.06	9.86
Religious use	2	1492.77	6834.54	0.24	0.89	1.78
Residential and commercial use	38	8210.51	13916.18	4.48	4.91	3.63
Residential use	715	128210.96	239715.70	84.22	76.71	62.52
Undeveloped areas	9	0.00	6122.32	1.06	0.00	1.60
Total	**849**	**167130.73**	**383441.59**	**100.00**	**100.00**	**100.00**

Land use in this sample exhibits a greater concentration amongst the residential uses aside from the support services that appear as spots. These services, however, tend to occupy the main street to benefit from its central location and in turn occupy a greater number of plots (Figure 5.87). The diversity of land use covers eleven different activity types. The residential purpose represents the highest number at 715 plots, which is spread proportionately over the selected area. Residential and commercial uses are the second most common at 38 plots, while industrial use comprises 33 plots. Unlike the samples A and B, in sample C the commercial use includes only 24 plots. In terms of the remaining uses, the quantities range between two and eleven plots (Figure 5.88).

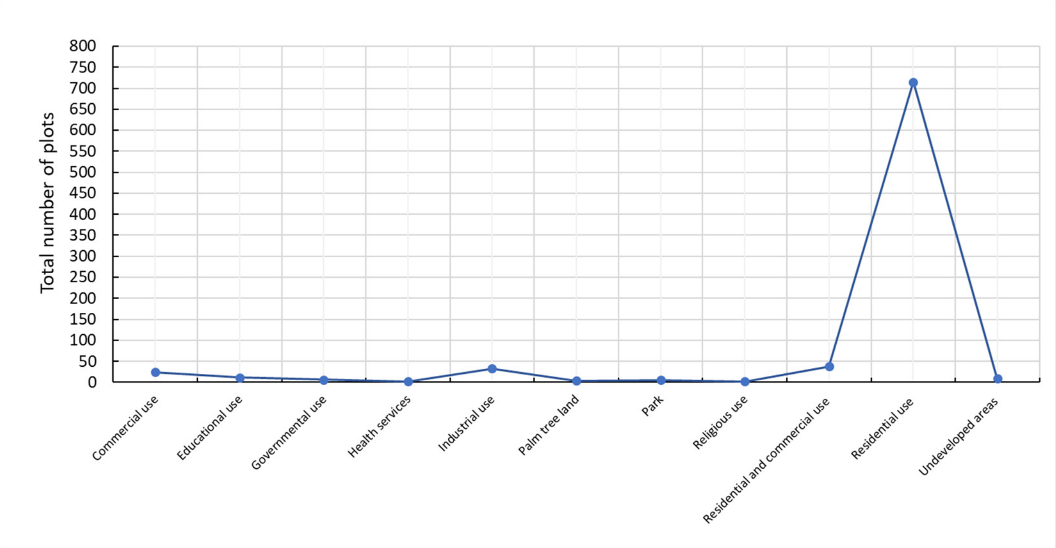


Figure 5.88. The total number of plots per land use for case study C (paralleled pattern). Residential use is dominant compared with the other uses.

In the selected area, the distinction between the plots' area and the built-up area is evident, particularly with regard to residential use. Accordingly, the amount of the coverage is less than those are surveyed in samples A and B. The residential purpose is about 239715.70 m^2 and 128210.96 m^2 is for the built-up area. The park (including the strip area between the two streets to the south of the selected area) occupies about 37790.65 m^2 and is the second largest plot area, while its built-up area is 94.90 m^2. This fluctuation between the plot and built-up areas is a dominant characteristic of the planning of most modern neighbourhoods (Figure 5.89).

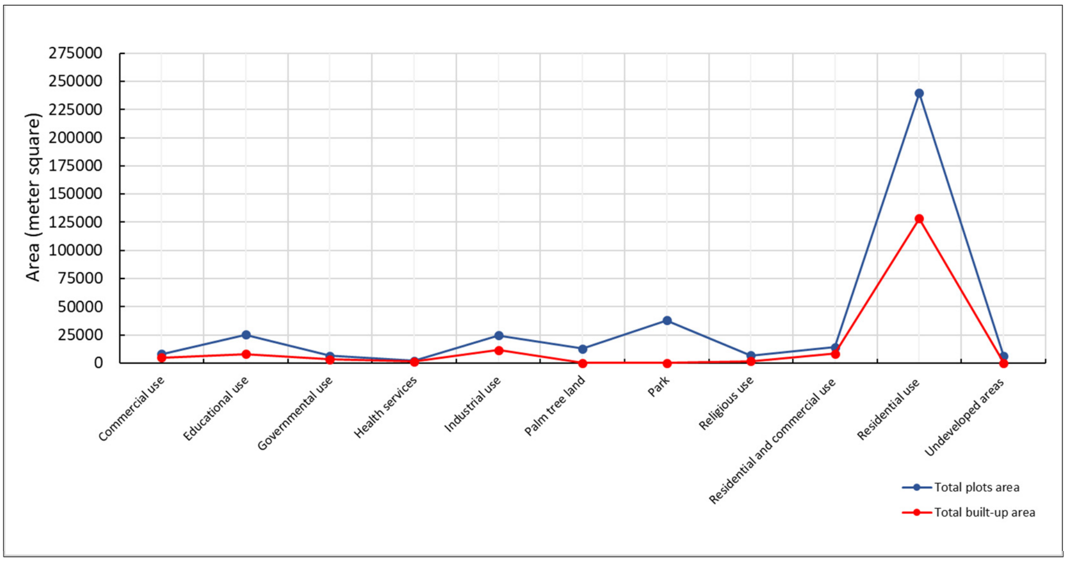


Figure 5.89. The fluctuation between the plot areas and the built-up area of case study C (paralleled pattern).

The total number of plots, the total area and the total built-up area show that residential use represents the highest ratios, at 84.22%, 62.52% and 76.71% respectively. Although residential and commercial use is the second most common at 4.48% of the numerical ratio, it is the fifth most prevalent within the plot area ratio at 3.63%. In comparison, it is the third most common at 4.91% for the built-up area. The third significant ratio is for the industrial use at 3.89% of the total number of plots, whilst this is fourth at 6.41% amongst the total plot areas, and second at 6.85% for the built-up area. The disparity amongst the ratio values continues with other types of land use. Sample C shows different values (number, area, and built-up) whether between its plots' purposes or in relation to cases A and B (Figure 5.90).

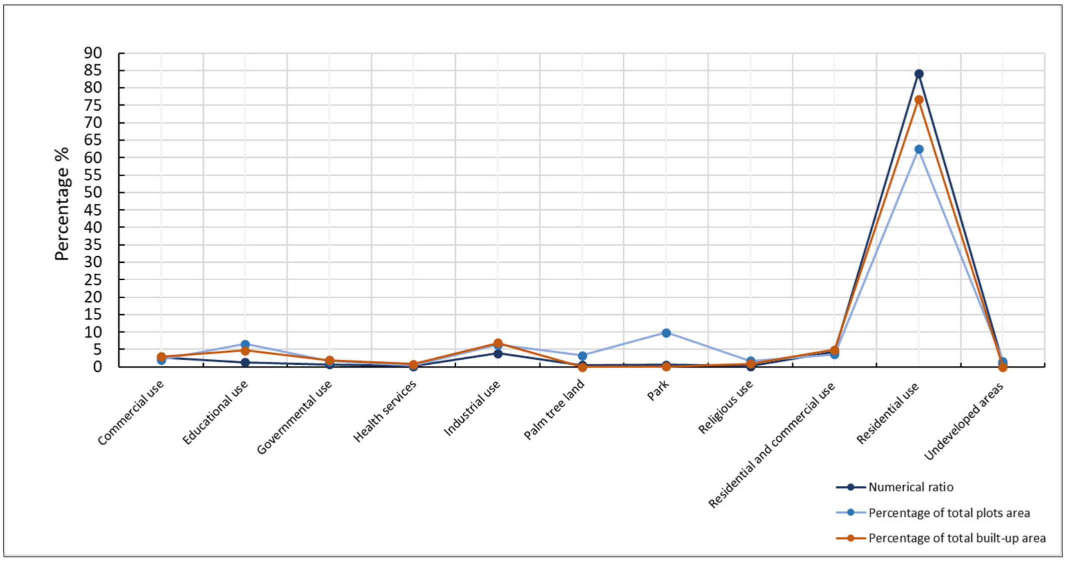


Figure 5.90. The numerical ratio and cadastral ratio (plot areas and built-up area) of the land use for sample C (paralleled pattern).

5.2.4.4 Case Study D: Loop-grid Pattern

Sample D displays more concentration toward the residential use, and the other services are placed mostly along the two main streets (north-east and north-west), while in the south-east street, these services are located on only one side (Figure 5.91).

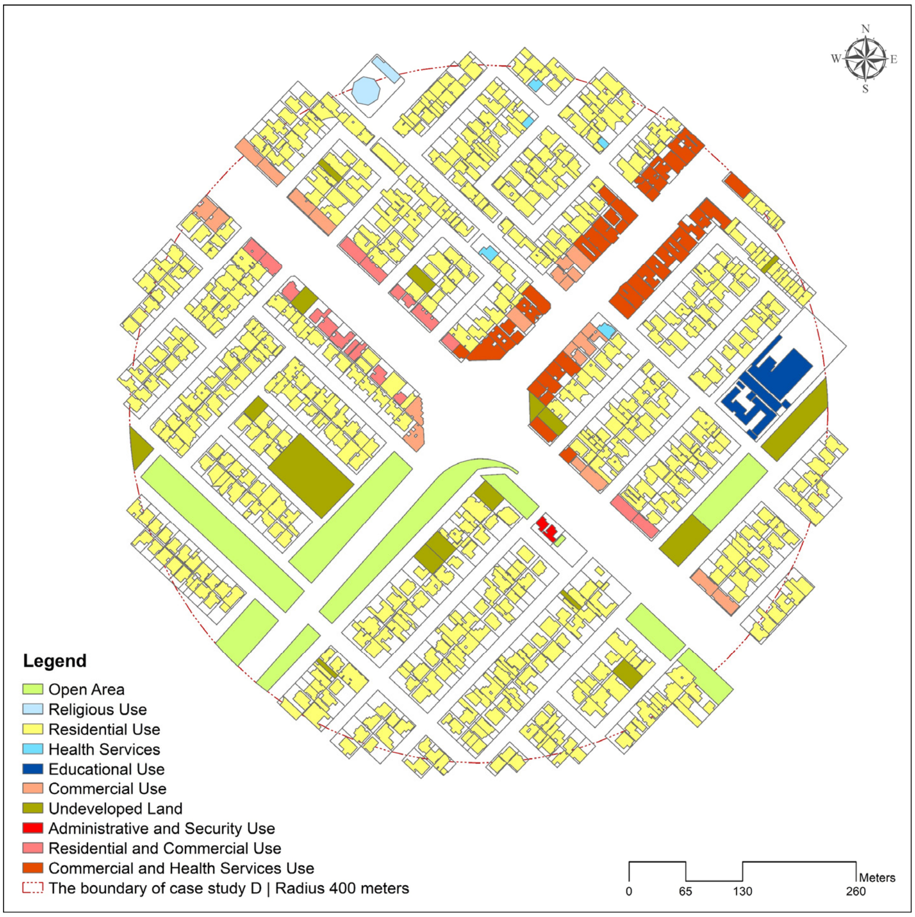


Figure 5.91. The land use of the selected area (D: loop-grid pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

To the south-west of the selected area, the main street is surrounded by open areas that work to separate between the residential blocks and the street. A pre-planned system is a significant factor that determines the land use, especially in relation to the main streets and their different commercial purposes (Figure 5.91). In contrast to sample A, land use is derived gradually and spontaneously from need. The most substantial plot quantity is for residential use which occupies 607 plots. In comparison, commercial and health use consists of only 38 plots and represent the second highest number, whilst twenty plots are for commercial purposes and represent the third most common use. Regarding the remaining land use, their share of the plots is varied and range from one to eighteen (Figure 5.92).

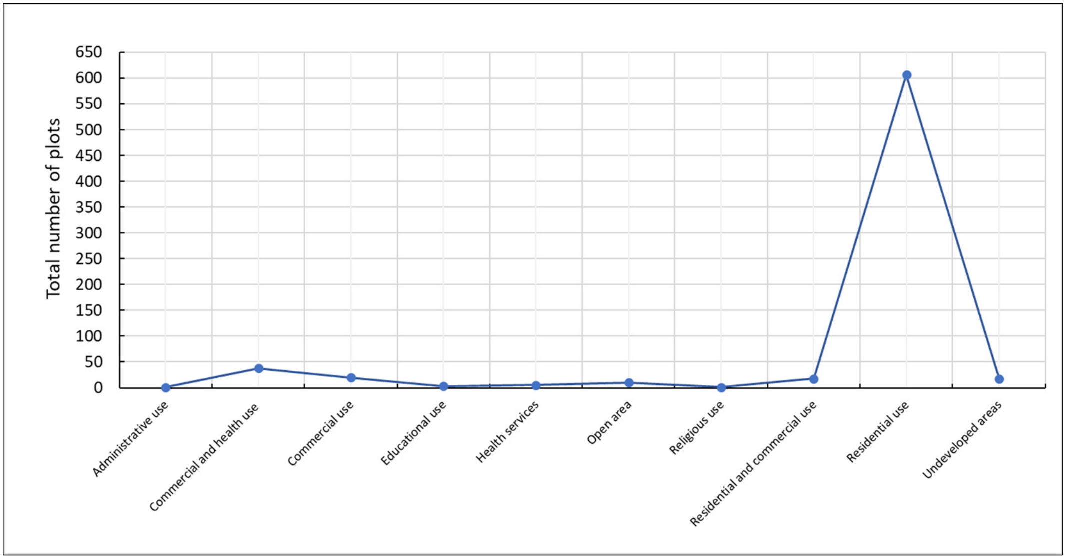


Figure 5.92. A chart displays the total number of plots per land for case study D, where residential use gets the highest number of the plots.

The relationship between the plot area and built-up area reveals the degree of the variation between the coverage area and open spaces. In this respect, the residential area is the most extensive domain for both types of area (plot area and built-up) at 238517.32 m^2 and 129189.47 m^2 respectively. The open area is the second largest plot area at 31971.64 m^2, whereas its value in terms of the built-up area is about 84.00 m^2. The third largest area is for commercial and health use, which comprises 16236.00 m^2 against 14174.18 m^2 is for the built-up area, which is the second most common land use (Figure 5.93).

In terms of the proportional values, residential use represents the highest percentage for all three classes at 84.31%, 71.65% and 79.32% for plot number, plot area and built-up respectively. Commercial and health use is the second highest ratio for the plot number at 5.28%, whilst at 4.88% it has the third largest plots' area. Moreover, its percentage for the built-up area is 8.70% and is the second most prevalent value among the other uses. Also, the numerical ratio and built-up area for commercial uses represent 2.78% and 4.58% respectively and are the third largest for both; however, it has the sixth largest per cent for the plots' area at 2.63% (Figure 5.94 and Table 5.19). The degree of density and diversity of land use is wide-ranging with significant variation, whether in one or across the four samples. Some use types are reduced as the areas become further removed from the oldest area, which is represented by case study A (the organic pattern). Regardless of the area, the residential purpose has the maximum percentage of land use in all but sample A. The other kinds of land use tend to occupy the central streets that are more central and accessible.

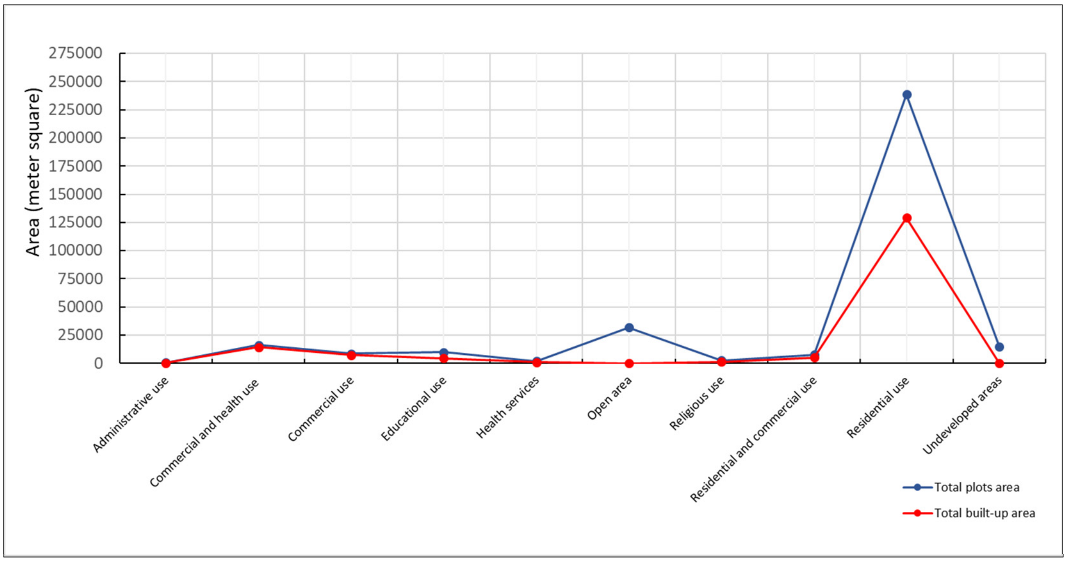


Figure 5.93. The differentiation between the plot areas and built-up area for the land use of case study D (loop-grid pattern).

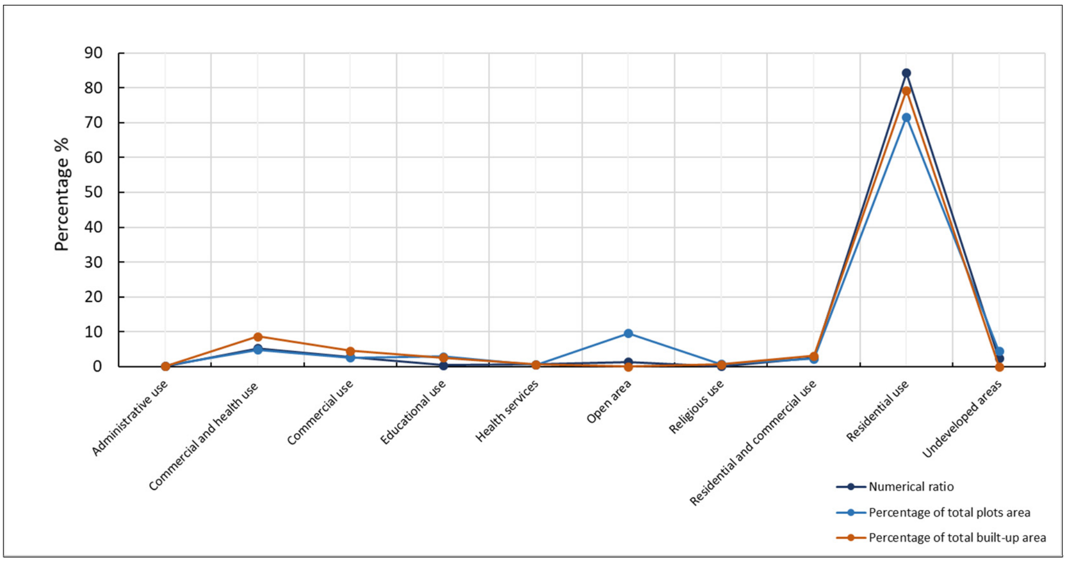


Figure 5.94. The proportional values of the three classes: the number of plots, plot areas and the built-up area of case study D (loop-grid pattern).

Table 5.19. The land use of sample D, which includes the total number of plots, plot area, and the built-up area.

Land use	Total number of plots	Total built-up area	Total plots area	Numerical ratio %	Percentage of total built-up area %	Percentage of total plots area %
Administrative use	1	316.127	762.5	0.14	0.19	0.23
Commercial and health use	38	14174.18	16237.00	5.28	8.70	4.88
Commercial use	20	7465.55	8740.18	2.78	4.58	2.63
Educational use	3	4343.30	9870.50	0.42	2.67	2.97
Health services	5	1009.28	1800.68	0.69	0.62	0.54
Open area	10	84.00	31971.64	1.39	0.05	9.60
Religious use	1	1147.89	2693.15	0.14	0.70	0.81
Residential and commercial use	18	5150.63	7551.88	2.50	3.16	2.27
Residential use	607	129189.47	238517.32	84.31	79.32	71.65
Undeveloped areas	17	0.00	14737.59	2.36	0.00	4.43
Total	**720**	**162880.44**	**332882.43**	**100.00**	**100.00**	**100.00**

5.3 Conclusion

The chapter addressed the two primary elements of the urban form: plot and block across the four selected areas: A (organic pattern), B (hybrid pattern), C (paralleled pattern) and D (loop-grid pattern). The focus is on the metric characteristics of both the plot and block. The analysis dealt with perimeter, size, dimension, density, mean area and block to street ratio. The chapter highlighted the significant differences amongst these indicators across the four samples. The traditional part of the city (sample A) exhibits more exceptional values regarding its plots and blocks. The spatial configuration of a case study A follows a spontaneous pattern in generating the plots and block. This pattern has responded to the implied and inherent order of the community. Due to its bottom-up approach in preparing the plot layout, in sample A the high variety of the plot size and plot perimeter is evident; in turn, this affects the block size and the block perimeters.

Like case A, case B (hybrid pattern) also includes a high diversity of size and perimeter. The new era of development has significantly affected the plot size, where Haifa Street and the high-rise adjacent buildings stand as the separation line between the oldest area and the other parts of the city. The value of samples A and B are close to each other. Both A and B have the highest quantity of plots and blocks, which includes 1753, 1976 plots and 138, 125 blocks respectively. The pre-planned order distinguishes both case study C and D, where their urban areas are subjected to the top-down approach in preparing the plot layout. Therefore, the level of diversity regarding the plot perimeter and plot size is less for samples A and B. The regularity of the production of the plot, as the smallest generative unit, is the key factor that affects the other elements of the urban form like the block. The reduction in plots and blocks in both cases C and D is clear compared with A and B. In this respect, sample C consists of 849 plots and 49 blocks, while case D is formed of 709 plots and 55 blocks. Sample A has the highest number of sides per block, while this phenomenon disappears partially in sample B and entirely in C and D. Block density within case study A holds the highest block density, while case C has the lowest density. Regarding the block area to the case study area ratio, both A and C show significant values compared with B and D. Across the four samples A has the lowest mean area due to the high quantity of (covered) blocks (about 136), while sample C holds the highest mean value area which includes only 45 (covered) blocks. The block to street ratio shows that case study A has less connectivity compared with D, which has the highest connectivity.

The relationship between the two primary components of the street structure: link (street) and node (intersection) were analysed. Nine different variables were employed across the four selected urban areas of Baghdad. Each case exhibited its values regarding the designated variables (*Id, Sd, LNR, INC, EPC, GPR, PRD (PRF*), *PS* and *EWA*). Three fundamental techniques were utilised in presenting these indicators: georeferencing maps, charts and tables. Land use between the plot and its building function was surveyed. The chapter dealt with two indicators of land use; density and diversity across the four selected samples; A (organic pattern), B (hybrid pattern), C (paralleled pattern), and D (loop-grid pattern). Land use was addressed in detail meaning that the one land use has different typified functions and activities. For those areas away from the historical centre, the density and diversity of use is less concentration focusing more on one function with a limited number of other activities. Even though diversity was present, particularly in samples C and D, the centrality value of the street plays a key role in controlling activities and their spread along the street edge, and this also attracts and increases the diversity of the land use. Both Chapters Four and Five analysed the neighbourhood scale by outlining the measurements of the street network and urban fabric. The next chapter (six), in accordance with the research process map, will address the two urban scales; street and block. The main interrelationship and comparison among the four case studies regarding the urban elements will be labelled in Chapter Nine and Ten

Chapter Six

Defining the Street Edge

Constitutedness | Permeability | Intervisibility

6.1 Introduction

The pattern (Edge – Edge interface) is governed by morphological dimensions that form the outline of a street edge regarding plots and blocks. It is also responsible for defining the boundary between two realms, private and public. The degree of overlap between the two territories is measured by different indices based on the characteristics of the street edge, such as porosity, transparency, permeability (Figure 6.1).

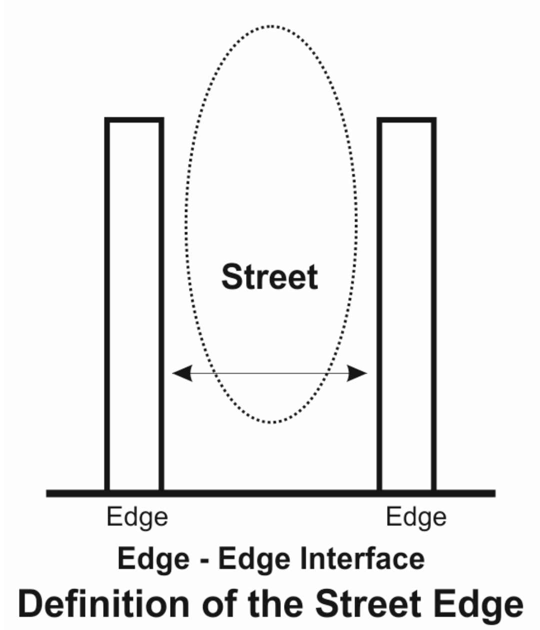


Figure 6.1. The fictive image illustrates the interface between two opposite street edges. Source: Drawn by the author.

The Multiple Centrality Assessment MCA is used to focus more on spatial dimensions at a micro-scale with a macro-scale domain. Therefore, inter-visibility, the density of entrances, permeability, and degree of constitutedness are considered. Micro-level observations are important in analysing the built environment with regard to private and public urban spaces. The reciprocal relationship between the private and public domains, with their control of the street and the configurational spatial structure plays a significant role in raising the quality of street livability. In this chapter, understanding the relationship of the spatial characteristics at a micro and macro scale requires an understanding of how spatial elements in an urban context are placed around each other and the impact of the configurational structure on the street network and human behaviour. From the MCA analysis, three categories of betweenness will be used, namely blue, yellow, and red, which ranged from 0.0000 – 0.0002, 0.0002 – 0.0017, and 0.0017 – 0.1397 respectively. These will be applied to define the selected streets, where there will be two streets for each category. Six streets for each case study will be examined for their constitutedness and permeability with regard to the betweenness centrality MCA.

6.2 Benefiting the Space: Responding to the Urban Edge

The way in which a community, particularly in Iraq, uses a public space could lead to a spectrum of expectations that inform individual action and collective behaviour. Principally, human behaviour tends to conform to the predominant dimensions of living in a particular community, for instance, by adopting the common beliefs, norms, values, economics, politics and the natural/built environment. In this sense, Bianca (2000, p 22) states that the physical environment represents, "… every genuine cultural tradition, architecture and urban form" and that this "… can be seen as a natural expression of prevailing spiritual values and beliefs .... it is an outcome of tradition and daily practices which correspond to certain spiritual principles". These considerations embed the interrelationship between space, time and culture. Moreover, the tripartite connections among these three social parameters (sociocultural, sociophysical and socioeconomic) are rooted in and formulate both the ecological pattern and different responses to the surrounding environment (Figure 6.2 illustrates this relationship).

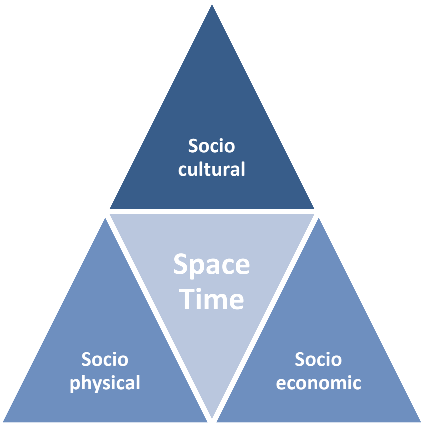


Figure 6.2. The tripartite connection among three social parameters (sociocultural, sociophysical and socioeconomic), which are governed by space and time. Source: Drawn by the author.

Even though there are four different urban fabrics represented by the selected samples: organic (A), hybrid (B), paralleled (C) and loop-grid (D), people who perceived the public spaces shared the same cultural patterns but not the same behavioural actions. The observations were based on the ethnographic method and quantify the responses of people who use the street. They enabled the documentation of people's reactions and interactions without any interference or impact on the subjects' behaviours. In this regard, to a large extent, the historical area (A) offers an opportunity for individuals to share the public space and engage in such activities as walking, staying, sitting, standing, watching and chatting as long as the street edge communicates the accommodation of such activities (Chen et al. 2008; 2013).

In the contemporary neighbourhoods, such as C (paralleled pattern) and D (loop-grid pattern), the lost knowledge of public and semi-public or semi-private spaces can be experienced in various ways. Moreover, in the modern areas, the human scale, enclosure and definition, and the authority of its public space are missing (Figure 6.3). As the public space can be distinguished according to the activity pattern of the adjacent context, it is possible to recognise different types of more common street edges, such as residential, commercial and mixed (Figure 6.4).

13.12.2016 10:24

12.12.2016 16:03

Figure 6.3. In the modern pattern, some public spaces are not within the authority of residents, where there is no explicit declaration about the claim over this type of territory. Source: Photographed by the author's team, 12/Dec/2016.

05.12.2016 11:36

06.12.2016 15:33

Figure 6.4. Residential edges: Multi-storey residential areas versus traditional low-rise neighbourhoods. Source: Photographed by the author's team, 12/Dec/2016.

These edges are entirely responsible for shaping people's responses, particularly within residential areas where people react spontaneously to the private, semi-private and even semi-public realms (Figure 6.4). Inhabitants in these areas tend to change the characteristics of the semi-public and sometimes public spaces. These changes manifest differently, such as through soft treatments or hard borders when a resident illegally occupies the adjacent realm (Figure 6.5). However, the residential edges are likely to be used by their inhabitants even if these edges face the public space or link directly to the street. Moreover, some proprietors cut off the adjacent part of the street in order to change the primary land use from residential to commercial. Unfortunately, this transformation of purpose, and any misunderstanding of the rights to do so leads to uncharted changes in land use. Hence, the residential edge is then be used for walking through rather than as a place to stop. According to Alexander (1977) and Hillier et al. (1993a), a street is generally designed for staying in, or movement-to rather than movement through.

Figure 6.5. Inhabitants have dealt with the public edge by turn it into a private space. Source: Photographed by author's team, 08-13/Dec/2016.

On the commercial and mixed edges, lively interactions between the people and street spaces are experienced. Although these edges, particularly in the historical area (A), are still lacking in maintenance, they represent an attractive spine for the neighbourhood (Figure 6.6). People who benefit from this type of edge show different responses based on the particular activity of each unit along the adjacent edge. Those who use public space can be classified according to their two primary activities: walkers and stayers. The aims of these two classes are varied in terms of their exchange purpose and/or movement-to/movement-through (Engwicht 1999).

Figure 6.6. The commercial and mixed edges in samples A (left) and D (right). Source: Photographed by author's team, 12-21/Dec/2016.

Thus, people who were observed in the selected streets for each case study were classified into four main categories: human activities, kind, volume and group. These divisions cover movement, activity, gender, age, and group pattern. The expression of public space and its investments differ considerably between the traditional pattern (A) and the more modern design (D). Whether in the traditional (A), partial/hybrid (B), or modern patterns, which comprise paralleled (C) and loop-grid model (D), the quantity of the public spaces are generally quite limited, excepting in the areas offered by the adjoining edges.

Therefore, there is a need to not only examine the traditional part of a city as an isolated pattern but also to understand the comparison with other, new neighbourhoods in terms of the different perspectives afforded, particularly via the urban form and urban life. The traditional urban fabric arose in response to indigenous cultures and traditions; thus, Remali (2014) explains that the “traditional urban form is the result of [the] "selectionism" of an evolutionary process, whereby a built environment gradually become[s] congruent with activity systems, lifestyles, meaning and values by applying rules, which are often unwritten, as in most cultural landscapes”. Moreover, there is also a need for individuals to understand their rights when using the street space and the extent to which they (the owner/user) have the authority to alter the public space. Commonly, individuals tend to extend their territoriality, even in temporary activities. This includes peddlers and the owners of adjacent units (shops) who tend to extend the commercial edge by elongating the boundary of their activities. These expansions differ entirely from one individual to another, and from one street to another. One of the main reasons for such territorial extensions is to attract customers by making the adjacent spaces particularly enticing; nevertheless, a critical issue remains concerning the authority for these expansions.

6.3 Edge – Edge Interface

6.3.1 Interfacing Between Street and Private-Public Edges

The main question is “to what extent individualistic lifestyles can interfere with street life and vice versa” (Van Nes et al. 2007, p 2). The relationship between private and public would exist within a micro-spatial configuration. Van Nes et al. (2007) states that the main street network in the urban context is a factor that influences the microscale spatial variables. Spaces that mediate between buildings and street create social interactions, which to help to form human behaviour. These spaces could be of part of a buildings’ interior that directly links with the public space, such as courtyards and balconies or through spaces in front of buildings, such as sidewalks. They encourage a social encounter and promote street life at different levels, whether in terms of culture, norms and religion or the physical conditions of the built environment (Can et al. 2015); (Nooraddin 1998). According to Jacobs Jacobs (1961, p 59), a relationship between the private and public realms requires "a good city street neighbourhood [that] achieves a marvel of balance between its people's determination to have essential privacy and their simultaneous wishes for differing degree of contact, enjoyment or help from the people around". According to Marshall (2007), the relationship between private and public is not only determined through physical expression, nor a volumetric enclosure that regulates the public-private border, but rather functions as a social filter.

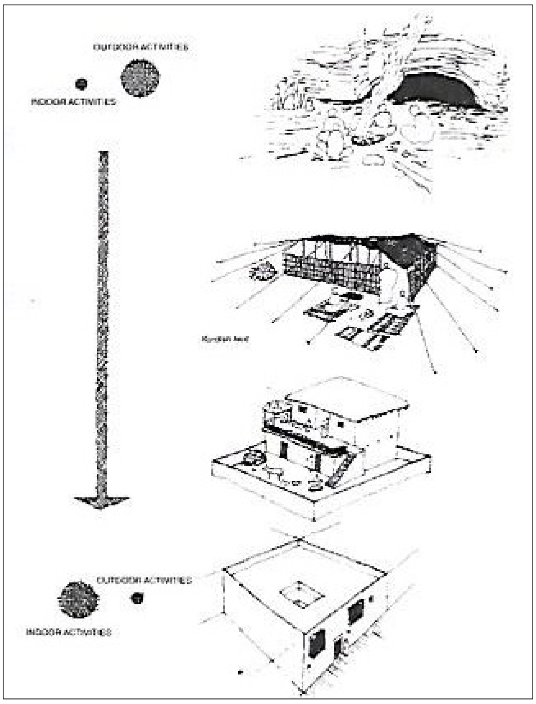


Figure 6.7. Transforming outdoor space activities into indoor space activities from ancient to urban settlement. Source: Nooraddin (1998, p 66).

Marshall (2005a, p 13) states that, "the movement space constituted by streets forms the essential connective tissue of urban public space - from the micro scale of circulation within building to the macro scale of whole cities". Therefore, "street space forms the basic core of all urban public space - and by extension, all public space - forming a continuous network or continuum by which everything is linked to everything else. This continuum is punctured by plots of private land. The plots of private land surrounded by public streets are like an archipelago of islands set in a sea of public space" (Marshall 2005a, p 13). Thwaites et al. (2013) address different aspects of urban spaces as a between-ness milieu, which mediates between the private and public. Also, they sought to highlight the role of community in making the urban decisions in order to draw at least the local scale or micro scale of their neighbourhoods. This contribution has been defined as the *Transitional Edge*.

According to Thwaites et al. (2013, p 85), "a public to private gradient that works in a continuum from private to public and vice versa… [it is] a smooth and complex gradient of subtle changes where a greater range of spaces allows greater diversity of intimacy and social interaction". Jacobs identifies three main qualities required to successfully encourage people into the street: (1) the situation requires visible demarcation between private and public areas; (2) a particular level of surveillance regarding eyes upon the street and (3) users who exploit the street reasonably continuously and as effective eyes, in turn induce others in adjacent buildings into the street to watch not the sidewalk the pedestrians (Jacobs 1961).

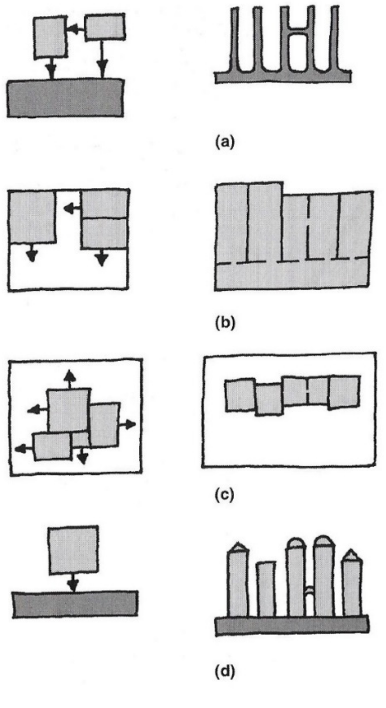


Figure 6.8. Street syntax: (a) all strategic roads connect to form a single network; (b) all private spaces connect to the single public space; (c) all buildings have an interface with the single outside space; (d) all buildings connect to the single ground surface. Source: Marshall (2007, p 78).

Marshall (2007) states that there are several subtle complications when understanding privacy; it is not only a single modest linear movement between public and private. Private (exclusive space) means operating the action, giving control of space to reserve a specific area for specific individuals or even a group, contributes to raise the overall supervision and shape the pattern of difference between public and private. The public (inclusive space) infers to an area where people are able to move, meet, mix and interact.

6.3.1.1 Street Edge Characteristics

The street is the artery of a city regardless of its classification; for example, the street form (straight, irregular or zigzag), street function (residential, commercial, mixed-use), street dimensions (its length and width), street class (main, secondary, connected street) and street type (open-ended, cul-de-sacs). One of the main aims of the street network is to enable people to access and move to/through the street network towards their destinations. The street is much more than an urban spatial element; it has a crucial space that is to manage the entire movement and people influx. Besides, the street can be "regarded as a fundamental building-block of urban structure, where, the public street system forms the principal part of the urban transport system" (Marshall 2005a, p 14-15). Hillier (1996b) states that good spaces are utilised spaces; in this respect, an urban area is utilised by the movement to and/or the through movement. Furthermore, the street proffers routes from everywhere to everywhere else, and its influence on movement is a fundamental source of the multifunctionality that promotes vitality in the city.

Marshall (2005a, p 15) states that, "the challenge is to address the street as an urban place as well as a movement channel, and how to make this connection of the street work - not just as an isolated architectural set piece, but as a contribution to wider urban structure - otherwise - street are for people". Thwaites et al. (2013) refer to ten themes that characterise the street edge and provide valuable insight into the socio-spatial properties relevant to transitional edges. The ten themes are: "social activity, social interaction, public-private gradient, hide and reveal, spatial expansion, enclosure, permeability, transparency, territoriality, and loose-ness" (Thwaites et al. 2013, p 78-79). Hillier et al. (1993a) denote that the integration of core maps cover the main streets and shopping areas.

Shopping streets tend to become viable when they have a high level of retail that is integrated with the global network and local pedestrian movement. Less integration tends to occur in monofunctional areas, such as residential areas (Hillier et al. 1993a); (Penn et al. 1998). The proportional place of the street and its integration within the entire network system play a crucial role in shaping the street edge characteristics. The configurational properties of the urban fabric are the primary influence on shaping two types of movement; through-movement and to-movement (Hillier et al. 1993a) (Figure 6.9). Movement and multiplier effects are significant prerequisites to promote the quality of street life. The multiplier effect attracts new development, new buildings and uses (Hillier 1996a; 1996b).

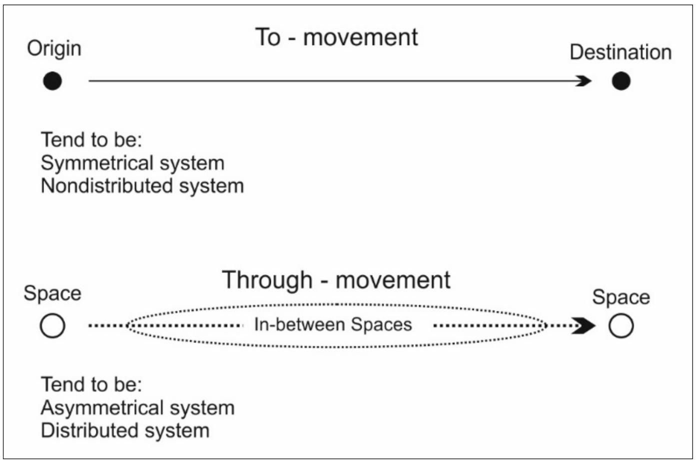


Figure 6.9. Two patterns depend on the spatial arrangement; through-movement and to-movement. The first occurs with the layout as a system of possible paths; however, when the layout can be considered as a system of origins and destinations, then movement is a to-movement. Source: Drawn by the author based on Hillier's concepts.

Transitional edge is defined by Thwaites et al. (2013) as the street edge and its multiple functions. It combines three dimensions: social, participatory and structural components. The *Transitional edge* encourages and diversifies the territorial experience to keep community sustainably for those who use urban space efficiently. Therefore, this can be regarded as a spatial and sociological line. *Transitional edges,* "are coherent socio-spatial domains and not simply boundaries between the architecture and the external public realm …. offer the potential to achieve a more socially optimal balance of form, place and understanding [therefore] transitional edges as key components in the socio-spatial order of the urban habitat" (Thwaites et al. 2013, p 23, 53, 71). Furthermore, Thwaites et al. (2013) refer to another idiom of the street edge: the broken and unbroken edge that governs the degree of social interaction. It also conveys an impression of the extent to which people can interact with whatever broken or/and unbroken edges (Figure 6.10).

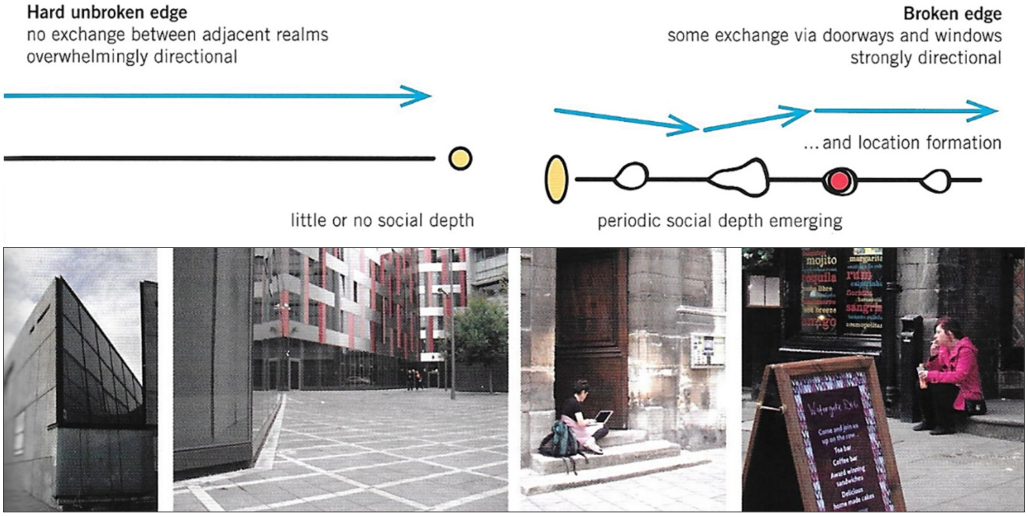


Figure 6.10. Unbroken, an abrupt edge between architecture and the public realm with little hope of encouraging life (left). Abrupt edges are broken by doors and windows which begin to act as catalysts for social activity (right). Source: Thwaites et al. (2013, p 107).

According to Jacobs (1961, p 380), *Visual Street Interruption (VSI)* is, when, "a good many city streets (not all) need visual interruptions, cutting off the indefinite distant view and at the same time visually heightening and celebrating intense street use by giving it a hint of enclosure and entity". VSI encompasses a set of considerations when "there is no visual tale of street intensity and detail to tell ... and should be in functional terms, not dead ends, but corners", therefore, "visual street interruption is a natural eye-catcher, and its own character has much to do with the impressions made by the entire scene" (Jacobs 1961, p 382-383). The street edge should be characterised by catching the eye and giving the space a rooted sense of place Buchanan (1988). According to Segall et al. (1966, p 51, 73), "the visual experiences most generally available in a particular environment predispose one to identify most readily material similar to the content of those experiences … the pattern of visual experiences in the lifetime of a person can modify his perceptions of objects in space" (Figure 6.11).

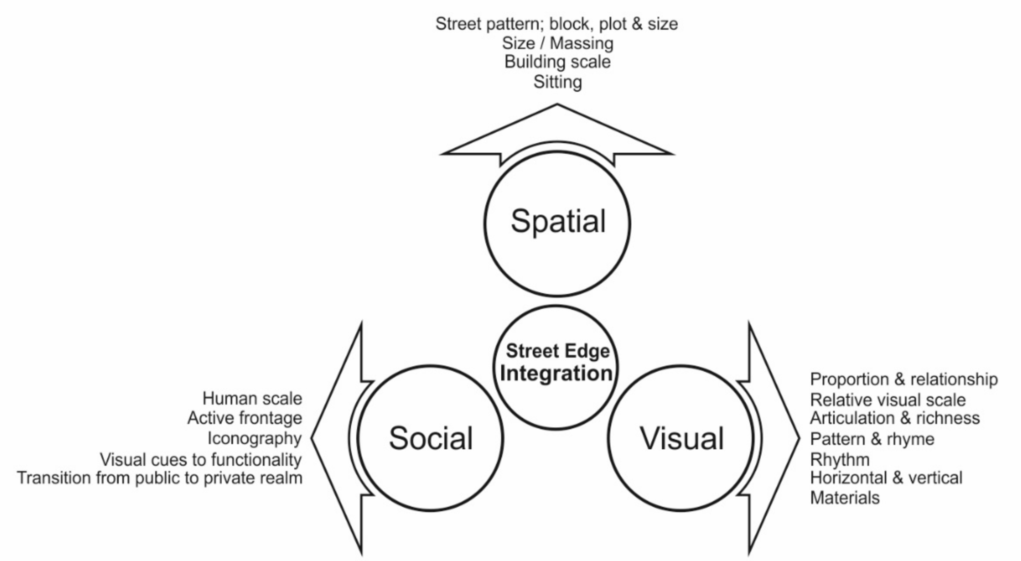


Figure 6.11. The criteria of the street edge integration based on Carmona et al. (2010). Source: Drawn by the author.

6.3.1.2 Private Edge Characteristics

Alexander (1977) offers 253 patterns that are divided into 36 categories. One of these patterns is path shape, which is a crucial component in the built environment and contributes to other patterns in drawing the whole context of a city. Alexander (1977, p 590) advocates that the, "street should be for staying in, and not just for moving through, the way they are today". Alexander (1977, p 593) opposes the concept of setbacks, stating that "buildings setbacks from the street, originally invented to protect the public welfare by giving every building light and air, have actually helped to destroy the street as a social space … the set-backs do nothing valuable and almost always destroy the value of the open areas between the buildings" (Figures 6.12 and 6.13).

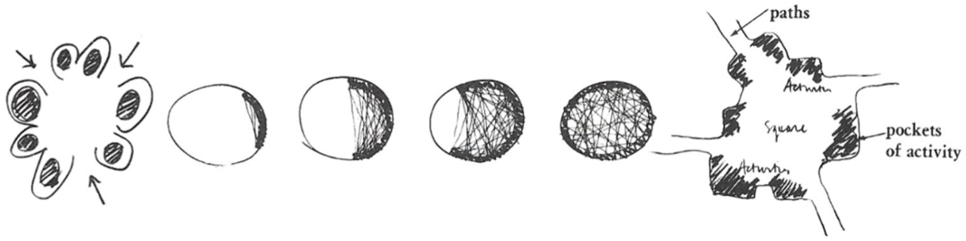
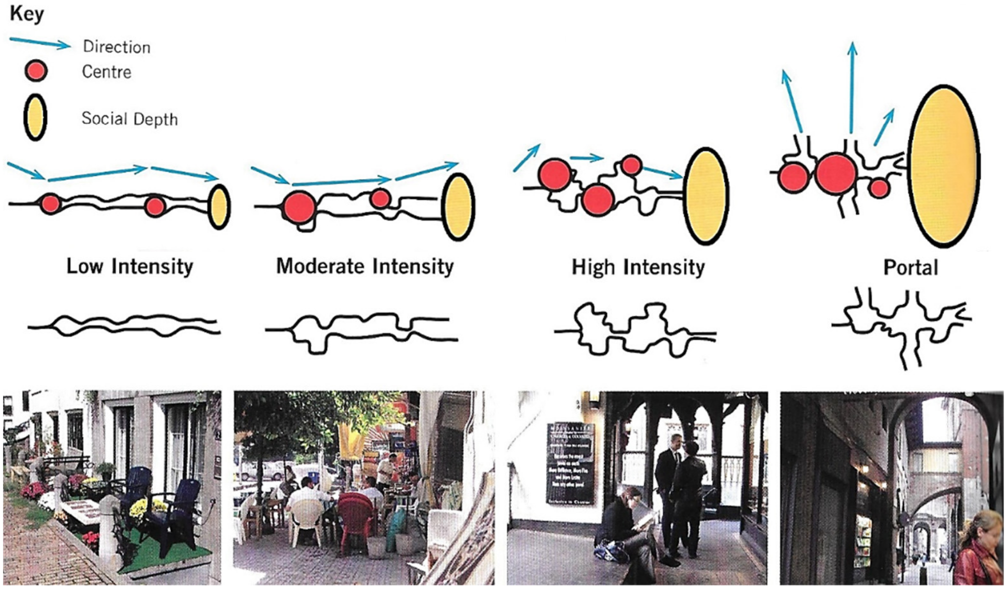


Figure 6.12. As the activities grow around the space, it becomes more lively. Source: Alexander (1977, p 600-602).



Directional emphasis with territorial opportunity

Balanced direction and location

Consolidating and sustaining territorial opportunity

Locational emphasis and connectivity

Figure 6.13. Four different intensities in four segments. Source: Thwaites et al. (2013, p 106-108).

Marshall (2007, p 105-112) states that the, "… private plots and buildings… [where]… buildings and cities are different kinds of social container, reflecting their differences in social structure. A city is not a big building, but is articulated into different buildings, mediated by a social fabric of public streets". Additionally, one side of the street edge is subject to private demands where the plot and building are located; this means that the facades are designed for private benefits (Carmona et al. 2010). The expression of privacy ranges from soft control, like colour, texture and level, to hard control, such as fence and/or wall.

Furthermore, moveable and invariable can also classify the nature of privacy. Kostof (1992) refers to the authority of using private space within the space of the street. He states that the buildings' edges need not be completely subjected to owners' desires, as there are public authority regulations which organise the street edge in such a way to increase the variety of building façades from block to block. The diversity works to impart the beauty of the block and street edge to the city; it incites attraction and surprise in people, whether inhabitants or visitors.

The *Filter Edge* is defined by Marshall (2007) as a *social filter* when he states that the city is heterogeneous and involves different kinds of people who move through the social filter system. The systematic circulation of people ranges from loose filters, like streets, to reach fine filters, such as building edges. Therefore, he states that, "a building is an environmental container and filter; the building-plot-street system is both a social container and a social filter…. the importance of public streets as being not void, but as integral to the notion of a city, a kind of mortar binding between social units. Without this system of public spaces, a city would not be a city" (Marshall 2007, p 105,112). Canter (1975, p 9) argues that, "the environment providing perceptual stimuli [and] also be thought of as a filter … we are always in the environment to carry out certain activities, and we usually carry out these activities with other individuals … this is the fact that we actively modify, build and influence our physical surroundings".

6.3.1.3 Public Edge Characteristics

The sense of public space is one of the main concerns and dialogue in generating social interaction and improvements in street life. The public edge embeds a broad spectrum of events, activities and social assemblage. It is a place where people should feel free to express their aspirations and desires. It, "host[s] structured or communal activities-festivals, riots, celebrations, public executions-and because of that, such places will bear the designed evidence of our shared record of accomplishment and our ritual behavior" (Kostof 1992, p 124). Accordingly, "the main public places of a city, are its most vital organs [thereby] if a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull" (Jacobs 1961, p 29). Banerjee (2001, p 14) suggests that, "the sense of loss associated with the perceived decline of public space assumes that effective public life is linked to a viable public realm. This is because the concept of public life is inseparable from the idea of a public sphere".

The public edge forms the third domain for social interaction and investment in the function of the street edge encourages people to collect. The variety in the function of the public edge promotes street life and maximises social interaction. It is necessary for the humanisation of public urban space such that the activities taking place contribute to the continuous surveillance of the space (Moirongo 2002). Oldenburg (1989) adopts '*Third Place*' as an expression of other places, apart from settled places and workplaces. The third place should conjoin people in a free and mixed way by presenting exceptional comfort which is important to public life. The third place is a sorting edge that filters interests, and that people admire or 'un-admire' when using such places. The highest value of the third place lies in its potential to encourage the meeting of people from diverse classes, age groups and with varied interests. It is important for the third place to be accessible, easy to reach and comfortable both for regular frequenters and newcomers. Furthermore, *unplanned*, *unscheduled*, *unorganised*, and *unstructured* are three characteristics of the third place, which define it as essential, universal and pivotal to informal participation and social interaction (Oldenburg 1989).

Hall (1966) refers to two types of spaces; *Sociofugal* is a space that keeps people apart, and *Sociopetal* is a space that brings people together. Engwicht (1999) states that, "a vibrant spontaneous public realm, therefore, allows greater flexibility in our private relationship". However, motorised regulations and their requirements exploit the public realm and drive away from the realm of the spontaneous encounter, which forces people into what Sennett (1996) called the '*polarization of intimacy*'. Jacobs (1961) states that the spatial social theme within the public space should be employed to capture what she called 'self-appointed public characters'. A public character is a person who frequently maintains contact with those who also use the same edge. Prosperous public places, according to Carmona et al. (2010), are characterised by the frequent attendance of people in self-reinforcing ways. The public space is an optional and available environment, that people can choose whether to visit. Hillier (1996b) states that the street as a space for movement shapes the primary activity for those who prefer to stay or go.

Self–control can characterise public edge even though space is designed for public benefit. At the same time, it characterises private control by those who regularly use it. Zukin (2010) suggests that there is not only social diversity but also the diversity of buildings and that helps to give a city its 'soul'. He mentions that, "the paradox of public space is that private control can make it more attractive, most of time, to a broader public, but state control can make it more repressive, more narrowly ideological, and not representative at all" (Zukin 2010, p 158). Moreover, Jacobs (1961) defined the '*eyes upon the street*' where these eyes belong to people who contribute to shaping the property of the street (Figures 6.14 and 6.15).

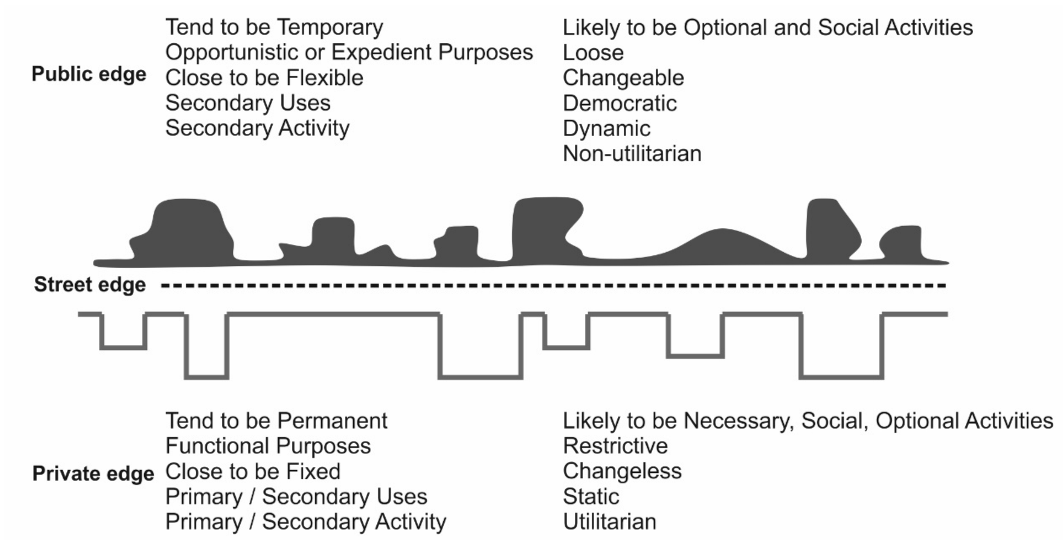
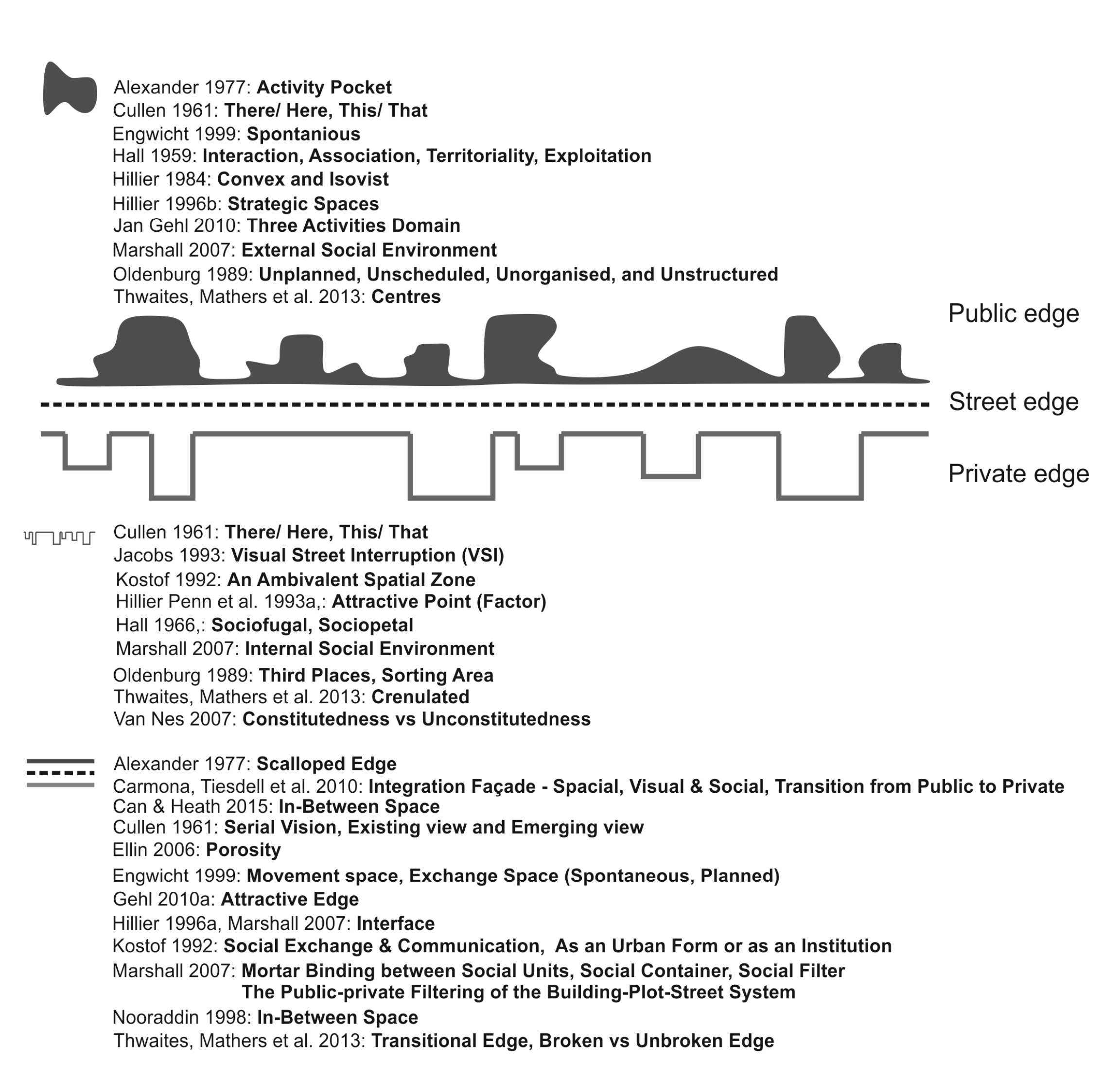


Figure 6.14. Demonstrating the ability of different types of urban space to shape three street edges. Source: Drawn by the author.



Alexander 1977: **Activity Pocket**
Cullen 1961: **There/ Here, This/ That**
Engwicht 1999: **Spontanious**
Hall 1959: **Interaction, Association, Territoriality, Exploitation**
Hillier 1984: **Convex and Isovist**
Hillier 1996b: **Strategic Spaces**
Jan Gehl 2010: **Three Activities Domain**
Marshall 2007: **External Social Environment**
Oldenburg 1989: **Unplanned, Unscheduled, Unorganised, and Unstructured**
Thwaites, Mathers et al. 2013: **Centres**

Cullen 1961: **There/ Here, This/ That**
Jacobs 1993: **Visual Street Interruption (VSI)**
Kostof 1992: **An Ambivalent Spatial Zone**
Hillier Penn et al. 1993a,: **Attractive Point (Factor)**
Hall 1966,: **Sociofugal, Sociopetal**
Marshall 2007: **Internal Social Environment**
Oldenburg 1989: **Third Places, Sorting Area**
Thwaites, Mathers et al. 2013: **Crenulated**
Van Nes 2007: **Constitutedness vs Unconstitutedness**

Alexander 1977: **Scalloped Edge**
Carmona, Tiesdell et al. 2010: **Integration Façade - Spacial, Visual & Social, Transition from Public to Private**
Can & Heath 2015: **In-Between Space**
Cullen 1961: **Serial Vision, Existing view and Emerging view**
Ellin 2006: **Porosity**
Engwicht 1999: **Movement space, Exchange Space (Spontaneous, Planned)**
Gehl 2010a: **Attractive Edge**
Hillier 1996a, Marshall 2007: **Interface**
Kostof 1992: **Social Exchange & Communication, As an Urban Form or as an Institution**
Marshall 2007: **Mortar Binding between Social Units, Social Container, Social Filter**
The Public-private Filtering of the Building-Plot-Street System
Nooraddin 1998: **In-Between Space**
Thwaites, Mathers et al. 2013: **Transitional Edge, Broken vs Unbroken Edge**

Figure 6.15. Illustrating the main characteristics of the street edge and the edge of its private and public domains (based on a considerable number of authors and scholars). Source: Drawn by the author.

6.3.2 Three Edges' Characteristics in Referring to Baghdad City

According to Hillier (1996b), in Arabic cities, diversity can be found in the development of the same underlying law. This tends to enable well-defined relationships between different levels of movement in the urban context. The old urban fabric seems quite complex in its street network, particularly within traditional Arabic cities; however, three domains play a crucial role in formulating the character of the street edge in such cities, namely street, private and public. Islamic cities are associated with what is called pre-Islamic regions, which inevitably have their own entities and identity regarding urban patterns, building typologies, and construction techniques, besides, the natural and physical environment (Hakim 1989). The ancient Mesopotamian model of clustered courtyard buildings, which date back to the 2500 B.C., provide evidence of the traditional settlement areas in other surrounding regions. Ur city is an ancient town situated to the south of Mesopotamia where its construction pattern matches the Islamic traditional cities that emerged later (Hakim 1989); (Woolley 1946) (Figure 6.15).

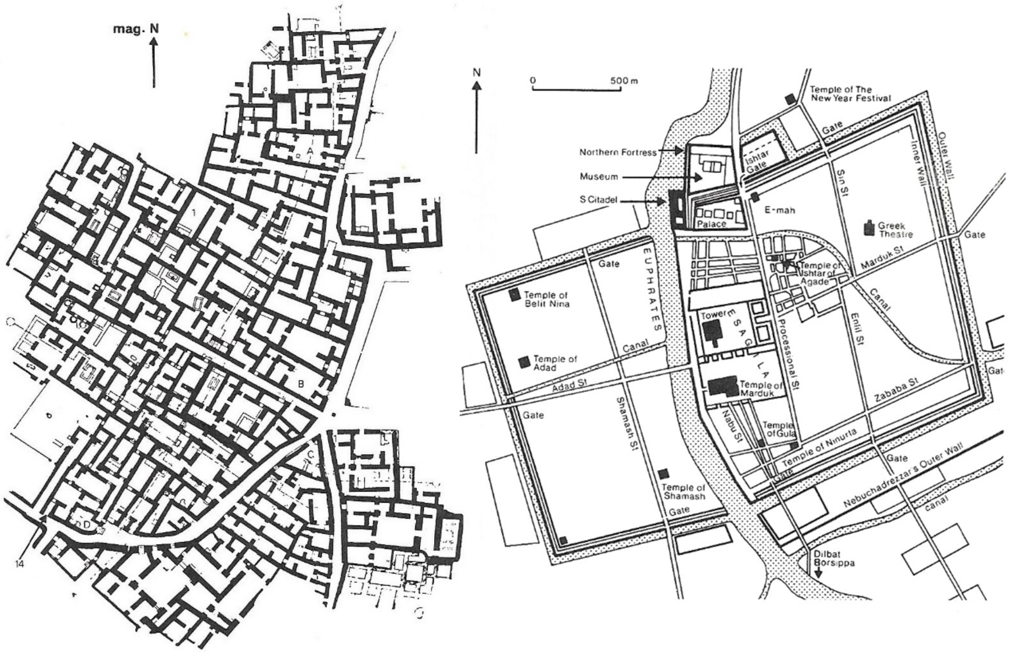


Figure 6.16. Plan of a portion of the ancient Sumerian city of UR as it was about 1900 B.C. (left). Plan of the city of Babylon at the height of its power, about 600 B.C. The religious features were dominant (right). Source: Lynch (1984, p 7, 10).

Urf is a systematic generative process (relating to the concept of habit or custom in English). *Urf* is a hidden order grounded in the consciousness of a community without the need to be listed, where each single member of society is aware of what Urf is. Its principles and influences formed a pattern within traditional Arab and Islamic cities over time. *Urf* is initially based on human behaviours and the acceptance and satisfaction of these amongst a community which generates these behaviours; these are compatible and match with Islamic rules. Otherwise, such individuals are rejected by society. Repeating the action means it becomes a habit, "for every act there must be an impetus or reason... therefore every *Urf* is a habit, but not every habit is *Urf*" (Hakim 1994, p 110). *Urf* has become a source of legislation: it is flexible, changeable and dynamic in simulating the reality of life and its conditions.

Three factors, identified by Hakim (1989), affected the nature of Islamic traditional settlements regarding their building patterns and planning. These are: (1) pre-Islamic urban models and their people culture and civilisations in territories that converted to Islam, where, the norms and customs have continued their influences the Islamic culture hitherto. (2) a transport pattern was made by the two-primitive means (camel and horse) which that affected the street network patterns and the urban fabric of traditional cities between the fourth and sixth centuries A.D. (3) the surrounding natural environment embraced most Islamic regions located between latitudes 10 and 40. Thus, the microclimatic was shared with the same analogical conditions. The emergence of the Arabic/Islamic city was based on three processes. Firstly, it renewed an existing city founded in old colonial areas to meet the prerequisite for a social life amongst those people at that time. Secondly, they were preplanned or planned cities, which were designed and pre-planned in accordance with Islamic rules and authorities. Historical resources and archaeologists confirm that the first primary planned city in the Islamic era was the round city of Baghdad, which was situated to the east of the Islamic region (Hakim 1982) (Figure 6.17). Thirdly, as a spontaneous model, it can be identified as "the most enduring and pervasive, and today most of the older areas of capitals and major town in Muslim world evolved out of this model" (Hakim 1989, p 88).

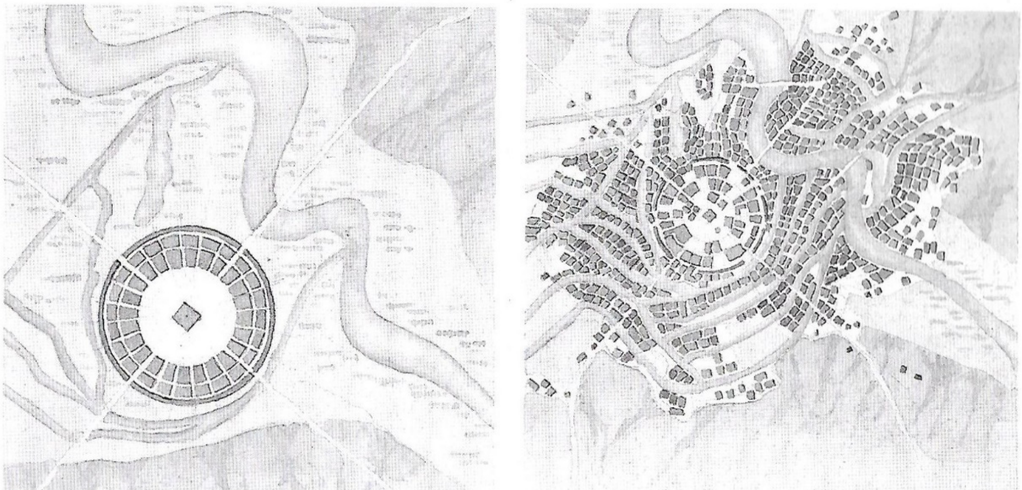


Figure 6.17. Baghdad-Iraq, the geometric 8th Century ground plan, organised around the Caliph's palace, was a casualty of the city's success. By the 9th Century the sprawling growth of a thriving community had obliterated the original autocratic diagram. Source: Kostof (1999, p 13).

However, Hakim (1990, p 84) states that, "an important observation is that when colonialism ended it left a gap between past and present and also left technology which did not evolve out of the past and has affected architecture considerably and in many ways, colonialism turned into cultural and technological dependency". Consequently, serious negligence occurred with the introduction of new regulations for city planning. These new demands considerably affected the whole system of the old urban fabric; it was designed on a human scale and their needs aside from the large scale urban spaces.

6.3.2.1 Street Edge's Characteristics

The three street space components (street, private, and public) integrate with the other components to provide one entity. The essential urban components that constitute the main character of the old urban fabric are the clustered courtyard buildings, street network and the hanging elements. Two predominant types of street network are embedded within the old urban fabric. The first is the open-ended street through which pedestrians publicly flow, and the second is the cul-de-sac, which is governed by inhabitants, is a private zone, and is thus not normally permissible for other people to enter or to use this type of street (Hakim 1989; 1990) (Figure 6.18).

Figure 6.18. The contemporary aerial scenery from the traditional part of Baghdad, al-Karkh. It shows the street pattern; cul-de-sacs and open-ended. Source: Prepared by the author based on the georeferencing aerial imagery authorised by R.S.GIS.U (2017).

The old part of Baghdad is characterised by a maze of narrow streets continued, designed to meet the needs of pedestrians (Figure 6.19). The traditional pattern forms a more preferable sense of community, which appears serene and shadowed for the most significant part of *Zugag* during the day. Adjacent houses, *Zugag*, are varied in width; in some cases, these are no more than 3m. While at the top, because of the *Shanashil* (prominent windows as a hanging or high-level protrusion) the street was almost covered over. The main *Zugags* in the residential quarters of the old part of Baghdad are usually found on mosques and bazaars. This feature can also be observed in Arab cities (Al-Ashab 1974) (Figure 6.19).

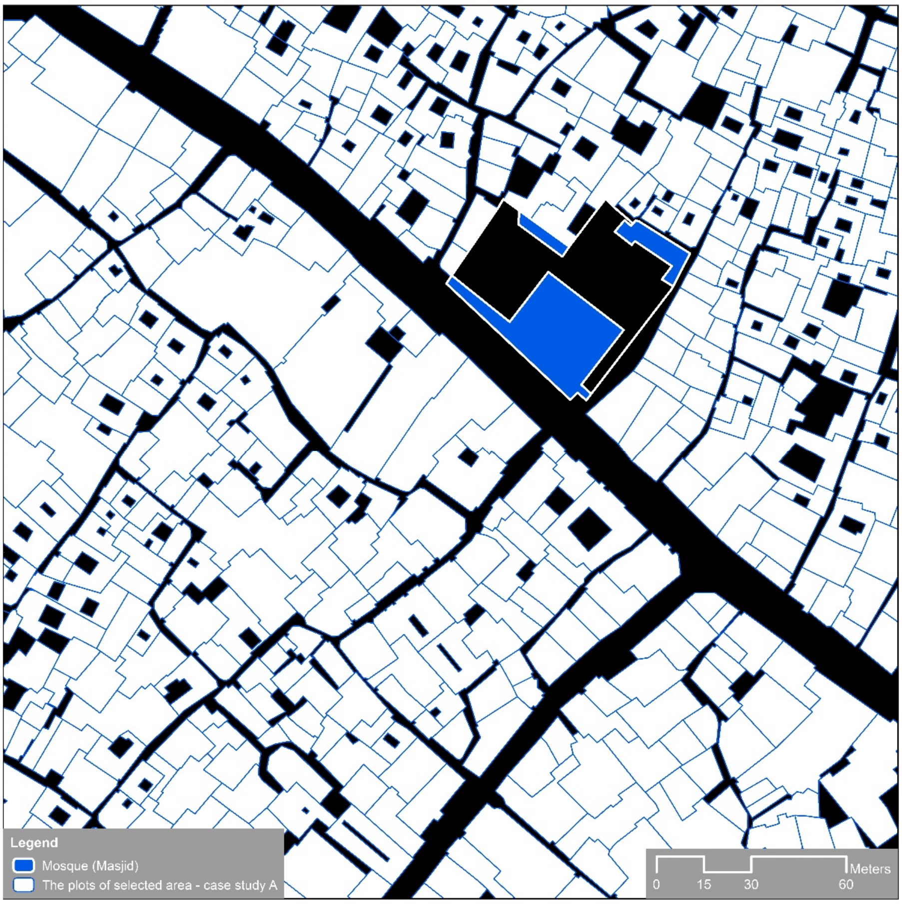


Figure 6.19. A magnifier slice of the traditional part of Baghdad city, Al-Rusafa. It displays the traditional street pattern; *Zugags* and surrounding neighbourhoods (*Mahallahs*). Source: Drawn by the author based on the georeferencing aerial imagery authorised by the G.I.S.Department (2016) and R.S.GIS.U (2017).

The hanging element is a '*high-level protrusion*' that can easily be seen during peregrination throughout the old urban fabric; the component was constructed above the street. This element has a unique name in the traditional area of Baghdad city '*Shanshul* (the plural is *Shanashil*)' is an oriel window. It is an upper-floor projection of a courtyard house, varied in size and shape in terms of ornamentation and decoration, and juxtaposed against the mass and shadow of the adjacent street (Al-Ashab 1974); (Fethi 1977). *Bridging the street* denotes, “bridging the street, and the buttressing arches spanning between walls on either side of the street to provide structural strength and support” (Hakim 1989, p 89).

In traditional Islamic cities, a street refers to the central market. The street market on both sides is several repetitive small chambers that are opposite each other and separated by about 10-20 feet. To enable pedestrian flow, the street is mostly covered by vaults that include skylights, which allow sunlight to pass through and protect the customers from undesirable climate conditions. Mostly, each street market is connected by the organic network of the narrow lanes or by other street markets. The other public facilities, such as mosques, baths, hotels or Khans are located close to shopping streets and thus, as an access network are maximally utilised (Hakim 1989, p 101); (Makiya 2005). The traditional *Aswaq* (markets) are still alive in the old part of Baghdad, where each *Suq* is delegated for specific products and purposes, such as the Textile *Suq*, Book *Suq*, Copper *Suq*. The specialisation of functional uses is one of the leading characteristics in the old traditional markets, which are placed close to each other in a harmonic way (Figure 6.20).

Figure 6.20. Safafeer *Suq* (market) is one of the oldest traditional market where copper plaques and plates are attached to the shops. This *Suq* was delegated for copper works, but has since been occupied by the textile merchants, thus minimising the number of artisans who work with the copper products. Source: Photographed by author’s team, 04/Dec/2016.

6.3.2.2 Private Edge Characteristics

In Islamic cities, privacy is a central factor in determining the use of space; this includes direct visual, particularly in residential areas. The cooperation between people and other institutions in formulating a generative system worked to maintain the rhythm and hierarchy between the private and public domains (Hakim et al. 1983; Hakim 2007). Furthermore, the Muslim community tends to be more concerned with preserving privacy, not only from physical connections, but also in terms of visual contact. The privacy factor significantly affects the morphology of the urban form in Islamic/Arabic cities and gives a distinct shape to the city. For example, the external street edge contains the main dogleg entrance that leads to the courtyard house (Figure 6.21). The dogleg technique gives a high level of privacy for inhabitants where there is no direct access to the private space from the public realm. Despite the fact that entrances are on opposite sides and directly adjacent to the street, no entry directly faces another.

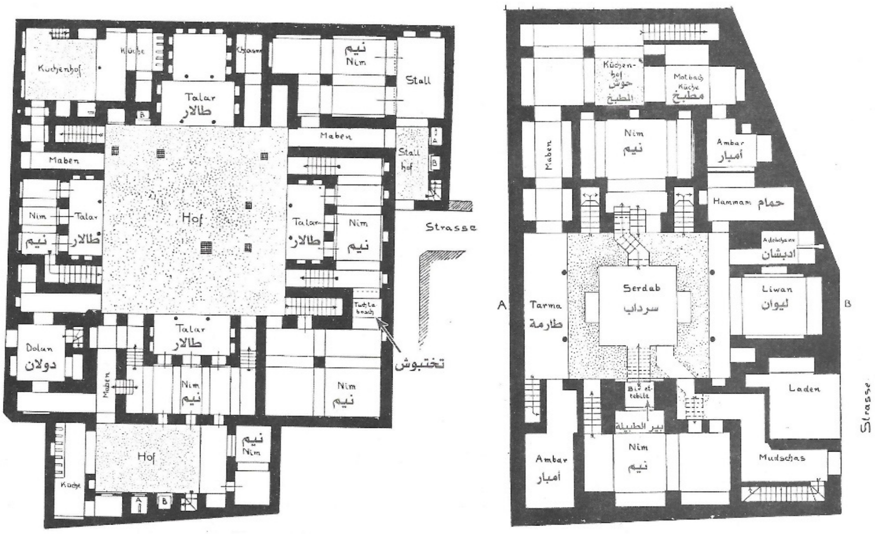


Figure 6.21. Two Iraqi traditional courtyard house that illustrates the dogleg (broken) entrance that links the courtyard of the house and the street as a public space. Source: Reuther (2006, p 36, 43). All right reserved for Al Warrak Publishing Ltd, London, UK.

In the residential area of the old part of Baghdad, the lower level of the external wall that is adjacent to the street is almost blind and as solid as a windowless wall to the outside. To attract lighting and ventilation in the courtyard house, all rooms are oriented inwards to the courtyard. Therefore, the external façade lacks apertures except, occasionally, small niches beside the upper level that are designed with *Shanashil*. The *Zugag* exhibits simple façades with a minimum of details at the lower level; instead, rich detail and decoration is placed on the *Shanashil* and main entrance (Figure 6.22).

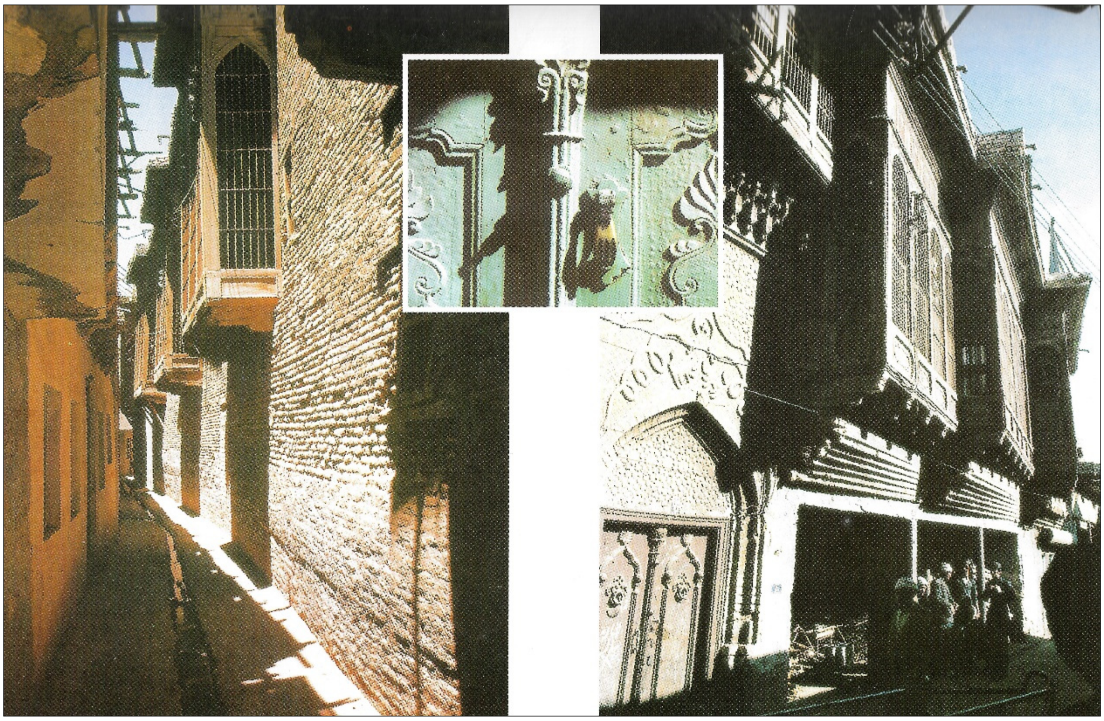


Figure 6.22. The traditional Baghdad Zugag where the street level tends to have a windowless and solid frontage (left). The main entrance of the courtyard house with the richness in decoration and detail (right). Source: Makiya (2005, p 422). All right reserved for Al Warrak Publishing Ltd, London, UK.

Moreover, to avoid straight visual connections, people in traditional cities tend to adopt the overlooking technique in setting doors, windows, openings and heights, where, "in Islamic culture, protection from visual intrusion into the private realm of houses was the paramount consideration. Views were appreciated when available, but they took second place to the blocking of visual corridors into the private realm" (Hakim 2008a, p 29). It allows for inhabitants to observe outdoor activities and pedestrian movement, but those who use the street were not able to see inside properties. This technique used the concept of *Shanshul*/*Shanashil* as the external element of the *Zugag* (local streets within traditional neighbourhoods) in the traditional area of Baghdad.

Shanashil were made up of smaller, modular, sash-window units; they are attractive architectural elements employed to promote the external edge of the *Zugag* (street). *Shanshul* includes wooden sliding windows and produces extra shadow for pedestrians against the direct sunlight, particularly in the summer season. Furthermore, the *Shanshul* technique, traditionally plays a significant role in social interactions and allows inhabitants to conduct conversations through opposing rooms on the upper floor (Fethi 1977) (Figure 6.23).

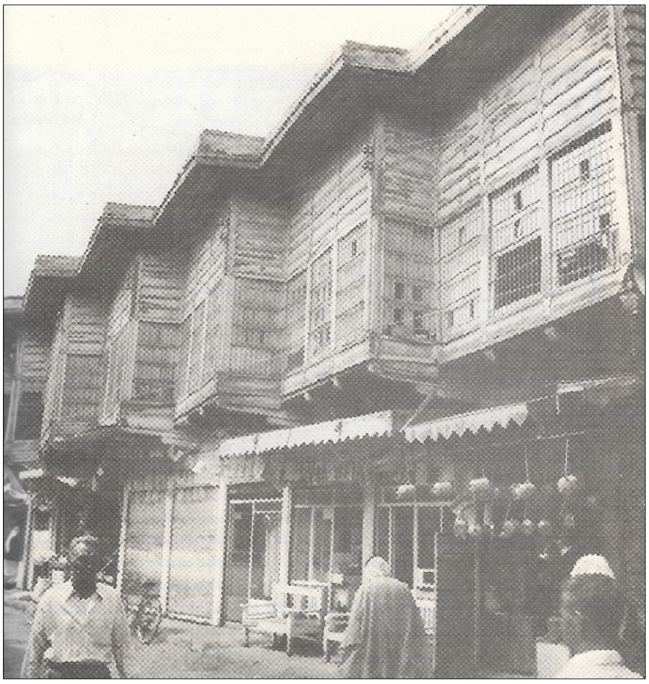


Figure 6.23. *Shanashil*; as a serrated row of oriel windows. Source: Makiya (2005, p 252). All rights reserved for Al Warrak Publishing Ltd, London, UK.

The concept of *bridging the street* also has been observed in the traditional area of Baghdad, but did not spread widely, like *Shanashil*. Technically, this type of high-level protrusion belongs to one owner or exploits links between two properties that belong to the same inhabitant (Figure 6.24). In the non-residential property they are employed for public use and have the same characteristics traditional shape complements the street pattern and the socio-physical structure of Baghdad; for instance, mosques and hammams. These types of building are oriented entirely toward the internal courtyard.

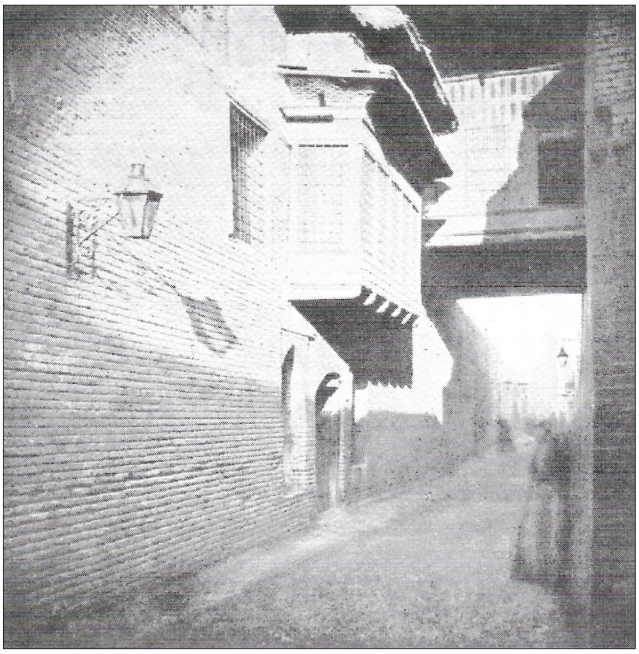


Figure 6.24. The concept of *Bridging the street* in the traditional area of Baghdad, but it does not spread commonly like *Shanashil*. Source: Reuther (2006, p 57). All right reserved for Al Warrak Publishing Ltd, London, UK.

A street provides a distinction between the private and public space in the traditional area of Baghdad; it is very controlled and restricted regarding the degree of permeability, transparency, accessibility and connectivity. The street is almost solid on the ground floor and semi-closed or closed by *Shanashil* on the first floor. The house entrance and *Shanashil* form the only two channels to link between the private street. In the modern context of Baghdad, within the residential area, the private edge varies from direct adjacency with the street to set backwards. The differences in street pattern, plot layout and block size, and the location of the building within the plot area play a key role in formulating the spatial organisation and provide distinct characteristics for each area of Baghdad (Figure 6.25).

Figure 6.25. The modern context of Baghdad within the residential area, the private edge manifests an important transformation which is adjacent with the street edge towards the back. The differences are apparent in street pattern, plot layout and block size, and the location of the building within plot area. Source: Prepared by the author based on the georeferencing aerial imagery authorised by R.S.GIS.U (2017).

The characteristic of the private edge in the modern pattern of the street network has different criteria and considerations. This leads to different interpretations of the private edge and the extent to which inhabitants have the authority to claim the juxtaposing space located in front of their property. It also influences the boundary of the street width, and to what extent it is for public use. The absence of a clear definition for the private, public and street edges, particularly in commercial streets which broke-through the traditional area, has resulted in complicated situations and difficulties in how to manage this critical area of Baghdad (Figure 6.26).

Figure 6.26. The absence of a clear definition of the private, public and street edge, particularly in commercial streets that go through the traditional area, have resulted in complicated situations where sellers deliberately present their products within the street arcades. Al-Rasheed Street. Source: Photographed by author's team, 21/Dec/2016.

6.3.2.3 Public Edge Characteristics

The public edge formulates the vitality of the street, where it enables people to interact either with the street edge or with other people. Tolerance depends on different criteria and rules, besides the norms of society (values and *Urf*). In the traditional area, the norms and *Urf* can be realized as concealed orders indoctrinated in the consciousness of society without the need for documentation. People realise the system of norms and *Urf* and then accordingly, shape their behaviour. The concept of *Urf* is related to the traditional area of Arabic/Islamic cities, where these types of areas were normally based on a set of treaties accepted by people. The idea of *Al-Fina* can be addressed as one of the public edge's characteristics in the old traditional part of Arabic/Islamic cities, such as Baghdad.

Al-Fina is a spatial element that distinguishes the street edge and interior courtyard of a house. It is located immediately adjacent to the peripheral exterior wall, opposite the street space. It serves daily and temporary uses without a need to own the space (Hakim 2008b). Moreover, the combination of zigzag and a string of narrow and wider areas along one street provides visible evidence of the design of a traditional city in the Islamic/Arabic world (Figures 6.27 and 6.28).

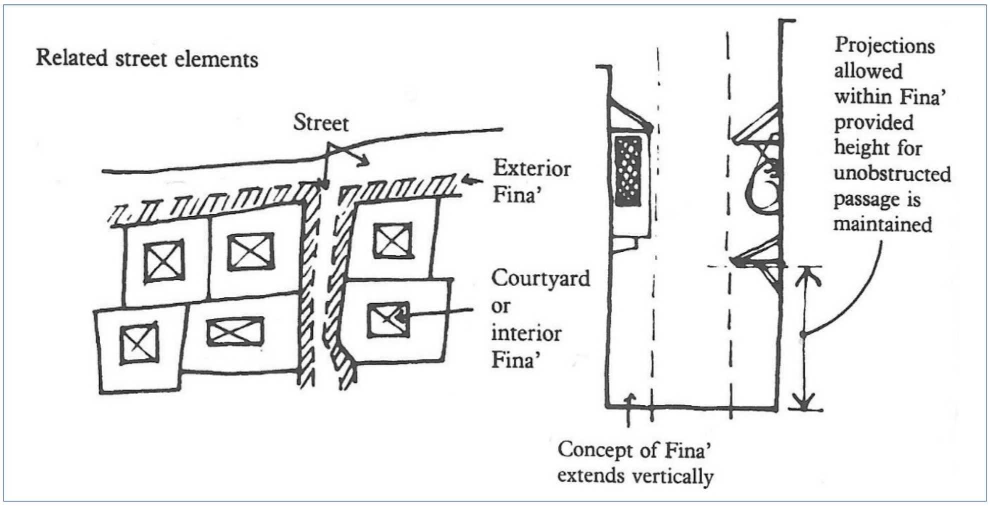


Figure 6.27. *al-Fina* is one of the leading characteristics of traditional Arab/Islamic cities. It refers to different purposes which both private and public domains can benefit from, but it is never be owned by anyone. Source: Hakim (2008b, p 28).

Figure 6.28. A street in the traditional part of Baghdad, Al-Karkh. Note the steps of the houses on the left of the picture, and verandahs on the upper level; both are located within the *Al-Fina* domain, besides having other hanging features. Even the car stop is subject to the same concept, despite the limitations of public edge. Source: Photographed by author's team, 05/Dec/2016.

Al-fina is completely changed in the modern neighbourhoods, where the built-up area is placed with the frontage set back. However, the area adjacent to the front wall of their properties is still used by people for different purposes, meaning that the authority of *Al-Fina* has been adopted differently. It might be recognised as a type of soft territorial space, "if territories are relatively small (garden or house versus park or apartment building, for example), and if they can be modified or maintained with modest effort, then it is easier for individuals or small groups to achieve control" (Lynch 1984, p 213) (Figure 6.29).


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Figure 6.29. Two examples from modern neighbourhoods in Baghdad exhibits how people pretend to make territorial space at the front wall of their properties. Partially covered area (left). Entirely paved by the inhabitant and using a ramp to access to the house located outside the private edge (right). Source: Photographed by author's team, 12-13/Dec/2016.

Furthermore, the concept of the '*in-between*' space is used by Nooraddin (1998) to denote a transitional milieu that mediates between the street and private space often in Arabic/Islamic traditional cities. In fact, there are no hard barriers between the in-between space and the street. The in-between space is generated by the consumer of street space, "In between phenomena, how it was organised in the old Islamic cities and how it contributed to the character of their street environments" (Nooraddin 1998, p 66). The in-between space is mainly located in the front of the private area where it is used as a gathering space and for different activities. This type of space is loose meaning that there is no specific shape to give it a final form. Instead, it is flexible in both investment and appearance. It enables people to meet their needs and their desires as much as possible regarding comfortable climate, religion, lifestyle, community and cultural aspects. Two types of in-between space are defined: (1) related to the commercial street, and (2) located on the residential street (Nooraddin 1998) (Figures 6.30 and 6.31).

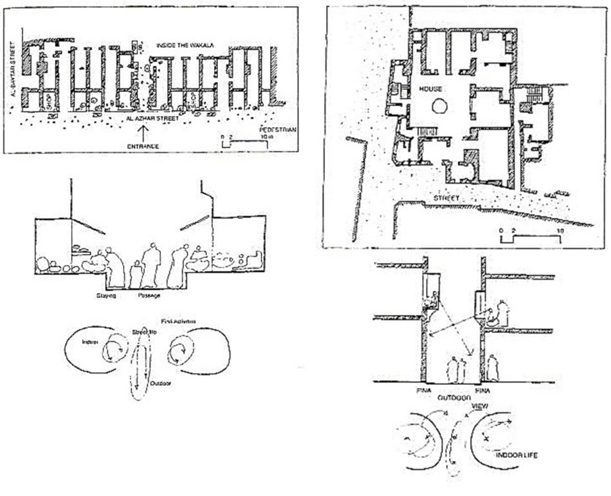


Figure 6.30. Left, reconstruction of the in-between spaces of a commercial street in traditional Islamic Arabic cities. Right, reconstruction of the in-between spaces of a residential street in traditional Islamic Arabic cities Nooraddin (1998, p 71- 72).

Figure 6.31. Al-Mutanabbi as one of the more traditional vital streets in the heart of the old part of Baghdad. It is vivid in attracting a massive amount of people from different gender, ages and for various purposes. It is the main resource for books, publishing, stationery and knowledge exchange. Source: Photographed by author's team, 21/Dec/2016 - 06/ Jan/2017.

According to Hall (1966), the in-between space shapes the microcultural theme, where it attracts the people to share the same territorial area. This notion, to a large extent, is rooted in the old part of cities. Hall (1966) distinguishes three types of proximate behaviour that manifests in a space; *Infracultural*: behaviour rooted in the human biological past, *Precultural*: the physiological level in the present, *Microcultural*: based on which most proxemic observations achieve. The *Microcultural* pattern encompasses three aspects (buildings, space and the distances maintained in encounters with others) which define territorial patterns, "… in every sense of the word an extension of the organism, which is marked by visual, vocal, and olfactory signs. Man has created material extensions of territoriality as well as visible and invisible territorial markers" (Hall 1966, p 103).

Can et al. (2015) use the term *In-between* to study social interaction and the morphological form of a city. They examine spatial configurations that occur in different street patterns; traditionally and modern. In traditional Islamic and Arabic cities, the *In-between* space reflects a social interaction between neighbours where it offers a niche within the street edge and in turn improves the street life. The pockets of activity play a significant role in shaping a live space; it mediates activities and the path as an in-between area in order to create an attractive space for people to pause and get involved (Alexander 1977).

Kostof (1992) states that public spaces are defined by residual, interstitial spaces located between neighbourhoods cells, such as bazars or *Aswaq* and *Maidans* (public squares). The contrast with Western urbanism lies in the fact it pays more attention to the street system and public spaces. The urbanism process in traditional Arabic/Islamic cities is based on the inside to outside, and is understood as a bottom-up approach, or, in other words, from private tendencies to public propensities.

In Arabic/Islamic cities, the sense of public space is defined in soft boundaries rather than hard borders, where the users and visitors share the same norms and values by investing in the public spaces. Kostof (1992, p 127) states that, “regardless of the private use of these resources, they could never be privately owned. Every member of society had equal claim to public places, be Muslim or non-Muslim. Whoever comes earliest to a public place has the right to make use of it through that day”. The *Suq* (the Arabic plural is *Aswaq*), in traditional areas of Baghdad, derives from the organic street pattern as there is no dramatic change between the *Suq* space and other networks, but rather movement is spontaneous and streamlined. The transformation is not based in the morphology of the space and its distinct characteristics, but also in the functional pattern of the street. This, in turn, results in a new vista with each movement (Figure 6.32).

A *Suq* is a crucial morphological urban element that is spontaneously subject to the hierarchy of location. *Aswaq* were organised in different ways, whilst the linear *Suq* functions as a continuum spatial route, where both its sides have opposite shops. As an area, the *Suq* denotes a series of back-to-back rows that are situated to face each other, whilst the units of a *Suq* are located against the perimeter of buildings (Morris 1994); (Oliveira 2016) (Figure 6.33). The pattern of a *Suq* and its spatial configuration came to exist as an assortment of different types of *Aswaq* (Arabic plural). It had various functions in order to serve a significantly sized community within the same scope, where *Aswaq* were located in order to be proximate and adjacent to each other.

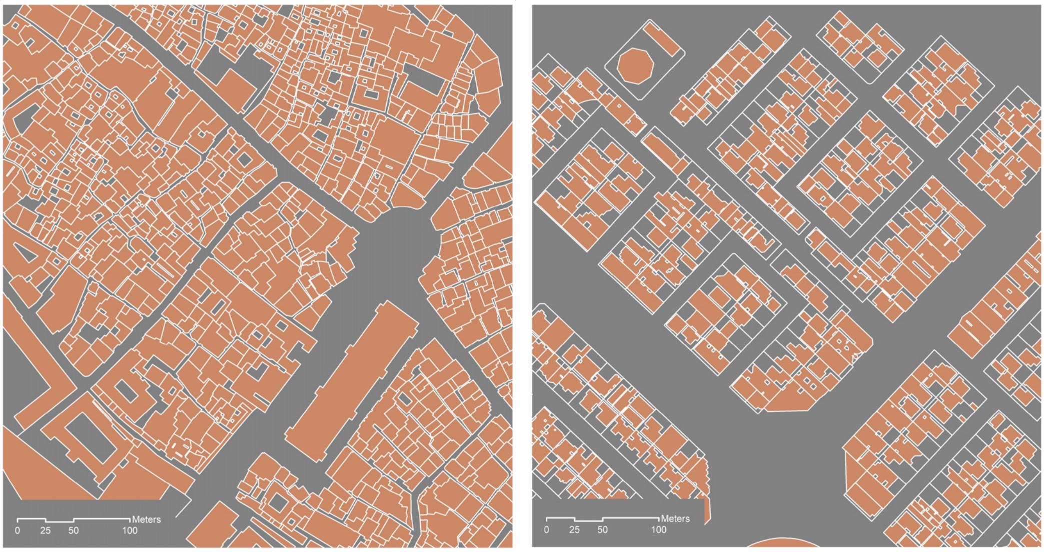


Figure 6.32. Two symmetric scale of street patterns in Baghdad (left: case A) and (right: case D) show the dramatic transformation in the concept of *Suq (Aswaq)*, from organic theme to loop-grid where the movement is changed from the spontaneous streamlined to a planned change direction. Source: Drawn by the author based on the georeferencing aerial imagery authorised by the G.I.S.Department (2016) and R.S.GIS.U (2017).

Figure 6.33. Spatial configuration of *Suq* pattern in the traditional area of Baghdad; *Al-Safafeer Suq* (left) and *Al-Mutanabbi* Street (right). Source: Photographed by author's team, 04/Dec/2016 - 21/Dec/2016.

The proximate pattern of distribution of *Aswaq* provides a distinct morphological form in the traditional area of Baghdad. The proximity enables people to combine shopping and viewing the sights (Figure 6.34).

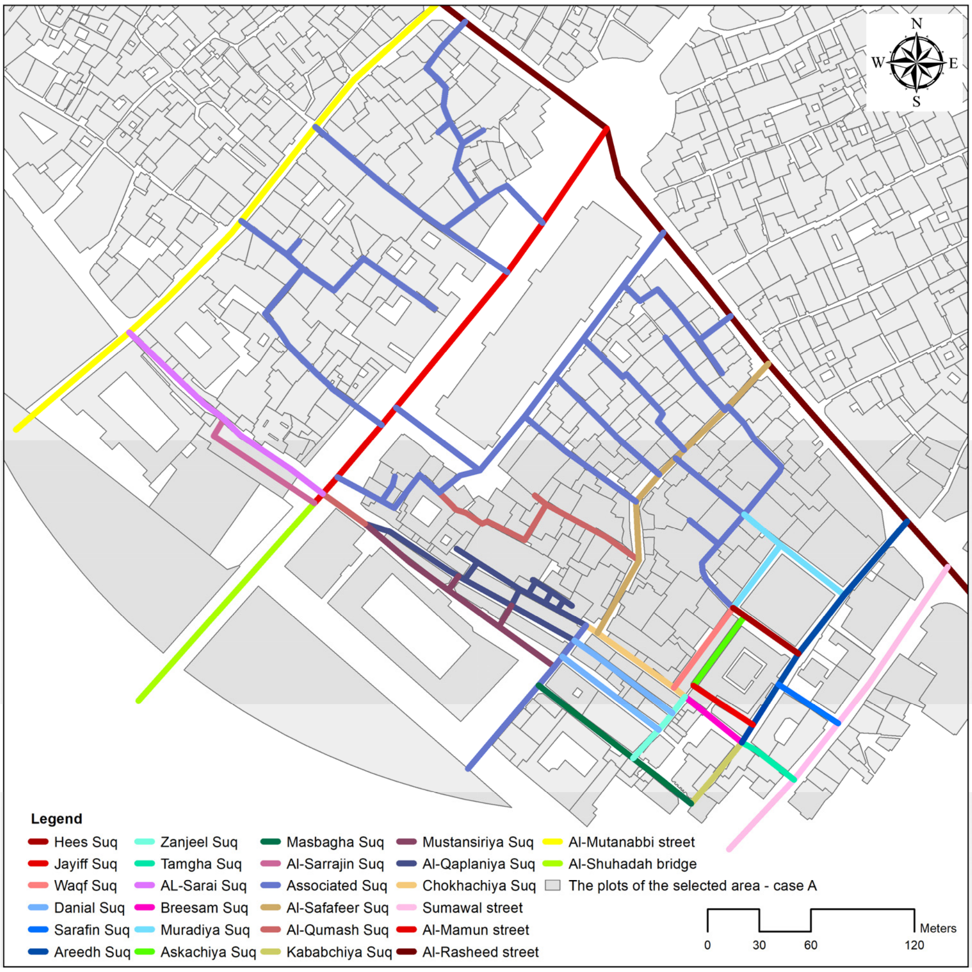


Figure 6.34. Sample of the pattern of a *Suq* with its spatial configuration came into existence as an assortment of different types of *Aswaq*. This aimed to provide various functions in order to serve a significant amount of the community within the same area. They were located near and/or next to each other. Source: Drawn by the author based on the georeferencing aerial imagery authorised by the G.I.S.Department (2016) and R.S.GIS.U (2017).

Functional proximity is often one of the important criteria for the closeness of the *Aswaq*; for example, *Al-Mutanabbi* street is designated for bookshops, publishing and stationery storage; moreover, it is close to *Al-Sarai Suq* to provide stationery and books (Figure 6.34). Along with the value of proximity, the pattern of the street in this part is more complicated, and based on the organic network, which developed spontaneously. The proximity governs the location of the *Aswaq* and the other social facilities, such as the *Masjid* (mosques), *Gahwah* (café), *Hammam* (public bath) and *Sahaht* (squares), where people are able to access different activities. This sense of proximity, to a large extent, is lost in some modern neighbourhoods in Baghdad, with their new street patterns that were established according to car-based movement. This resulted in minimal social interaction, and it maximised the distance between settled units and the *Aswaq*, besides other facilities and service (Al-Azzawi 1984); (Al-Hasani 2012) (Figures 6.32 and 6.34).

Proximity, in this regard, is based on human demands, regarding accessibility and connectivity. This considers '*where*' as the settled units in which people live, and '*there*' where their needs are located. The traditional part of Baghdad, like other Arabic/Islamic cities, emerged initially from a bottom-up strategy, where the community had the authority to shape and reshape the built environment so that it harmonised with their needs (Hakim 2007); (Mohareb 2010). In the traditional area of Baghdad, Al-Ashab (1974) refers to another morphological element that characterises the urban context of the street pattern in this area, namely, *Al-Sahah* (*Sahaht* – as plural). It emerged spontaneously within the urban fabric and is normally placed where two or more streets come together to shape the space of connection. This space has been used as a meeting place for neighbours. *Sahah* within *Mahallahs* (neighbourhoods) were full of life and attractive as social interaction spots that eventually spread through the traditional urban fabric (Al-Ashab 1974).

Sahah space refers to several *Sahaht* that are varied regarding the size; it ranged from the more private space, such as the courtyards of traditional houses, tertiary *Sahah*, and more public areas like sub-*Mahallah* or secondary *Sahah*, and the primary *Sahah*. The hierarchy of accessibility from the small to the large *Sahah* was perceived both by those who lived there as well as visitors (Al-Ashab 1974) (Figure 6.35). In a new urban context, where the squares (*Sahaht*) develop from a planned process, open spaces are meaningless and void from any common function. They, however, enable the unnecessary physical expansion of the city, and the sense of human scale is lost as their geometrical dimensions are not subjected to other surrounding urban elements; thus, the enclosure is also missing. In the modern pattern, squares fall out of the authority of inhabitants, as there is no explicit declaration about the claim for this type of area. Moreover, there is a deficiency in determining the nature of use, even though they are designed for public use (Figure 6.35).

Figure 6.35. *Al-Sahah* (*Sahaht* – as plural), Baghdad, al-Karkh (Case B - left). It emerges spontaneously and is embedded in the urban fabric and customarily located where two or more streets come together to form a connective space. Case D (right) is a new modern pattern which exhibits fragmented squares as superfluous. Source: Drawn by the author based on the georeferencing aerial imagery authorised by the G.I.S.Department (2016) and R.S.GIS.U (2017).

6.3.3 Computing: Edge - Edge Interface

The relationship of edge – edge has critical meaning when studying the urban context between two different streets, such as organic and geometric patterns. This relationship widens when one goes deeper into the micro scale of a street segment; thus, the characteristics of each pattern are varied. Different approaches to examine the street edge and street life range from global, local to macro and micro scale. The main aim is to examine the dependent and independent factors that effectively help to shape the vitality of the street. In this regard, the current study adopts different scopes of the urban fabric to determine the association between these factors and at different scales.

6.3.3.1 Global – Local Interface

Accessibility indices can be measured by several methods that depend on different approaches and techniques, which are based on the notions of propinquity, proximity and closeness. These represent the concept of accessibility, meaning that an individual point can be close to surrounding locations in a network system. The focus is on how to deal with the distance that links two locations and how to represent this link. Therefore, geometrical, topological and metric measurements are considered (Jiang et al. 1999).

Two significant approaches: Space Syntax (SS) and Multiple Centrality Assessment (MCA) are applied in order to determine the correlation between the accessibility of the street and movement patterns which are influenced by other factors, such as land use, human wayfinding and the degree of security (Porta et al. 2006a). In the current research, accessibility at a global and local scale is examined by using the MCA approach. Significant outcomes have been noted for the whole selected area of Baghdad (globally) and the four-urban selected areas (locally). The MCA expresses global and local centrality regarding spatial structure, function, and the type of street, which represents the macro and micro levels to quantify the value of the street edge.

6.3.3.2 Macro – Micro Interface

The micro and macro-scale analyses are interconnected to define the degree of street liveliness and safety. Moreover, "the micro-spatial structure of urban street plinth affects the direct interface of the public and private life of a built environments inhabitants and visitors in an informal way. It has always been like this in built environment" (Van Nes 2009, p 10). Van Nes et al. (2007) define a significant relationship on two levels between the private and public space, namely the local and macro. However, the micro level is, to a large extent, limited; therefore, there is a concentration on the inter-relationship of buildings and the adjacent street networks.

Van Nes et al. (2007) raises the question of how the constructional units relate to the street and how their entrances constitute the street edge. Besides the topological depth in connecting the private and public space, and the principle of inter-visibility of constructional units, whether doors or houses across streets networks. Van Nes et al. (2007) identify eight micro criteria that primarily govern the relationship between street space and adjacent buildings. Paying more attention to microscale studies compared with other urban research, including the definition and operationalisation of microscale conditions, still, denote the preliminary phase. Various degrees of active urban frontages determine the relationship between buildings and streets; therefore, it would be useful to gain a genuine understanding of spatial interaction and human behaviour and their impact on street life and urban safety (Van Nes 2009).

The configurative spatial systemisation of the street network is not solely substantial; instead, it needs to consider the relationship between private and public spaces and the social monitoring of the street from buildings. The interdependence of these spatial elements plays a vital role in a physical setting and can help it to feel safe and attractive. Nevertheless, this is subject to various factors: adjacency, permeability and intervisibility on different scale levels (López et al. 2007) (Figure 6.36).

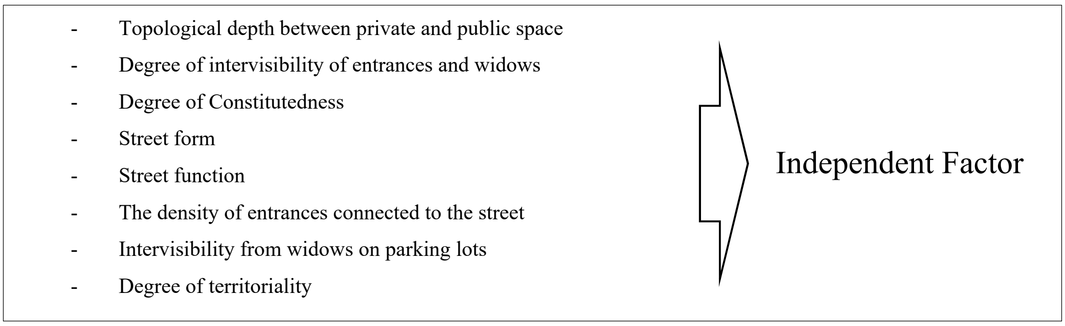


Figure 6.36. Explaining the eight independent factors that contribute to managing the relationship between the street edge and public space. Source: Drawn by the author based on Van Nes et al. (2007).

Four fundamental independent indicators work to shape the street edge: constitutedness, permeability, topological depth, and intervisibility. Those factors can be considered as the leading platform for the spatial configuration of the street pattern at the micro level and its interrelationship with the whole network. The mechanism adopted to formulate an equation to test these indicators differs from one researcher to another.

6.3.3.3 Deriving the Constitutedness Equation from Metric Order

Previous studies dealt primarily with the position of entry per plot area, the distance that separates a street edge and building entrance, the street width, and building height. Furthermore, some scholars employ a particular number of units per storey to calculate the value of constitutedness, whereas others use the concept of convex space. Regarding space which intermediates between the private and public realm, former scholars have mostly adopted topological depth, rather than metric distance. Topological depth is varied and subject to different considerations that relate to the boundary between private and public spaces. The current study deals with the metric order, apart from topological depth, to highlight the concept of constitutedness from a new perspective.

Despite the view that the classification of a street depends on the purpose of its application, such as transport modeller, planner and developer, geometrical dimensions play a significant role in shaping its performance and reshaping its social activities. Metric distance deals with the width and street height, whereas the length might be subject to the whole street network and block (Figure 6.37). Considering the street as a metric unit is not a new approach to study the network; for example, one of the foremost spatial network analyses is MCA, whilst planning and transportation studies also adopt this approach. The street and its width and height have been studied by various authors, including Gehl (2010a); (2010b); Gehl et al. (2013); Remali (2014); Van Nes (2009); Van Nes et al. (2007).

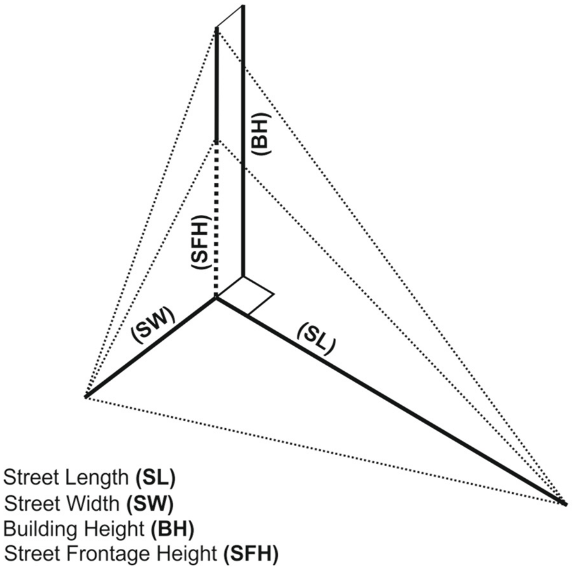


Figure 6.37. A Diagram displays four significant street dimensions: length, width, building height, and street frontage height that can be experienced by people. Source: Drawn by the author.

6.3.3.3.1 Metric Depth

Van Nes et al. (2007, p 3) state that, "there are several ways of analysing spatial configurative relationships between building entrances and the street network". They place a priority on topological depth rather than metric distance as a simple method to account for the spaces between public and private spaces (Hillier et al. 1984). Topological depth is employed as an indicator to measure the value of constitutedness. This, the value would be zero when no space mediates the private and public space; when there is a direct link, the depth is equivalent to one with a single space (semi-private or semi-public space). Furthermore, when there is a two-step separation between the private and public, the value is two. Consequently, the value of depth ascends, as long as the number of spaces increases between the street and private spaces (Van Nes et al. 2007) (Figure 6.38).

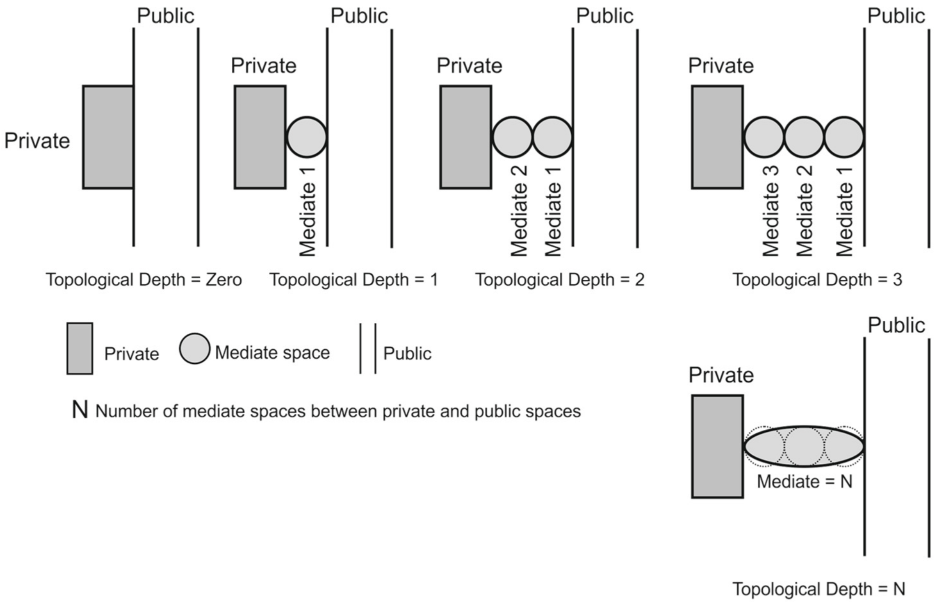


Figure 6.38. The topological depth between private and public space as a considerable factor in measuring the value of constitutedness. Source: Drawn by the author.

Hillier et al. (1984) offer a description of mediation that is placed between private and public spaces and appears as an asymmetrical and distributed system. Asymmetry explains that one must pass through the third space to move from one space to another in a linear-shaped relationship that requires some notion of depth. The distributed system reflects the relationship where there is more than one space or non-intersecting route to reach another space as a circular movement (Figure 6.39).

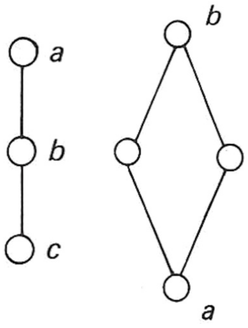


Figure 6.39. Asymmetrical and distributed system where mediate spaces are required to link between two spaces. Source: Hillier et al. (1984, p 94); Gehl (2010a, p 40).

Remali (2014) classifies two types of topological depth that measure the value of constitutedness: vertical topological depth (as storey topological depth) and horizontal topological depth that governs the relationship between a building's entrance and the street (Figure 6.40).

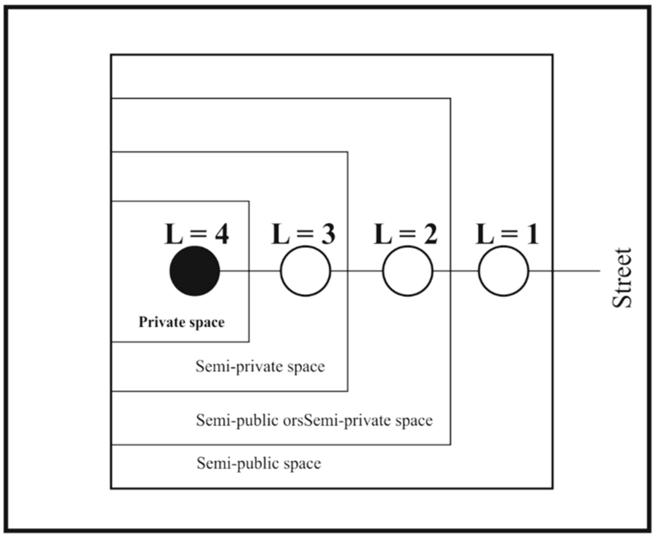


Figure 6.40. The criteria for measuring topological depth on the ground floor. Source: Remali (2014, p 345).

Several studies often adopt topological depth; it might be more available for scholars when dealing with topological dimensions rather than metric depth. Furthermore, it offers more tolerance when it comes to the quantitative and qualitative analysis of an urban context. Although metric depth represents a real distance, it is neither available nor critical to adopt when using accurate georeferencing maps and to examine at the micro scale of a street segment. Notwithstanding, the metric distance can help to designate the distance two spaces, whether private, semi-private or public; however, semi-public spaces have an unobvious boundary between them (Figure 6.41). A georeferencing map with a high resolution allows for scholars to examine the morphological relationship between the private and public, which helps to create a new image of this association.

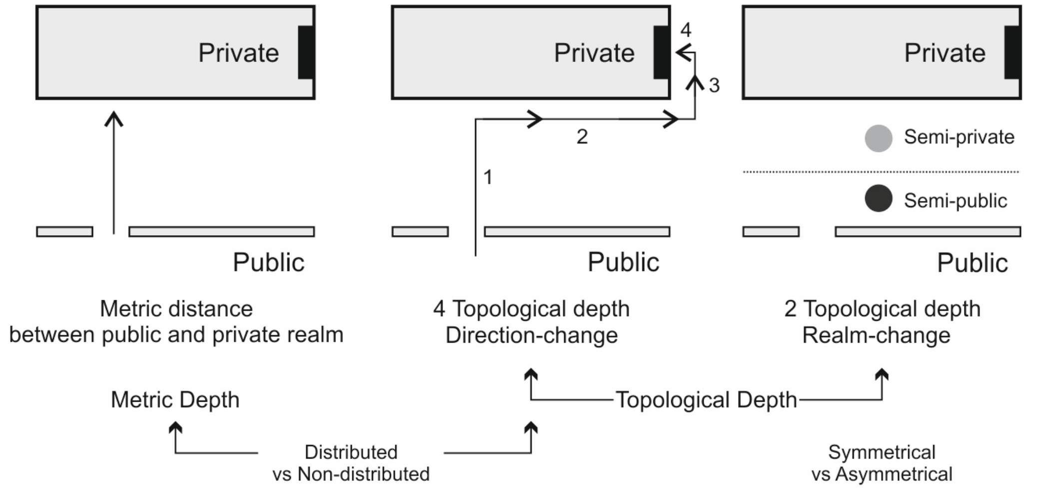


Figure 6.41. It illustrates three types to understand the relationship between private and public spaces. Source: Drawn by the author.

Another primary concern about topological depth is the distance between the private and public space. There is, to a large extent, the possibility that one topological depth can be defined in different ways based on metric distance (Figure 6.42). This perspicacity, however, is noticeable when studying this relationship at the street scale, where topological depth is equal to one step; however, the metric dimension is varied between private and public (Figure 6.43).

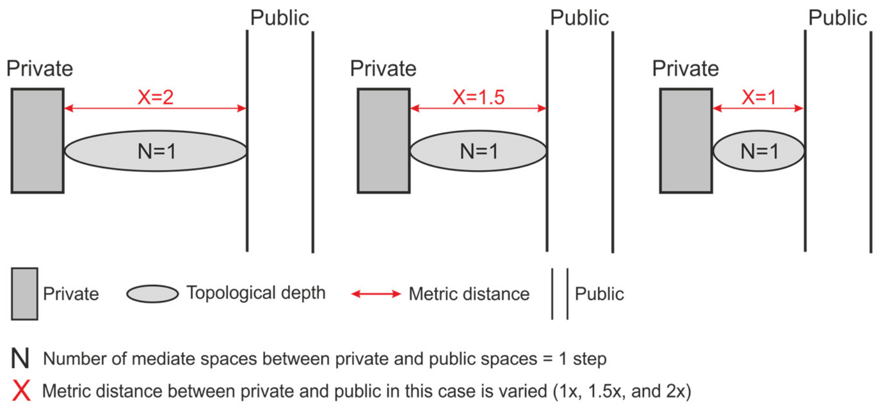


Figure 6.42. Three manifestations of topological depth and metric distance to explain the shift between the concept of the step in calculating topological depth and metric distance in calculating out intermediate spaces. Source: Drawn by the author.

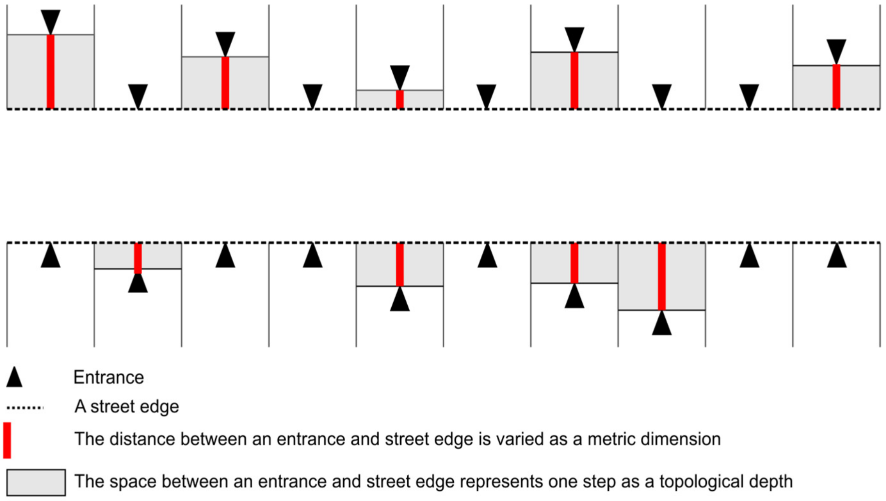


Figure 6.43. An example exhibits the difference between topological depth and the metric system in determining the mediate space between the private and public. Source: Drawn by the author.

In this study, the metric system between the private and public is employed to extract the number of indicators. Four types of metric distance control the street edge: street width, building edge to building edge located on the opposite side of the street, building edge to the nearest edge of the adjacent street (setback), and building edge to the furthest edge of the adjoining street (Figure 6.44). The research seeks out to define constitutedness, intervisibility and permeability.

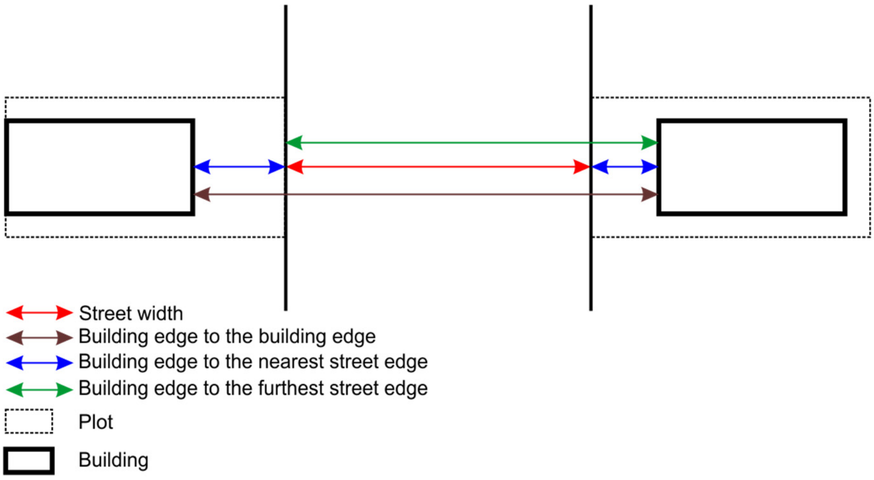


Figure 6.44. Diagram illustrates four types of metric distance which govern the relationship of street edges. Source: Drawn by the author.

6.3.3.3.2 Intervisibility Metrics

Van Nes et al. (2007) state that a high concentration of entrances are linked to a street; this does not necessarily mean a high degree of intervisibility. Entrances and windows located on one side of the street should face those on the opposite side; otherwise, there is no intervisibility. Intervisibility is an essential indicator at the microscale to determine the relationship between the private and public. At the macro level there would be, for example, a street with few connections to other streets and neighbourhoods, but at the same time, it has a high density of entrances that constitute the street, high visibility between private and public spaces, and social activities at a micro scale (Van Nes 2009) (Figure 6.45).

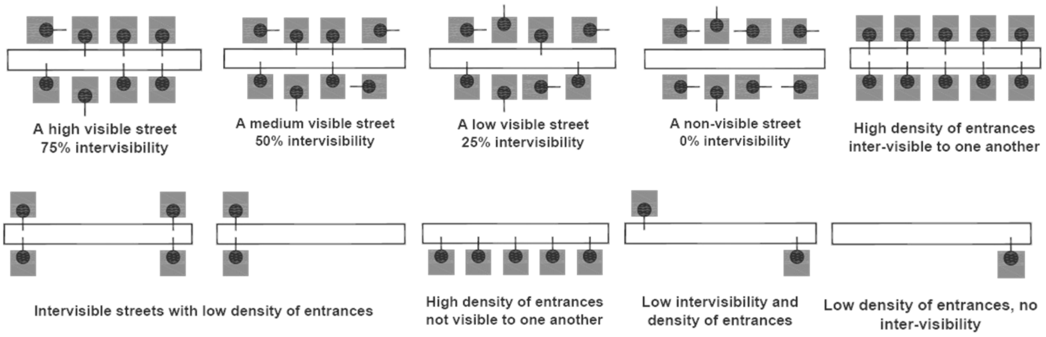


Figure 6.45. The relationship between intervisibility and the density of entrances. Source: Van Nes et al. (2007, p 8).

To achieve intervisibility, at least two entrances need to face the street or be directly obverse, regardless of the number of entrances, which have direct access to the street. Consequently, intervisibility refers to the entries that constitute the streets directly and are located on both sides, where, "two buildings with two entrances facing towards each other indicate 100%

intervisibility of doors. Conversely, a street segment with a high density of entrances on only one side of the street segment is defined to be 0% inter-visible" (Van Nes 2009, p 7). Moirongo (2002) states that the buildings adjacent to the street do not achieve and promote the quality of street life, unless the adjacent buildings have direct access to and from the street with a degree of inter-visibility and transparency. This can include, "blank walls [which] offer little interest to the pedestrian and no activity, the absence of which can result in dangerously desolate nighttime environments" (Warren 1998, p 22). To measure the degree of intervisibility at the microscale, Remali (2014) formulates an equation:

$$SI = (u \times sif) \times swf$$

Where *SI* is street intervisibility, *u* number of units, *sif* is storey intervisibility factor that is labeled as (ground floor = 1.00, 1st floor = 1.00, 2nd floor = 0.80, 3rd and 4th floor = 0.40, and 5th floor and upward = 0.10). *swf* is a street width factor based on the range of street width, where (0 ≤ 5m = 1.00; 5 – 10 = 0.90; 10 – 20 = 0.70; 20 – 25 = 0.50; ≥ 25 = 0.00).

Four significant indicators were employed by different studies to comprehend the street edge at the microscale (Figure 6.46). These studies depended on the topological depth to calculate the intervisibility in terms of the distance between the street and private space (horizontally), and the street and number of storeys per building (vertically).

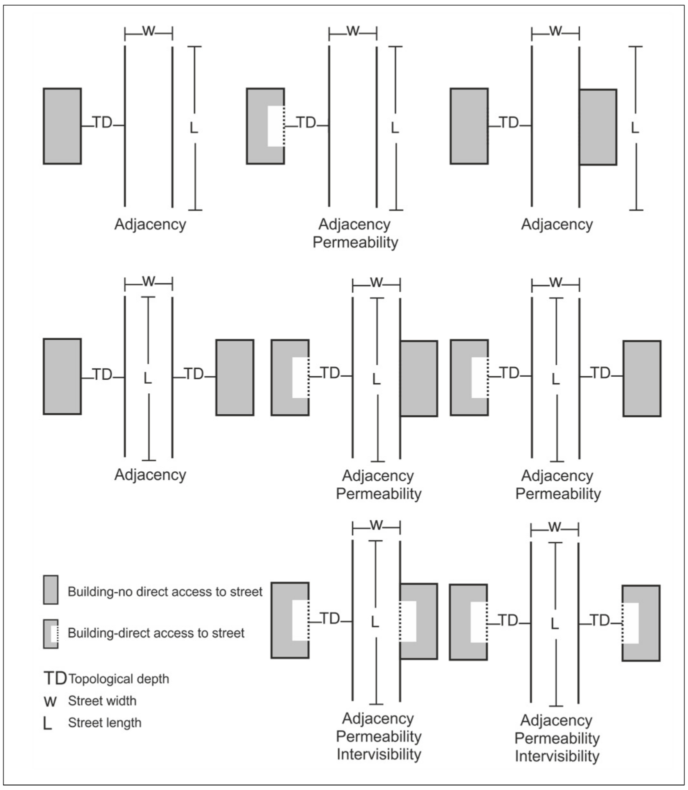
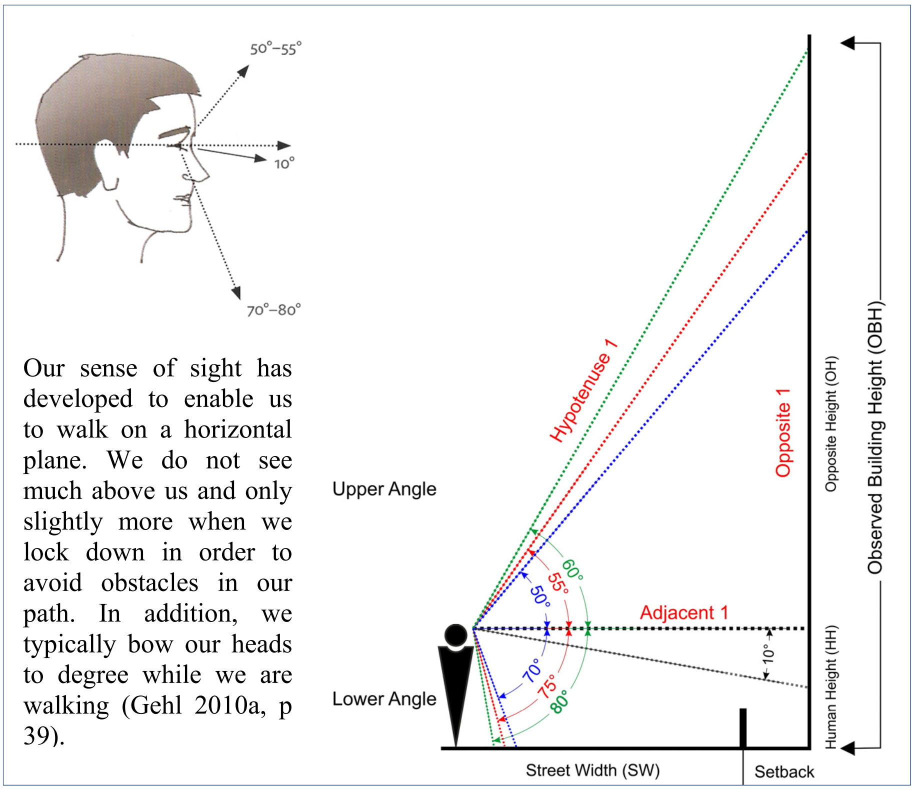


Figure 6.46. Displays the pattern of a constituted street regarding adjacency, permeability, topological depth, and intervisibility. Source: Drawn by the author.

From the metric order, to derive the equation of intervisibility, two variables are involved, street width and building height, where the human height is constant and equal to 1.829 m (Neufert et al. 2012). The street width is not important in itself but is used by people and influence how they perceive a building's height and its adjacent street. In this regard, as the metric horizontal distance, street width is addressed as a metric width rather than a width factor (Figure 6.47).



Our sense of sight has developed to enable us to walk on a horizontal plane. We do not see much above us and only slightly more when we lock down in order to avoid obstacles in our path. In addition, we typically bow our heads to degree while we are walking (Gehl 2010a, p 39).

Figure 6.47. Scanning vision diagram displays the upper and lower angle of projection of a visual angle and its relation to the observed building height (based on (Hall 1966, p 127) and (Gehl 2010a, p 39)) where the upper angle ranges between 50°, 55°, 60° and the lower angle 70°, 75°, 80°. Source: Drawn by the author.

The distance between a street edge and the entrance of a building is added to the street width to give the total horizontal distance (Figure 6.47). When the scope of vision falls under the upper angle, 60° is applied to determine the number of storeys that should be counted, whereas the storeys higher than 60° are excluded.

Intervisibility is derived from:

$$Hypotenuse = \sqrt{Opposite^2 + Adjacent^2} \rightarrow H = \sqrt{O^2 + A^2}$$

Where each single storey has its own hypotenuse besides a street width and a metric depth (if applicable). This is because the vision will dwindle when it moves to the upper floors; consequently, the intervisibility value is equal to the inverse value of the hypotenuse for each storey. The intervisibility per storey (I_S) is:

$$I_S = \frac{1}{\sqrt{(storey\ height)^2 + (street\ width + setback)^2}}$$

Except for the storey that located at the street level, where intervisibility:

$$I_S = \frac{1}{\sqrt{(human\ height)^2 + (street\ width + setback)^2}}$$

Where I_S represents the line that reaches between the mid storey and the furthest edge of a street at the human height. For clarification, in terms of the vertical distance, the rule is to employ the height that represents the distance that reaches from the middle line of a storey's height to the street level (Figure 6.48, 6.49 and 6.50).

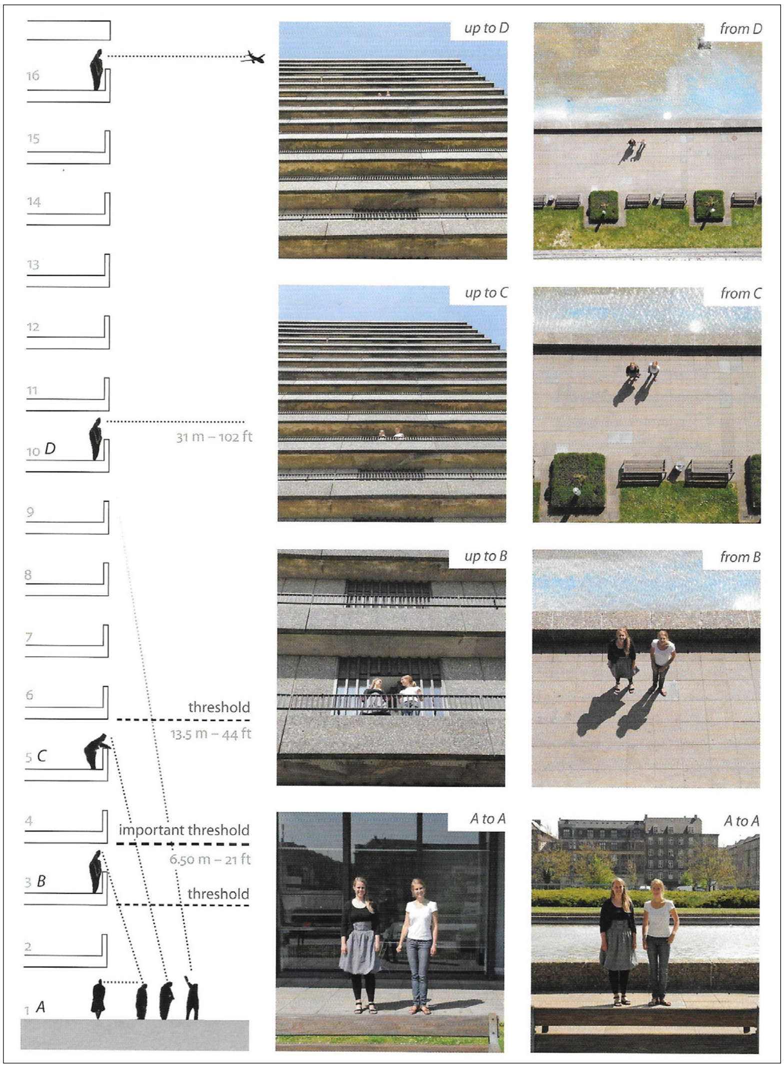


Figure 6.48. Three types of threshold that control the connection between the building and the street level: lower, important, and upper. The storeys under the lower threshold offer opportunities for social interaction; under the important threshold (third and fourth floors) it is possible interact efficiently and conveniently. The fifth floor and upwards, the contact fades completely. Source: Gehl et al. (2013, p 109); Gehl (2010a, p 40).

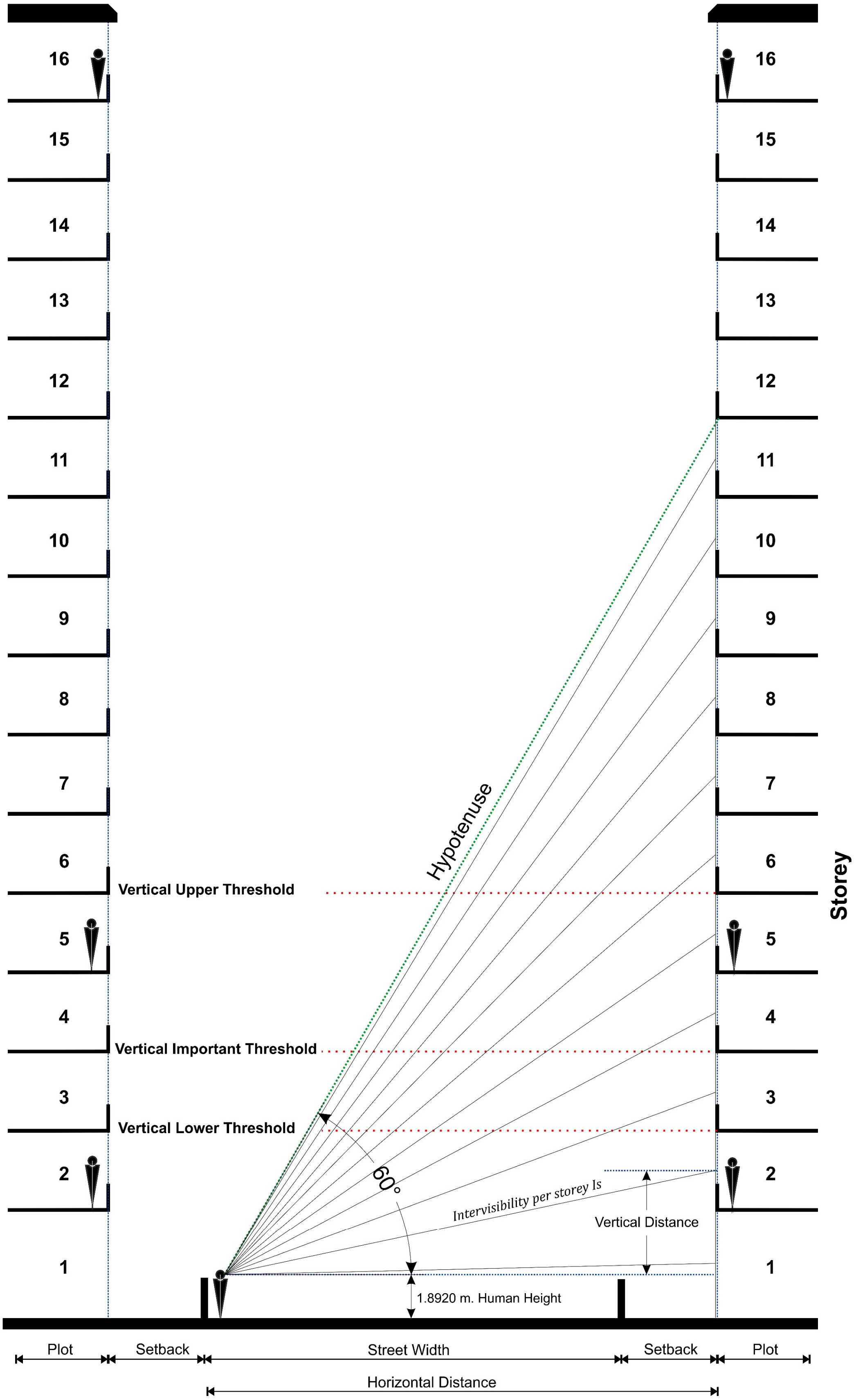


Figure 6.49. The main variables in computing the intervisibility and permeability of a street edge in order to disclose the constitutedness of the street. Based on Gehl et al. (2006, p 33); Gehl (2010a, p 40); Gehl et al. (2013, p 109) Source: Drawn by the author.

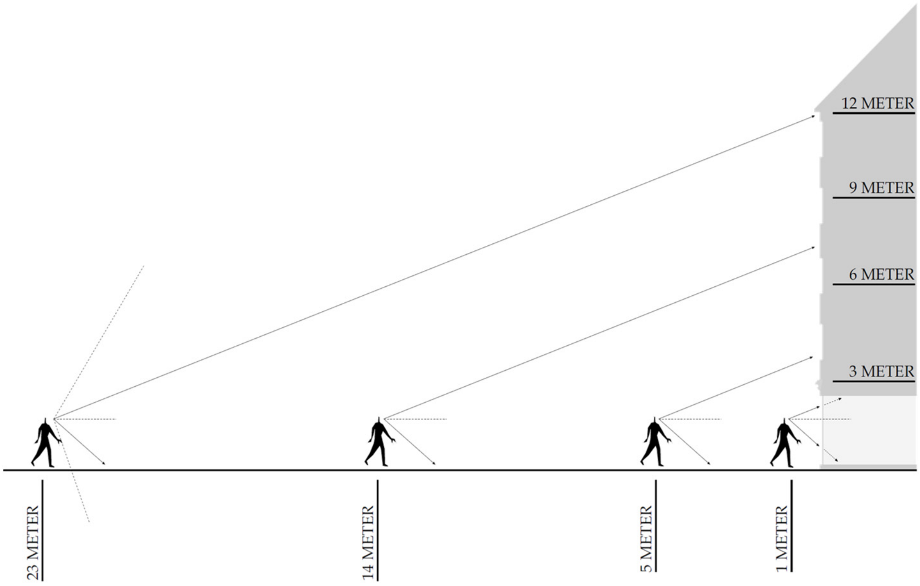


Figure 6.50. Effective viewing distances. Source: Gehl et al. (2006, p 33).

In this study and based on the field survey and observation, the height of the upper storeys are equal to three metres and storey one, at street level (ground floor), is four meters or in some cases is three meters. This difference depends on the land use and the regulations of a region. All these factors are considered in computing the indicators of constitutedness. This equation of intervisibility is applied for the four selected cases, where there are six streets per case study as classified by the MCA analysis. The concept of vertical vision and its relationship to the building's storeys come from the notion of Gehl (2010a), Gehl et al. (2006) and Gehl et al. (2013), who offer a quantitative method to examine the reciprocal relationship between people on the ground and those who use the edge of the building on the upper floors, such as balconies and windows (Figures 6.48 and 6.49). This social interaction is critical when considering the upper floors. Three types of threshold govern the connection between the building and the adjacent street: lower, important, and upper thresholds.

The storeys that fall under the lower threshold offer opportunities for efficient and convenient social interaction under the important threshold (third and fourth floors). The fifth floor and upward, provide a connection with those who occupy the street and this changes considerably (Gehl 2010a); (Gehl et al. 2013). Understanding the potentiality of people to create interactions with the adjacent street from the upper floors is potentially less relevant for urban studies than examining the street level where people are close to each other. This research, therefore, focuses on street life and social interactions at different levels of the street edge.

6.3.3.3.3 Permeability Metrics

Permeability is one of the indicators used to study the relationship between private and public realms. Two factors simultaneously govern the constitutedness of the street: the buildings adjacency of the street and the permeability of the street façade. The concept of permeability is implicitly employed in constitutedness and indicates an accessible connection between the building and street. Hillier (1996a, p 31-33) refers to the meaning of permeability, "if we define spatial relations as existing when there is any type of link-say adjacency or permeability - between two spaces, then configuration exists when relations between two spaces are changed according to how we relate one or other or both to at least one other space … the pattern of permeability created by the disposition of entrances is the critical thing … now the pattern of permeability would make relatively little difference to the building structurally or climatically, that is to the bodily aspect of buildings, especially if we assume similar patterns of external fenestration, and insert windows wherever the other had entrances onto the courtyard".

Permeability (P), according to Moirongo (2002, p 210), represents the permeability per unit area; this is obtained by dividing the building space index (constitutedness) by the area of the convex space to get the intensity of buildings accessed from that space per unit area:

$$P = \frac{Building\ space\ index}{The\ convex\ area} = \frac{BSI}{CA}$$

Or

$$P = \frac{Constitutedness}{The\ convex\ area} = \frac{C}{CA}$$

According to Van Nes (2009), a number of indicators control the value of constitutedness, and these are: (1) there are no obstacles or barriers, such as fences and hedges, that might be located between the entrance of the building and street, (2) the entrance directly faces the street, (3) and the spaces that mediate the street and building entrances, like semi-private and semipublic spaces where the topological depth between the street and the building entrance, is equivalent to zero.

According to Van Nes et al. (2007); (2009), permeability (I) is the number of entrances (E) located on both sides of the street that face each other and allow direct access to a street:

$$P = No.of\ E$$

Where P is permeability, E number of entrances facing each other with direct access to an adjacent street, regardless of the topological depth. The buildings that have no access to a street are omitted.

According to Marshall (2005a), permeability is a compositional property that refers to the extent to which accessible space permeates a two-dimensional plan area as permeability gives a compositional property. Connectivity is a configurational property to define the extent to which various links or routes connect in a network. Thwaites et al. (2013) define permeability as the capacity for connection to other realms through a physical interaction; therefore, "transitional edges are by their nature permeable, but the extent of permeability may be locally controlled by those in occupation as they mediate who and what passes between the two adjacent spaces. Research indicates that the more permeable these transitional edges are, the greater the levels of social activity in the streetscape" (Thwaites et al. 2013, p 93).

Carmona et al. (2010) refer to the other value of permeability as a sustainable factor in designing urban spaces. They state that a sustainable dimension in urban design requires patterns of development to accommodate the needs for permeability and accessibility within the network system, and enable effective social interaction.

This variable is an independent factor to measure the value of street constitutedness. Van Nes (2009) uses the equation:

$$Constitutedness = \frac{\text{the number of entrances to a street}}{\text{the number of buildings located along that street}}$$

Where the entrances are placed directly to the adjacent street as there are no mediating spaces. The value (1) stands for the high value of constitutedness.

A number of scholars adopt this equation, such as Chih-Feng Shu (2000), who states that constitutedness is achieved when more than 75% of entrances of adjacent buildings on a street face the entrance on the opposite side of the street. Moirongo (2002) employs the same equation: constitutedness is equal to the number of buildings that directly open onto a street, and this is divided by the total number of buildings. Moreover, López (2003) states that it is important for doors to be located every 7-9 metres with the transparency of façades at about 63% and the depth between 0.7 and 2.0 metres. López states that this would efficiently help to increase the degree of constitutedness in neighbourhoods. Can et al. (2015) follow the same mechanism in computing the value of constitutedness; they achieve this by summing the number of houses that directly open onto a street and divide this by the total number of houses.

In comparison, permeability is more complex to quantify mathematically based on the number of street edge variables. Remali (2014) provides the following equation to calculate permeability on the micro scale of the street edge:

$$P = \sum 1 \rightarrow e \left[\sum 1 \rightarrow n(u \times s) \right] \times d(where\ d = 1/no.of\ links)$$

Where u is the number of units per storey served by the entrance, n is the number of storeys, s is storey's topological depth factor (ground floor = 1.00, 1st floor = 0.80, 2nd floor = 0.60, 3rd and 4th floor = 0.40, and 5th floor and upward = 0.20), e is the number of entrances on the street, and d represents the horizontal topological depth factor (topological depth value at ground floor (d) = 1/L where L= 1,2,3,4, Figure 6.40.

From the metric order, to generate the equation of permeability, two variables are named: the number of units per storey and the depth storey factor:

$$Permeability\ per\ storey\ (P_S) = depth\ storey\ factor\ (D_S) \times number\ of\ units\ per\ storey\ (U_S)$$

Where: $Depth\ storey\ factor\ (D_S) = Intervisibility\ per\ storey\ (I_S)$

Then the permeability per plot is:

$$P_P = \sum_{S=1}^{n} D_S \times U_S$$

Where P_P is permeability of a plot, S is a storey, D_S is a depth storey factor, and U_S is a number of units per storey. The value of permeability is not restricted to the entrance but includes the other units; for example, shops, offices, and stores placed at the ground level where people have an opportunity to interact with the street edge.

$$P_{St} = \sum_{P=1}^{n} P_P$$

Where P_{St} is the permeability per street (selected street), P is plot, and P_P is the permeability per plot. Hence, the term plot is used rather than a building, because a plot can mean a building, house, or any other construction.

6.3.3.3.4 Constitutedness

Constitutedness refers to the relationship between the entrance of the building and street based on its adjacency and permeability. A building that has direct access from and to the street contributes to constituting the street. If no entrance opens directly onto the street, regardless of the number of adjacent buildings, then the street becomes un-constituted. Hillier et al. (1984) analysed the relationship between buildings' entrances and streets in Somers Town to the north of Euston Road in London. The study was conducted at two periods; the Nineteenth and Twentieth Centuries. By using what they called an '*interface map*', they note that there has been a dramatic change in this relationship. The relationship between buildings which adjoin the street and the street itself changed from constitutedness to unconstitutedness and from distributedness to nondistributedness. Also, they represented the relationship between a building and the adjacent street through what they called the '*permeability map*' (Hillier et al. 1984, p 132-138).

There is no consideration for the geometrical dimensions of space regarding, for example, the width of the street or the distance between the entrances located on both opposite sides of the street. Furthermore, the relationship between other floors of a building and the pedestrian flow movement is absent. Moirongo (2002) gives a different expression of constitutedness, but has the same explanation. Moirongo (2002) refers to the building space index of a space, which is used to measure constitutedness; this expresses the adjacency and direct access from space, as the permeability of the space. The permeability of the interface mediates the private and public realms; it can be calculated by dividing the constitutedness (building space index) by the area of the convex space. Furthermore, the degree of adjacency and impermeability are based on the number of buildings that are adjacent but with no access to space (Moirongo 2002).

Constitutedness can be understood as a physical or visual interaction between the private as indoor and the public as outdoor space. These characteristics mainly are governed by permeability, transparency and accessibility. According to Moirongo (2002, p 209), constitutedness (C) represents the building space index of a space that is also known as the measure of constitutedness of the space. It refers to the number of adjacent buildings which are directly permeable from the space:

$$\boldsymbol{C} = No, of\ buildings\ \ where\ they\ adjacent\ and\ directly\ permeable\ from\ a\ space$$

Moura et al. (2003) refer to constitutedness as the relationship between two realms; the building as an interior place and the exterior space as the public realm. Thus the entrance is the main channel to link between them. Shu et al. (2003) define constitutedness when more than 50% of the adjacent buildings on one street have front entrance to front entrance visibility with no obstacles.

Van Nes (2009) states that the constitutedness of a street depends on different degrees of adjacency and permeability, from buildings as private units to public space as represented by the street. Constitutedness occurs as long as there is direct access to the street from the building that constitutes the street. However, when the entrances of buildings are not directly accessible from the street, even when all these buildings are adjacent to the street, then the street is un-constituted. Also, the high density of entrances connected to a street does not always mean high intervisibility, as there is a difference when entrances constitute streets and when they are intervisible to each other.

According to Van Nes et al. (2007); (2009), constitutedness (C) is the number of entrances to a street divided by the number of buildings located along that street E:

$$\boldsymbol{C}\ = \frac{Nb\ of\ buildings\ entrances\ faced\ and\ linked\ to\ a\ street\ directly}{Total\ number\ of\ buildings\ located\ on\ both\ sides}$$

Remali (2014) describes constitutedness in the broader meaning by combining three spatial variables; permeability, topological depth and street intervisibility. These dimensions work collectively to create a constituted street through its adjacent buildings. Remali (2014) adopts, not only the topological depth in a horizontal direction, but aims to determine vertical depth by measuring the relationship between the private and public realm. Thereby, according to Remali (2014), constitutedness (C) is:

$$C = permeability\ (P) \times street\ intervisibility\ (SI)$$

Zako (2015) adopts the constitutedness to examine the relationship between the physical attributes of the environmental setting and the anti-social behaviour of its users. Similarly, Can et al. (2015) state that constitutedness is significant for street life and safety, but not enough in itself to boost liveliness and to prevent misbehaviour. The scholars who addressed constitutedness have considered different indicators and used varied means to measure variables. They shared the same orientations in terms of topological depth and number of entrances. Whilst others add the number of storeys of a building, none have adopted metric distances, whether for the horizontal or vertical dimensions of buildings. In this study, the indicators and their variables, intervisibility and permeability, come from the metric system. Consequently, constitutedness is:

$$C \to P_{St} = \sum_{P=1}^{n} P_P/n$$

Where C is constitutedness, P_{St} is permeability per street, P is a plot, P_P is permeability per plot, and n is the number of plots. The length of the selected streets examined in this study is 100 metres. Therefore, the value of constitutedness is divided by the total number of buildings positioned within one hundred metres of the chosen streets:

$$C \to C_{St} = \frac{P_{St}}{n}$$

Where C_{St} is constitutedness of the selected street, P_{St} is permeability per selected street, n is the total number of buildings positioned within one hundred metres of the selected streets.

6.4 Applying Constitutedness | Permeability

The spatial configuration of the street edge plays a central role in formulating the vitality of both private and public spaces, where intervisibility and permeability as two criteria control the degree of the ‘scalloped edge’, ‘soft edge’ and ‘transitional edge’ (Alexander 1977); (Gehl 1986); (Thwaites et al. 2013). Micro-spatial findings make it possible to define the spatial set-up of the built environments at a local level by adopting microscale measurements (Van Nes 2009). Furthermore, Van Nes et al. (2007, p 11) state that, “the definition and operationalisation of the microscale conditions are, however, still in a preliminary phase and an area that can be improved upon in the near future”.

In this study, spatial analysis is used on four scales; the global/local scale are examined by running the MCA analysis, and the macro/micro are determined by using their constitutedness. To compute the constitutedness of a street, the study numbers each plot as the *ID* of a plot; for example, *AB1P1* represents *A* which is the case study *A; B1* is block number one, and *P1* means plot number one. Six streets for each case study are examined for their the constitutedness and permeability. From the MCA analysis, three categories of betweenness were used, namely: blue, yellow, and red, which ranged from 0.0000 – 0.0002, 0.0002 – 0.0017, and 0.0017 – 0.1397 respectively. These were used to determine the chosen streets, where there were two streets for each category.

6.4.1 Case Study A: Organic Pattern

The street in this selected area is characterised by direct access to the adjacent buildings (Figure 6.51). Most of the buildings in this part of Baghdad have no metric depth as an intermediate space between two spaces. The width of the streets is varied and narrow; in some streets, this is only one metre. The micromorphological pattern of each street is often like the other streets in the old part of Baghdad (Figure 6.51). From the MCA analysis, three categories of betweenness were used, namely: Blue (0.0000 – 0.0002), Yellow (0.0002 – 0.0017), and Red (0.0017 – 0.1397). These were handled to manage the determined streets, where there were two streets for each category. Six streets are chosen to reveal the degree of intervisibility, permeability and constitutedness.

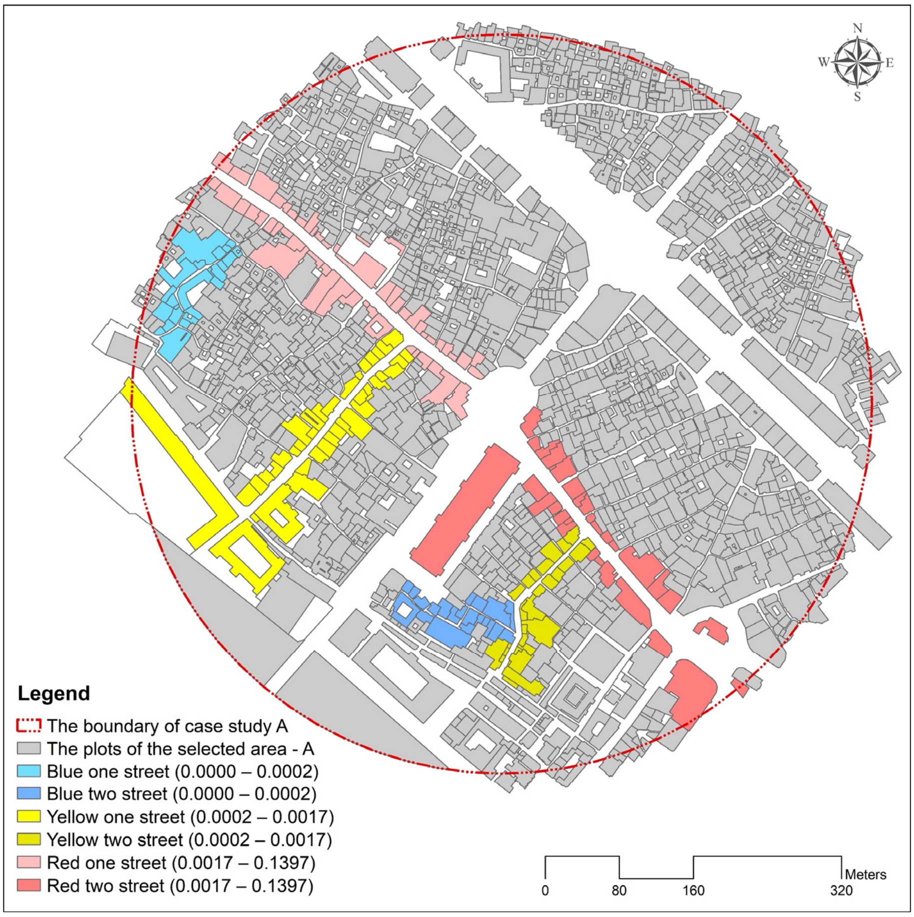


Figure 6.51. The selected street of the case study A (Organic Spontaneous pattern). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

6.4.1.1 Blue One Street: Case A (0.0000 – 0.0002)

In blue one street, a 100-meter segment is covered (Figure 6.52). The total number of buildings is 19 that have direct access to the adjacent street as there is no intermediate space between the indoors and outdoors. The street width is varied (1.46 - 4.62 meters), each building has its own width, while the metric depth is zero. The buildings' heights consist of one and/or two storeys, and for some, the upper floor covers the adjacent street (Figure 6.53).

The street edge defines both the private and public spaces through the wall and permeated by the main entrance and some shops. The intervisibility index (I_S) per storey of each building is applied to the permeability index for a storey (P_S), and the permeability of a building comes from the total number of (P_S), (Table 6.1). Increasing the number of units at the street level maximise the permeability, such as AB19P14, AB21P3, and AB21P9 have 5, 4 and 12 units respectively (Figure 6.54). The value of constitutedness comes from the overall of permeability divided by the total number of buildings, which in this segment is 19.

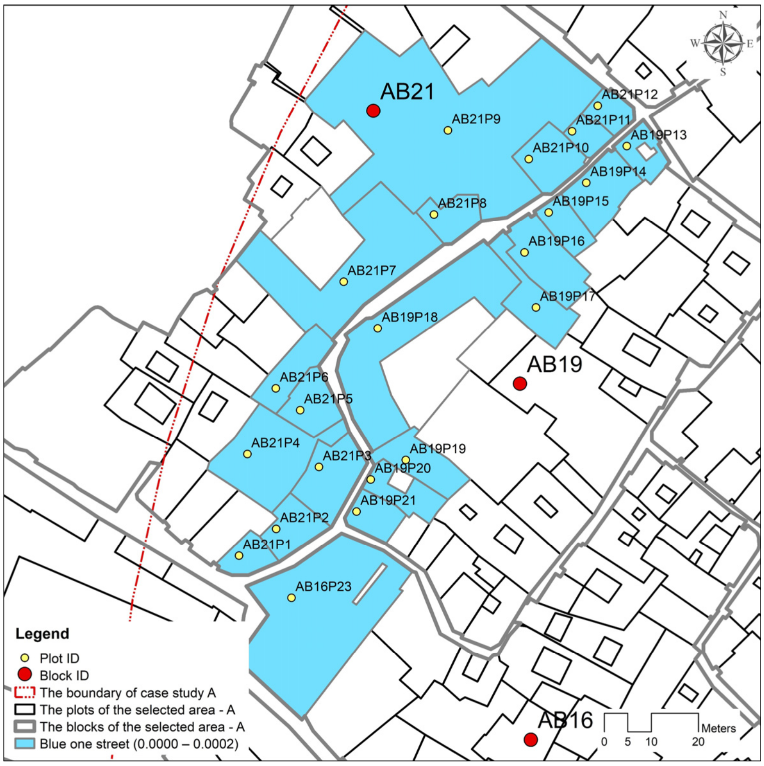


Figure 6.52. Blue one street from case study A. It Illustrates an organic street pattern, where buildings have direct access to the adjacent street. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 6.53. A blue one street: Case A. Source: Photographed by author’s team, 04/ Dec/2016.

$$Permeability\ of\ blue\ one\ street: Case\ A\ (P_{St})\ \rightarrow \sum_{P=1}^{19} P_P\ =\ 16.54030$$

$$Constitutedness\ of\ blue\ one\ street: Case\ A\ (C_{St}) = \frac{16.54030}{19} =\ 0.87054$$

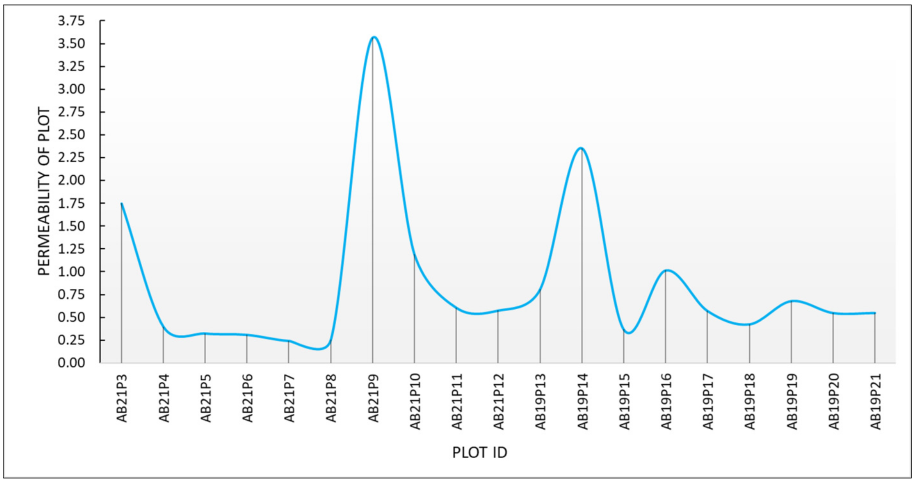


Figure 6.54. The value of Permeability per building (plot) along 100 metres. Case A: blue one street. The arrangement of plots is based on their place on the site rather than as an ascending and descending order.

Table 6.1. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building. This table represents blue one street: case study A.

Case study: A | Street: Blue one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
A	Blue	0.0000 - 0.0002	AB21	10	AB21P3	2.48	0	2.48	1	4	3.0827	0.3244	1.2976	1.7489
									2	2	4.4310	0.2257	0.4514	
					AB21P4	1.72	0	1.72	1	1	2.5133	0.3979	0.3979	0.3979
					AB21P5	2.48	0	2.48	1	1	3.0802	0.3247	0.3247	0.3247
					AB21P6	2.66	0	2.66	1	1	3.2252	0.3101	0.3101	0.3101
					AB21P7	3.67	0	3.67	1	1	4.1046	0.2436	0.2436	0.2436
					AB21P8	3.45	0	3.45	1	1	3.9063	0.2560	0.2560	0.2560
					AB21P9	2.83	0	2.83	1	12	3.3667	0.2970	3.5644	3.5644
					AB21P10	2.09	0	2.09	1	2	2.7808	0.3596	0.7192	1.1924
									2	2	4.2266	0.2366	0.4732	
					AB21P11	2.05	0	2.05	1	1	2.7457	0.3642	0.3642	0.6062
									2	1	4.1322	0.2420	0.2420	
					AB21P12	2.26	0	2.26	1	1	2.9068	0.3440	0.3440	0.5760
									2	1	4.3105	0.2320	0.2320	
			AB19	9	AB19P21	2.48	0	2.48	1	1	3.0817	0.3245	0.3245	0.5502
									2	1	4.4304	0.2257	0.2257	
					AB19P20	2.49	0	2.49	1	1	3.0897	0.3237	0.3237	0.5491
									2	1	4.4359	0.2254	0.2254	
					AB19P19	1.46	0	1.46	1	1	2.3427	0.4269	0.4269	0.6799
									2	1	3.9521	0.2530	0.2530	
					AB19P18	3.82	0	3.82	1	1	4.2334	0.2362	0.2362	0.4250
									2	1	5.2965	0.1888	0.1888	
					AB19P17	4.63	0	4.63	1	2	4.9753	0.2010	0.4020	0.5713
									2	1	5.9063	0.1693	0.1693	
					AB19P16	1.84	0	1.84	1	2	2.5908	0.3860	0.7719	1.0156
									2	1	4.1041	0.2437	0.2437	
					AB19P15	2.02	0	2.02	1	1	2.7225	0.3673	0.3673	0.3673
					AB19P14	1.95	0	1.95	1	5	2.6704	0.3745	1.8724	2.3538
									2	2	4.1548	0.2407	0.4814	
					AB19P13	2.26	0	2.26	1	1	2.9068	0.3440	0.3440	0.8080
									2	2	4.3105	0.2320	0.4640	

6.4.1.2 Blue Two Street: Case A (0.0000 – 0.0002)

In this example, the buildings are situated in the commercial sector of the old part of the city. In a one-hundred-metre segment, 14 buildings directly link to the adjacent street, where the value of metric depth is zero, as no spaces are placed between the private and public spaces. Textile markets represent the functional use of these buildings. The street width is diversified (1.1435 - 3.3756 m) (Figure 6.55 and 6.56). The number of storeys does not exceed three floors, and the number of units at street level differs from one building to another. More units are likely to affect the permeability, such as AB102P19 and AB101P9 takes 7 and 12 units respectively (Figure 6.57).

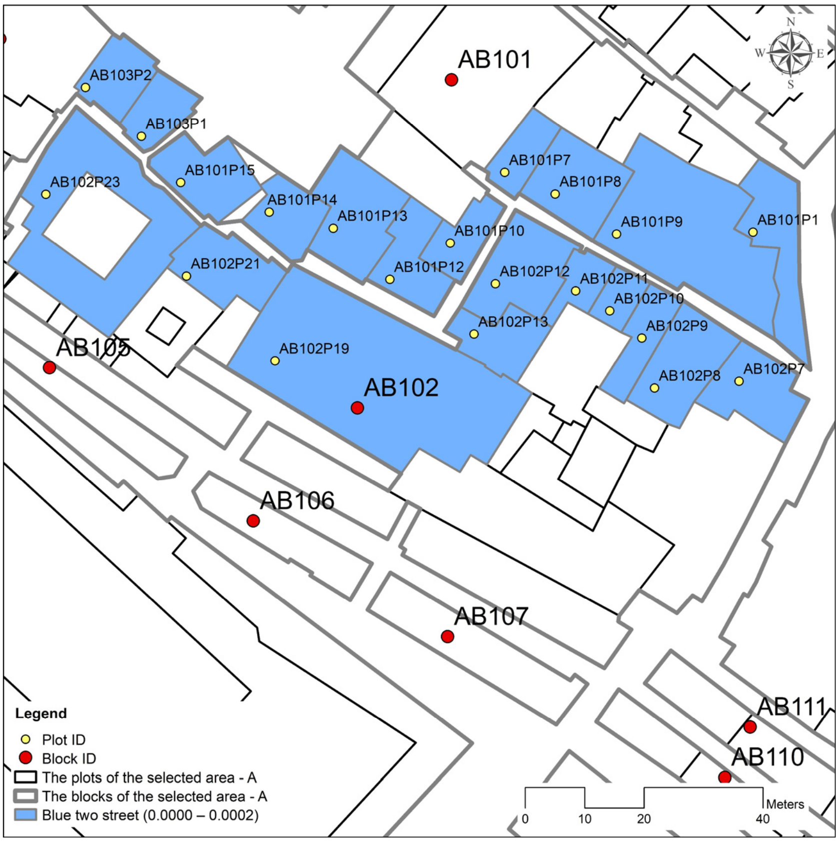


Figure 6.55. A blue two street from case study A. It shows a narrow and an organic alley, where building access to the adjacent street, is direct and where the metric depth is zero. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 6.56. A blue two street: case A. Source: Photographed by author's team, 10/ Dec/2016.

The street edge is widely occupied by open frontage stores to present the textile products and capture the customers. The number of buildings in this example is 14. The adjacent stores permeate the street edge, and the intervisibility index (I_S) per storey of the building is added to the permeability index per storey (P_S). Then the permeability of a building is the total number of (P_S), (Table 6.2 and Figure 6.57).

$$Permeability\ of\ blue\ two\ street: Case\ A\ (P_{St}) \rightarrow \sum_{P=1}^{14} P_P = 20.53777$$

$$Constitutedness\ of\ blue\ two\ street: Case\ A\ (C_{St}) = \frac{20.53777}{14} = 1.46698$$

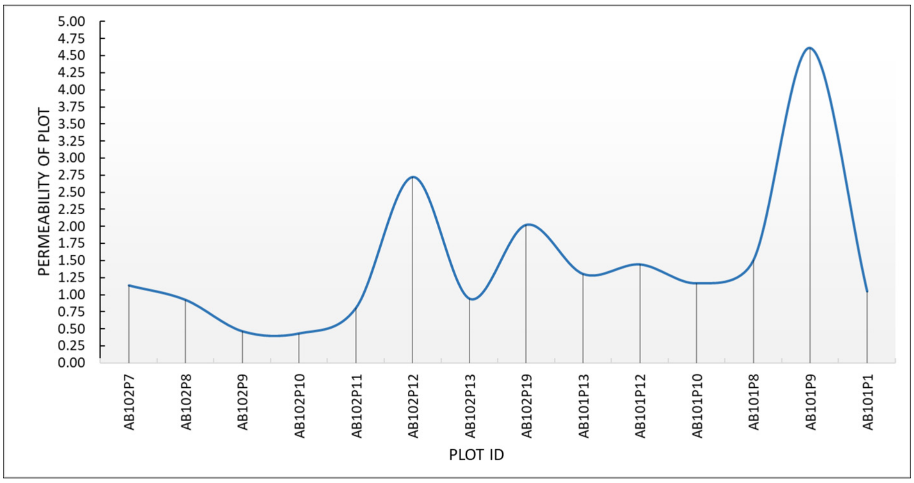


Figure 6.57. A chart shows the value of Permeability per building (plot) along 100 metres. Case A: blue two street. The arrangement of plots is based on their place on the site rather than in an ascending and descending order.

Table 6.2. This table represents blue two street: case study A. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building.

Case study: A | Street: Blue two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
A	Blue	0.0000 - 0.0002	AB102	8	AB102P19	3.38	0	3.38	1	7	3.8393	0.2605	1.8233	2.0238
									2	1	4.9871	0.2005	0.2005	
					AB102P13	2.87	0	2.87	1	2	3.3995	0.2942	0.5883	0.9408
									2	1	4.6570	0.2147	0.2147	
									3	1	7.2604	0.1377	0.1377	
					AB102P12	1.81	0	1.81	1	5	2.5700	0.3891	1.9456	2.7238
									2	2	4.0909	0.2444	0.4889	
									3	2	6.9110	0.1447	0.2894	
					AB102P11	1.66	0	1.66	1	2	2.4694	0.4050	0.8099	0.8099
					AB102P10	1.41	0	1.41	1	1	2.3065	0.4336	0.4336	0.4336
					AB102P9	1.14	0	1.14	1	1	2.1570	0.4636	0.4636	0.4636
					AB102P8	2.69	0	2.69	1	3	3.2506	0.3076	0.9229	0.9229
					AB102P7	2.71	0	2.71	1	3	3.2725	0.3056	0.9167	1.1358
									2	1	4.5651	0.2191	0.2191	
			AB101	6	AB101P13	2.90	0	2.90	1	3	3.4286	0.2917	0.8750	1.3025
									2	2	4.6783	0.2138	0.4275	
					AB101P12	3.38	0	3.38	1	4	3.8393	0.2605	1.0419	1.4429
									2	2	4.9871	0.2005	0.4010	
					AB101P10	1.81	0	1.81	1	2	2.5700	0.3891	0.7782	1.1674
									2	1	4.0909	0.2444	0.2444	
									3	1	6.9110	0.1447	0.1447	
					AB101P8	2.22	0	2.22	1	3	2.8762	0.3477	1.0430	1.5092
									2	2	4.2900	0.2331	0.4662	
					AB101P9	1.85	0	1.85	1	12	2.6017	0.3844	4.6124	4.6124
					AB101P1	2.71	0	2.71	1	2	3.2725	0.3056	0.6111	1.0493
									2	2	4.5651	0.2191	0.4381	

6.4.1.3 Yellow One Street: Case A (0.0002 – 0.0017)

The yellow one segment stands for one of the oldest streets in the traditional pattern of the network. In this sector, within the 100-metre sample, there are 17 building that was designated for specific uses, namely bookshops, publishing, and stationery. Regarding the intermediate spaces, most buildings have a metric depth between 0.500 – 2.500 metres, except for one that has direct access to the street. Inbetween spaces form the arcade line that separates the private and public as a soft edge. Like other streets in this traditional area, the street does not continue in one width but reaches between 6.4638 and 11.4025 metres (Figures 6.58 and 6.59).

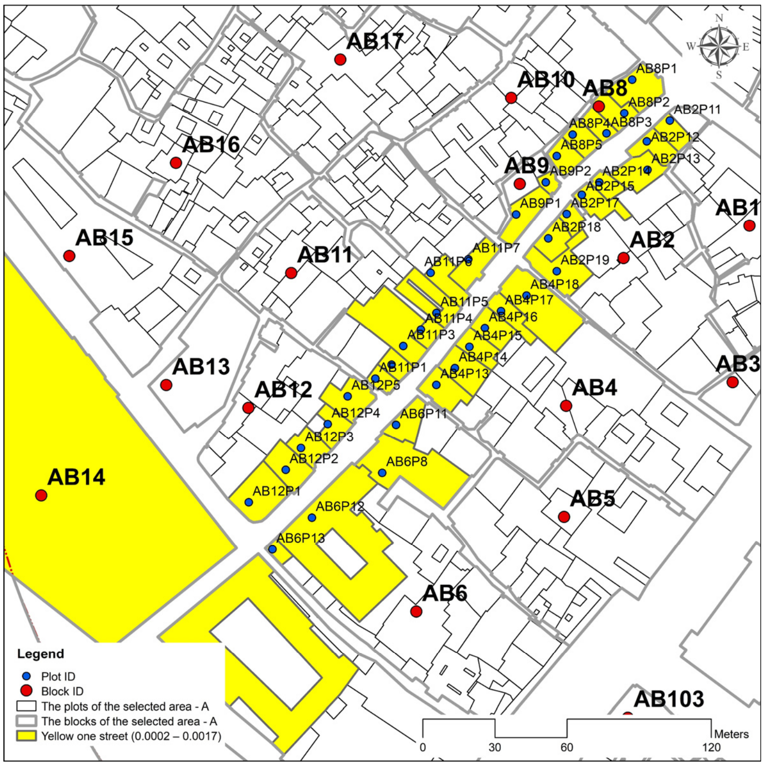


Figure 6.58. A yellow one street from case study A. It displays *Al-Mutanabbi* street as one of the oldest streets in the traditional pattern of the network. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 6.59. A yellow one street (*Al-Mutanabbi* representing a cultural street): Case A. Source: Photographed by author's team, 21/ Dec/2016.

In this segment, there are either two or three floors. At the street level, the quantity of units that link directly to the edge is high, and they are characterised by small an open and/or transparent panel (Table 6.3). In this segment, the permeability value is the total sum of permeability per building, where (P_{St}):

$$Permeability\ of\ yellow\ one\ street\text{: } Case\ A\ (P_{St}) \rightarrow \sum_{P=1}^{17} P_P = 14.13878$$

The constitutedness value is measured by the sum of the building's permeability divided by the number of buildings, which in this sample is 17:

$$Constitutedness\ of\ yellow\ one\ street\ |Case\ A\ (C_{St}) = \frac{14.13878}{17} = 0.83169$$

The metric depth between the private and public space affects the value of constitutedness despite the number of buildings and their units at the street level being higher compared with the previous samples (Figure 6.60). The plots, namely AB9P1, AB2P19 and AB4P18 in this segment had a high permeability value, and this is due to the number of units at the street level, at 10, 8 and 12 respectively (Figure 6.60). Accordingly, the permeability of the selected street became higher; P_{St} 14.13878, while the number of plots governs the constitutedness value, which in this case is C_{St} 0.83169.

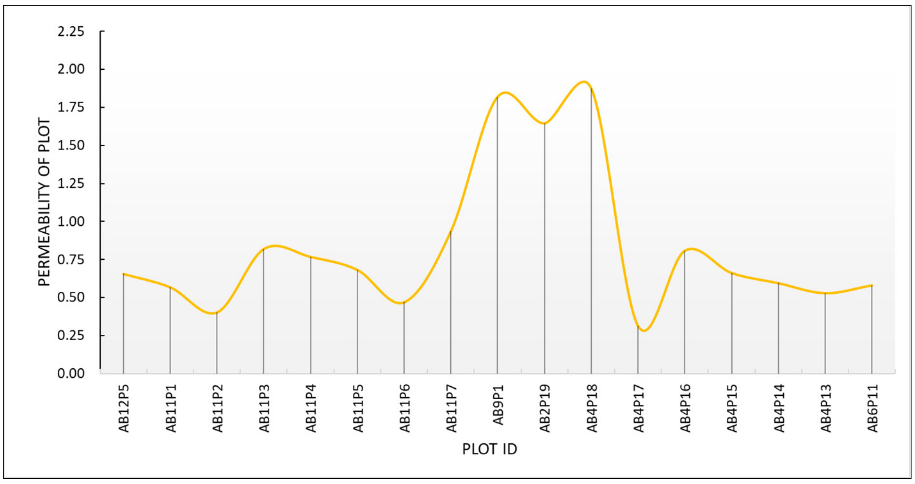


Figure 6.60. The Permeability value per building (plot) along 100 metres. Case A: yellow one street. The arrangement of plots based on their place on the site rather than in ascending or descending order.

Table 6.3. The yellow one street: case study A. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building.

Case study: A | Street: Yellow one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
A	Yellow	0.0002 - 0.0017	AB9	1	AB9P1	6.71	2.50	9.21	1	10	9.3920	0.1065	1.0647	1.8198
									2	4	9.9167	0.1008	0.4034	
									3	4	11.3740	0.0879	0.3517	
			AB11	7	AB11P7	9.71	0.00	9.71	1	6	12.3441	0.0810	0.4861	0.9370
									2	3	12.7478	0.0784	0.2353	
									3	3	13.9116	0.0719	0.2156	
					AB11P6	7.70	2.50	10.20	1	2	10.3613	0.0965	0.1930	0.4698
									2	3	10.8392	0.0923	0.2768	
					AB11P5	7.31	2.50	9.81	1	3	9.9790	0.1002	0.3006	0.6825
									2	4	10.4744	0.0955	0.3819	
					AB11P4	7.20	2.50	9.70	1	4	9.8696	0.1013	0.4053	0.7681
									2	2	10.3701	0.0964	0.1929	
									3	2	11.7714	0.0850	0.1699	
					AB11P3	6.68	2.50	9.18	1	2	9.3641	0.1068	0.2136	0.8202
									2	6	9.8902	0.1011	0.6067	
					AB11P2	6.98	2.50	9.48	1	2	9.6586	0.1035	0.2071	0.4037
									2	2	10.1695	0.0983	0.1967	
					AB11P1	9.13	2.50	11.63	1	3	11.7694	0.0850	0.2549	0.5681
									2	2	12.1922	0.0820	0.1640	
									3	2	13.4043	0.0746	0.1492	
			AB12	1	AB12P5	11.40	0.50	11.90	1	5	12.0422	0.0830	0.4152	0.6561
									2	3	12.4558	0.0803	0.2409	
			AB6	1	AB6P11	11.29	0.50	11.79	1	5	11.9266	0.0838	0.4192	0.5813
									2	2	12.3440	0.0810	0.1620	
			AB4	6	AB4P13	6.54	2.50	9.04	1	3	9.2273	0.1084	0.3251	0.5300
									2	2	9.7608	0.1025	0.2049	
					AB4P14	7.24	2.50	9.74	1	4	9.9099	0.1009	0.4036	0.5958
									2	2	10.4086	0.0961	0.1921	
					AB4P15	7.27	2.50	9.77	1	3	9.9378	0.1006	0.3019	0.6626
									2	2	10.4350	0.0958	0.1917	
									3	2	11.8286	0.0845	0.1691	
					AB4P16	7.75	2.50	10.25	1	3	10.4138	0.0960	0.2881	0.8089
									2	3	10.8893	0.0918	0.2755	
									3	3	12.2313	0.0818	0.2453	
					AB4P17	9.58	2.50	12.08	1	2	12.2164	0.0819	0.1637	0.3154
									2	1	12.6242	0.0792	0.0792	
									3	1	13.7985	0.0725	0.0725	
					AB4P18	9.71	2.50	12.21	1	12	12.3441	0.0810	0.9721	1.8741
									2	6	12.7478	0.0784	0.4707	
									3	6	13.9116	0.0719	0.4313	
			AB2	1	AB2P19	6.46	2.50	8.96	1	8	9.1485	0.1093	0.8745	1.6454
									2	4	9.6864	0.1032	0.4130	
									3	4	11.1737	0.0895	0.3580	

6.4.1.4 Yellow Two Street: Case A (0.0002 – 0.0017)

One of the prominent streets in the old urban area of Baghdad is Al-Safafeer street, where artisans with small workshops are located. These workshops are completely open and open directly onto the adjacent street, where the street edge blends between private and public. Along the 100 metres, there are 15 buildings that face each other with a highly varied street width (2.8071 - 9.9240 metres), and the metric depth disappeared to become zero (Figures 6.61 and 6.62). Four buildings consist of just one storey, and the rest have only two floors. The open frontage allows people to closely interact with both products and seller, whilst the distance between the units is semi-dematerialised.

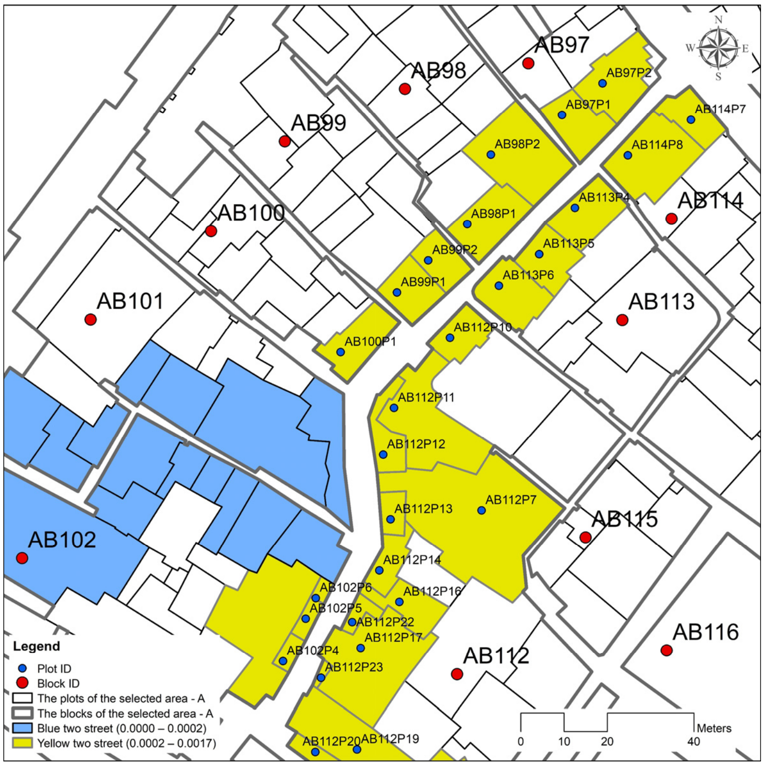


Figure 6.61. A yellow two street from case study A. *Al-Safafeer* street is one of the well-known streets in the old urban area of Baghdad. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 6.62. A yellow two street: Case A (*Al-Safafeer*) with a narrow and sinuous route. Source: Photographed by author's team, 04/ Dec/2016.

In term of permeability, the total value:

$$Permeability\ of\ yellow\ two\ street\ |Case\ A\ (P_{St}) \rightarrow \sum_{P=1}^{15} P_P \ = \ 20.72136$$

The value of constitutedness (C):

$$Constitutedness\ of\ yellow\ two\ street\ |Case\ A\ (C_{St}) = \frac{20.72136}{15} = 1.38142$$

The selected segment exhibits a high value of constitutedness and permeability per building, besides the intervisibility value (Table 6.4. and Figure 6.63).

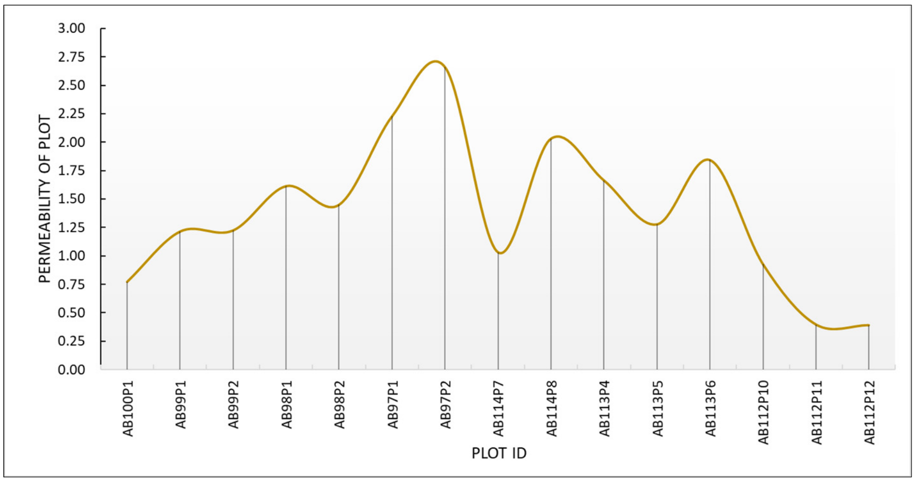


Figure 6.63. The Permeability value per building (plot) along 100 metres. Case A: yellow two street. The arrangement of plots is based on their place on the site rather than in an ascending or descending order.

Table 6.4. Yellow two street: case study A. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey.

Case study: A | Street: Yellow two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
A	Yellow	0.0002 - 0.0017	AB97	2	AB97P2	3.88	0	3.88	1	9	4.2878	0.2332	2.0990	2.6608
									2	3	5.3400	0.1873	0.5618	
					AB97P1	3.80	0	3.80	1	7	4.2169	0.2371	1.6600	2.2278
									2	3	5.2833	0.1893	0.5678	
			AB98	2	AB98P2	4.76	0	4.76	1	4	5.1006	0.1961	0.7842	1.4495
									2	4	6.0123	0.1663	0.6653	
					AB98P1	4.99	0	4.99	1	6	5.3129	0.1882	1.1293	1.6137
									2	3	6.1934	0.1615	0.4844	
			AB99	2	AB99P2	3.20	0	3.20	1	3	3.6897	0.2710	0.8131	1.2235
									2	2	4.8729	0.2052	0.4104	
					AB99P1	5.11	0	5.11	1	4	5.4256	0.1843	0.7372	1.2142
									2	3	6.2903	0.1590	0.4769	
			AB100	1	AB100P1	7.56	0	7.56	1	6	7.7779	0.1286	0.7714	0.7714
			AB114	2	AB114P7	4.10	0	4.10	1	3	4.4896	0.2227	0.6682	1.0316
									2	2	5.5034	0.1817	0.3634	
					AB114P8	3.70	0	3.70	1	6	4.1235	0.2425	1.4551	2.0310
									2	3	5.2091	0.1920	0.5759	
			AB113	3	AB113P4	4.80	0	4.80	1	6	5.1394	0.1946	1.1675	1.6637
									2	3	6.0452	0.1654	0.4963	
					AB113P5	4.79	0	4.79	1	4	5.1288	0.1950	0.7799	1.2769
									2	3	6.0362	0.1657	0.4970	
					AB113P6	2.81	0	2.81	1	4	3.3504	0.2985	1.1939	1.8431
									2	3	4.6213	0.2164	0.6492	
			AB112	3	AB112P10	5.07	0	5.07	1	5	5.3879	0.1856	0.9280	0.9280
					AB112P11	9.92	0	9.92	1	4	10.0911	0.0991	0.3964	0.3964
					AB112P12	7.48	0	7.48	1	3	7.6971	0.1299	0.3898	0.3898

6.4.1.5 Red One Street: Case A (0.0017 – 0.1397)

Al-Rasheed street was the first to breaks away from the old fabric of the city since 1915. It was the widest and longest route in the old urban fabric, and it was the first street located in parallel with the Tigris river. In comparison, the old traditional network was typically perpendicular to the river to serve different purposes. Along the 100 metre segment, 17 buildings face each other and are linked to the street through an arcade with a depth metric of 2.50 metres (Figures 6.64 and 6.65).

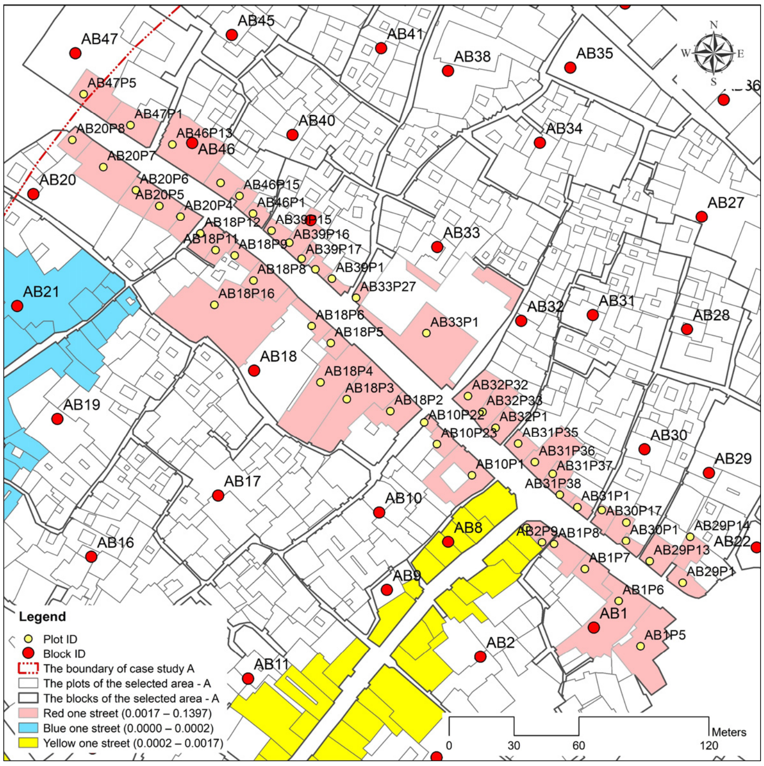


Figure 6.64. Red one street from case study A (according to MCA analysis). *Al-Rasheed* street is the first street which breaks away from the old fabric of Baghdad. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 6.65. Red one street: Case A (*Al-Rasheed* street). The entrance of the street from the statue of Maruf al Rusafi. Source: Photographed by author's team, 21/ Dec/2016.

This arcade is defined as a soft edge, which is placed between two spaces: private and public. It offers a shield from the climate for passersby. The street width fluctuates (11.6612 - 14.3168 metres) and the building heights in this segment are also diverse, from 1 to 6 floors (Table 6.5). At the street level, people have direct access to the private edge, which is mostly defined by see-through windowpanes or uncluttered and open frontages. The functional use of the street is varied, and each sector of the street has a unique function to serve a specific purpose for customers.

Table 6.5. A red one street: case study A. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: A | Street: Red one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
A	Red	0.0017 - 0.1397	AB1	4	AB1P5	11.66	2.50	14.16	1	4	14.2788	0.0700	0.2801	0.6219
									2	5	14.6293	0.0684	0.3418	
					AB1P6	12.58	2.50	15.08	1	5	15.1855	0.0659	0.3293	0.5871
									2	4	15.5155	0.0645	0.2578	
					AB1P7	13.60	2.50	16.10	1	4	16.1986	0.0617	0.2469	0.4829
									2	2	16.5083	0.0606	0.1212	
									3	2	17.4227	0.0574	0.1148	
					AB1P8	12.69	2.50	15.19	1	4	15.3017	0.0654	0.2614	0.8137
									2	2	15.6292	0.0640	0.1280	
									3	2	16.5921	0.0603	0.1205	
									4	2	18.0090	0.0555	0.1111	
									5	2	19.7826	0.0505	0.1011	
									6	2	21.8261	0.0458	0.0916	
			AB2	2	AB2P9	13.56	2.50	16.06	1	1	16.1662	0.0619	0.0619	0.1225
									2	1	16.4766	0.0607	0.0607	
					AB2P10	13.73	2.50	16.23	1	2	16.3340	0.0612	0.1224	0.3027
									2	3	16.6413	0.0601	0.1803	
			AB8	1	AB8P1	13.61	2.50	16.11	1	3	16.2135	0.0617	0.1850	0.1850
			AB29	3	AB29P1	11.66	2.50	14.16	1	4	14.2788	0.0700	0.2801	0.5446
									2	2	14.6293	0.0684	0.1367	
									3	2	15.6538	0.0639	0.1278	
					AB29P14	12.58	2.50	15.08	1	4	15.1855	0.0659	0.2634	0.5212
									2	4	15.5155	0.0645	0.2578	
					AB29P13	13.04	2.50	15.54	1	2	15.6493	0.0639	0.1278	0.2530
									2	2	15.9698	0.0626	0.1252	
			AB30	3	AB30P1	13.60	2.50	16.10	1	2	16.1986	0.0617	0.1235	0.2446
									2	2	16.5083	0.0606	0.1212	
					AB30P18	11.97	2.50	14.47	1	3	14.5896	0.0685	0.2056	0.3396
									2	2	14.9328	0.0670	0.1339	
					AB30P17	12.66	2.50	15.16	1	3	15.2743	0.0655	0.1964	0.3246
									2	2	15.6024	0.0641	0.1282	
			AB31	4	AB31P1	12.90	2.50	15.40	1	2	15.5097	0.0645	0.1290	0.2517
									2	1	15.8330	0.0632	0.0632	
									3	1	16.7842	0.0596	0.0596	
					AB31P38	13.76	2.50	16.26	1	1	16.3663	0.0611	0.0611	0.1780
									2	1	16.6730	0.0600	0.0600	
									3	1	17.5788	0.0569	0.0569	
					AB31P37	14.32	2.50	16.82	1	2	16.9160	0.0591	0.1182	0.2344
									2	2	17.2128	0.0581	0.1162	
					AB31P36	13.69	2.50	16.19	1	3	16.2979	0.0614	0.1841	0.6951
									2	3	16.6058	0.0602	0.1807	
									3	3	17.5151	0.0571	0.1713	
									4	3	18.8627	0.0530	0.1590	

Regarding the permeability index, where there is a certain value for each single storey and for each building, the total value for the selected street is:

$$Permeability\ of\ red\ one\ street\ |Case\ A\ (P_{St}) \rightarrow \sum_{P=1}^{17} P_P = 6.70263$$

The value of constitutedness (C):

$$Constitutedness\ of\ red\ one\ street\ |Case\ A\ (C_{St}) = \frac{6.70263}{17} = 0.39427$$

Besides the total permeability value, each plot has its own value (Figure 6.66) that reflects the fluctuation in these values along the 100 metres of the selected street.

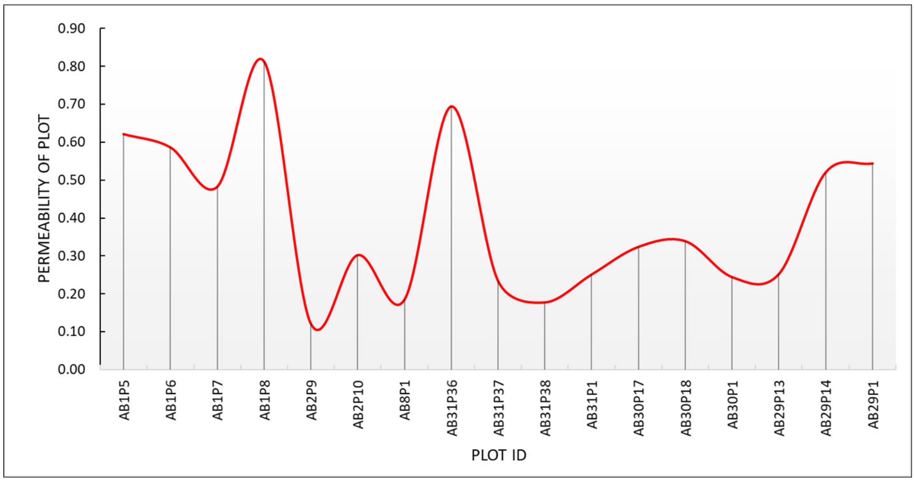


Figure 6.66. A chart shows the Permeability value per building (plot) along 100 metres. Case A: red one street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

6.4.1.6 Red Two Street: Case A (0.0017 – 0.1397)

This segment is near to the earlier (red) one, and both belong to the same street (Al-Rasheed). It stands at the north-west end of the street and reaches the public square. There are 11 buildings placed contiguously with the edge; two are without metric depth and are directly linked to the street, while the rest have 2.50 metre depth from the street edge. Within the 100 metres length, there is an arcade which is sited in an intermediate space between the private and public edge, which allows people to move smoothly. Also, the street width differs from one point to another, such as 12.5845 - 28.0335 metres (Figure 6.67). The disparity in building height is evident in this segment, where two buildings consist of one storey, and others contain six floors (Table 6.6).

The functional purposes distributed along both sides of the street, encourage people to move continuously from and to the street, where alleys and cul-de-sacs link to the street (Figure 6.68).

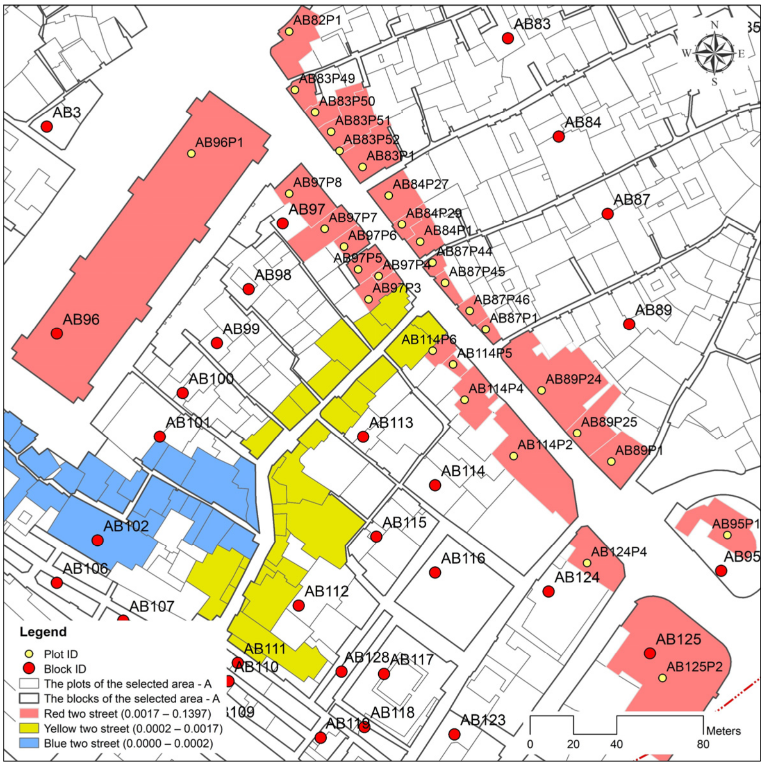


Figure 6.67. A red two street from case study A. It displays another segment of *Al-Rasheed* street. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Figure 6.68. A red two street: Case A. Another segment of *Al-Rasheed* street (Red two) witnesses a high flow of people for different purposes and activities. It includes a significant number of prominent features and buildings that belong to different periods of Baghdad's history. People tend to engage in multiple activities when visiting the street. It can be considered a live record of the city's heritage over the time since the Abbasid era and hitherto. Source: Photographed by author's team, 01-04/Dec/2016.

In terms of the permeability (P_{St}) and constitutedness (C):

$$Permeability\ of\ red\ two\ street\colon Case\ A\ (P_{St}) \rightarrow \sum_{P=1}^{11} P_P = 7.18757$$

$$Constitutedness\ of\ red\ two\ street\colon Case\ A\ (C_{St}) = \frac{7.18757}{11} = 0.65342$$

The total permeability of the selected street is 7.18757 and its constitutedness is 0.65342 for 100 metre length (Figure 6.69).

Table 6.6. Red two street - case study A. The Intervisibility values as (Depth Storey Factor) and the Permeability for each building storey.

Case study: A | Street: Red two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
A	Red	0.0017 - 0.1397	AB96	1	AB96P1	28.03	0.00	28.03	1	50	28.0931	0.0356	1.7798	1.9472
									2	1	28.2728	0.0354	0.0354	
									3	1	28.8163	0.0347	0.0347	
									4	1	29.6548	0.0337	0.0337	
									5	1	30.7641	0.0325	0.0325	
									6	1	32.1163	0.0311	0.0311	
			AB97	3	AB97P8	15.72	2.50	18.22	1	8	18.3115	0.0546	0.4369	1.4313
									2	5	18.5860	0.0538	0.2690	
									3	5	19.4028	0.0515	0.2577	
									4	5	20.6275	0.0485	0.2424	
									5	5	22.1928	0.0451	0.2253	
					AB97P7	13.00	2.50	15.50	1	4	15.6061	0.0641	0.2563	0.7867
									2	3	15.9274	0.0628	0.1884	
									3	3	16.8733	0.0593	0.1778	
									4	3	18.2684	0.0547	0.1642	
					AB97P6	12.58	2.50	15.08	1	2	15.1950	0.0658	0.1316	0.3817
									2	2	15.5248	0.0644	0.1288	
									3	2	16.4938	0.0606	0.1213	
			AB82	1	AB82P1	28.03	0.00	28.03	1	4	28.0931	0.0356	0.1424	0.1424
			AB83	5	AB83P49	19.98	2.50	22.48	1	3	22.5561	0.0443	0.1330	0.3926
									2	3	22.7795	0.0439	0.1317	
									3	3	23.4507	0.0426	0.1279	
					AB83P50	15.95	2.50	18.45	1	4	18.5367	0.0539	0.2158	0.4241
									2	2	18.8079	0.0532	0.1063	
									3	2	19.6154	0.0510	0.1020	
					AB83P51	15.66	2.50	18.16	1	3	18.2498	0.0548	0.1644	0.4814
									2	3	18.5253	0.0540	0.1619	
									3	3	19.3445	0.0517	0.1551	
					AB83P52	16.21	2.50	18.71	1	2	18.8039	0.0532	0.1064	0.1588
									2	1	19.0713	0.0524	0.0524	
					AB83P1	15.61	2.50	18.11	1	4	18.1986	0.0549	0.2198	0.2198
			AB84	1	AB84P27	12.74	2.50	15.24	1	5	15.3452	0.0652	0.3258	0.8216
									2	4	15.6718	0.0638	0.2552	
									3	4	16.6323	0.0601	0.2405	

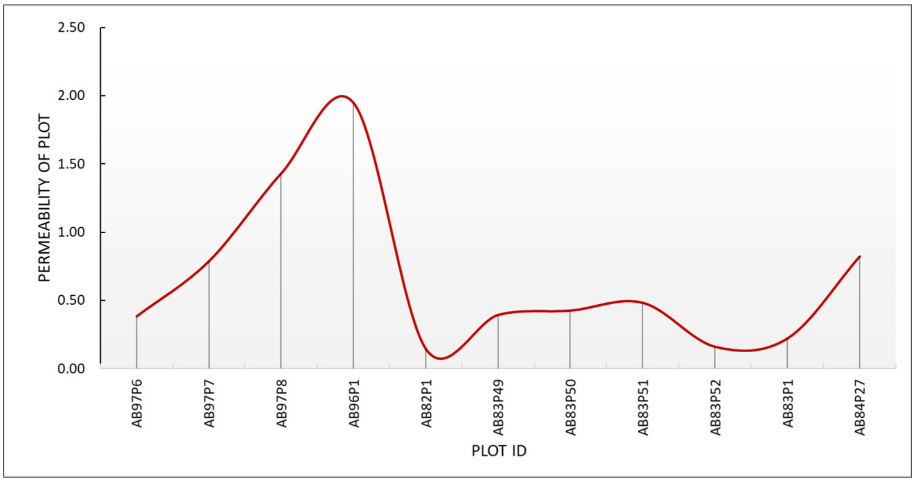


Figure 6.69. The Permeability per building (plot) along 100 metres. Case A: red two street. the arrangement of plots is based on their place on the site rather than in an ascending or descending order.

6.4.2 Case Study B: Hybrid Pattern

Like the traditional area of the old part of Baghdad (in the Al-Rusafa region) some parts of this case have a spontaneous and organic network along the river in the Al-Karkh region (Figure 6.70).

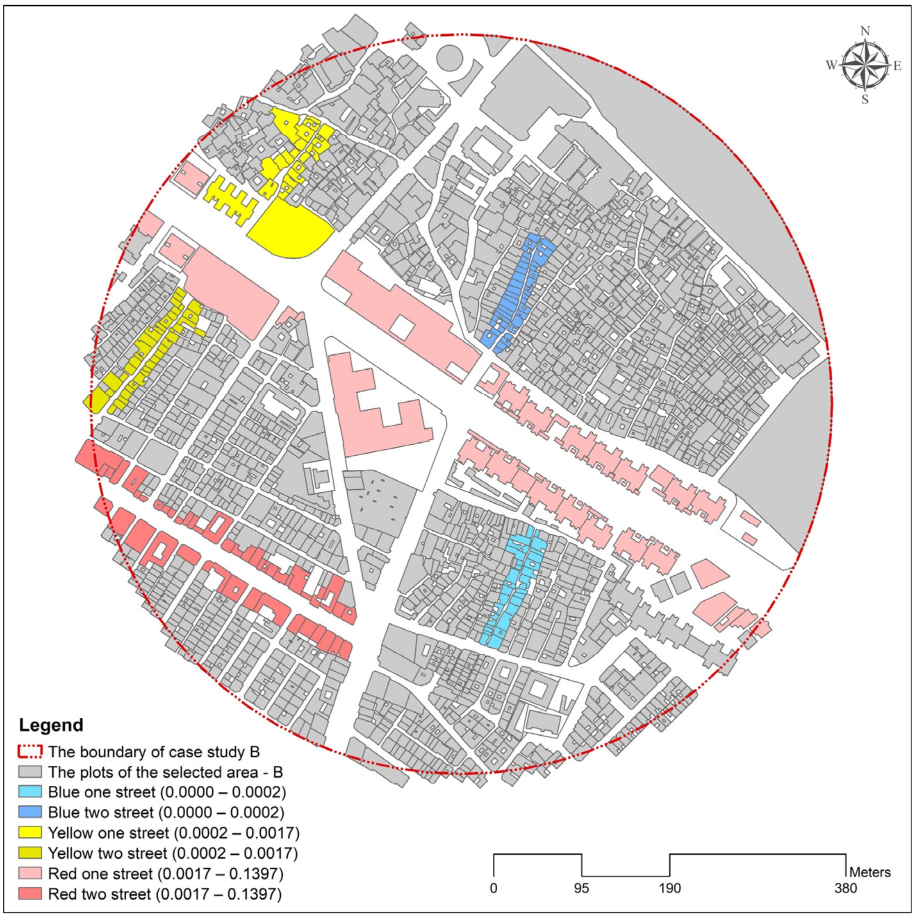


Figure 6.70. A map of the selected street of case study B: Hybrid pattern. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

The area witnessed a dramatic change, particularly in the historical sector, when a new broad street was implemented to separate between the old and modern neighbourhoods. The morphological transformation in this sample is not limited to the urban form, such as plot, block, and street, as a two-dimensional shape, but also includes the tripartite dimension. This is because there is a hard edge between the low-rise neighbourhoods and the high-rise residential units, which form the main character of Haifa street. At the periphery of the case study, there is a variety of land use and a diverse street pattern, where commercial, governmental, and administrative uses are located adjacent to the main streets. In comparison, the residential use recessed to the middle of neighbourhoods. Six streets were selected to examine the degree of intervisibility, permeability and constitutedness.

6.4.2.1 Blue One Street: Case B (0.0000 – 0.0002)

In this segment, the link is characterised as a traditional alley with a narrow width and where the metric depth is zero. Along 100 metres, there are 25 buildings with direct access to the public edge. Residential use is the dominant function, where houses often consist of two storeys and are placed on small plots to face the street. Moreover, the alley width differs from 2.14 metres to 4.64 metres. The street space defines both the indoor and outdoor areas by its edge, which is permeated by the main entry points and one local shop (Figures 6.71 and 6.72). The plot area in this segment is small in comparison with the earlier samples, and this increases the number of buildings within the 100 metre length. That maximises the number of houses in a certain street, which contributes to raising the permeability and constitutedness value.

Figure 6.71. A blue one street | Case B. Source: Photographed by author’s team, 05/ Dec/2016.

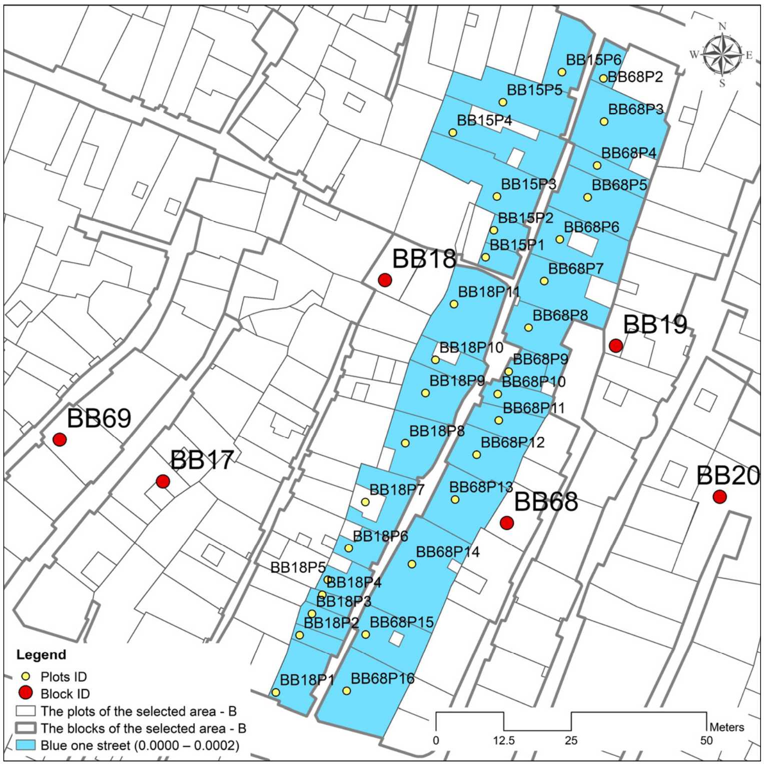


Figure 6.72. Blue one street from case study B. It Illustrates a traditional alley and its narrow width where the metric depth is zero. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

Based on the study's approach, the intervisibility (I_S) per storey is employed within the permeability (P_S), from which the permeability of a plot (P_P) is computed by summing the total number of (P_S) (Table 6.7. and Figure 6.73).

The value of permeability in this sample is:

$$Permeability\ of\ blue\ one\ street: Case\ B\ (P_{St})\ \rightarrow \sum_{P=1}^{25} P_P\ =\ 12.88101$$

$$Constitutedness\ of\ blue\ one\ street: Case\ B\ (C_{St}) = \frac{12.88101}{25} =\ 0.51524$$

Along the 100 metre length, the permeability value for 25 buildings is 12.88101, and the constitutedness is 0.51524. Two independent factors lead to an increase in (P_{St}) or the buildings' height (1-2 storeys with only one unit per floor), and the street width where the metrical depth is zero, (Figure 6.73).

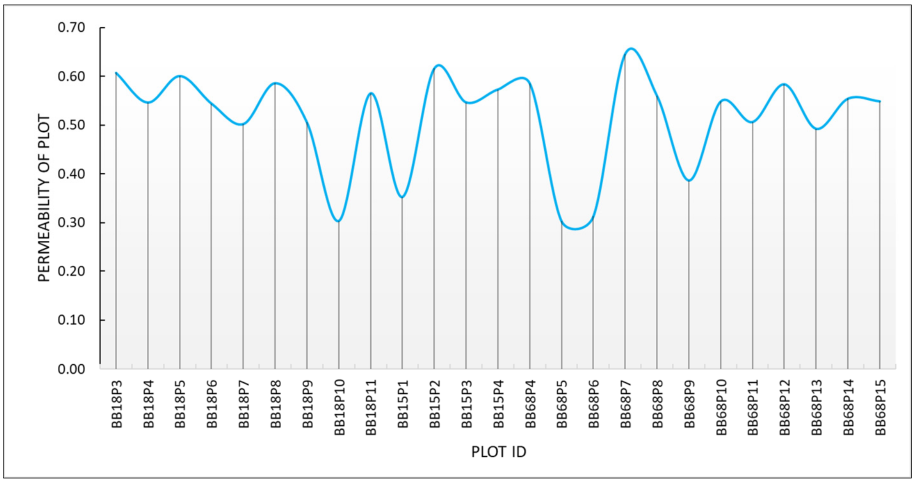


Figure 6.73. A chart shows the value of Permeability per building (plot) along 100 meters. Case B – blue one street. The arrangement of plots based on their place on the site rather than ascending and descending order.

Table 6.7. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building. Blue one street: case study B.

Case study: B | Street: Blue one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
B	Blue	0.0000 - 0.0002	BB18	9	BB18P3	2.4189	0.0000	2.4189	1	1	3.0325	0.3298	0.3298	0.6073
									2	1	3.6035	0.2775	0.2775	
					BB18P4	2.8903	0.0000	2.8903	1	1	3.4204	0.2924	0.2924	0.5465
									2	1	3.9355	0.2541	0.2541	
					BB18P5	2.4658	0.0000	2.4658	1	1	3.0701	0.3257	0.3257	0.6008
									2	1	3.6352	0.2751	0.2751	
					BB18P6	2.9086	0.0000	2.9086	1	1	3.4359	0.2910	0.2910	0.5443
									2	1	3.9489	0.2532	0.2532	
					BB18P7	3.2831	0.0000	3.2831	1	1	3.7582	0.2661	0.2661	0.5024
									2	1	4.2324	0.2363	0.2363	
					BB18P8	2.5745	0.0000	2.5745	1	1	3.1581	0.3166	0.3166	0.5862
									2	1	3.7098	0.2696	0.2696	
					BB18P9	3.2530	0.0000	3.2530	1	1	3.7319	0.2680	0.2680	0.5055
									2	1	4.2091	0.2376	0.2376	
					BB18P10	2.7346	0.0000	2.7346	1	1	3.2899	0.3040	0.3040	0.3040
					BB18P11	2.7365	0.0000	2.7365	1	1	3.2915	0.3038	0.3038	0.5653
									2	1	3.8240	0.2615	0.2615	
			BB15	4	BB15P1	2.1634	0.0000	2.1634	1	1	2.8329	0.3530	0.3530	0.3530
					BB15P2	2.3542	0.0000	2.3542	1	1	2.9812	0.3354	0.3354	0.6163
									2	1	3.5604	0.2809	0.2809	
					BB15P3	2.8876	0.0000	2.8876	1	1	3.4181	0.2926	0.2926	0.5468
									2	1	3.9335	0.2542	0.2542	
					BB15P4	2.6743	0.0000	2.6743	1	1	3.2399	0.3087	0.3087	0.5732
									2	1	3.7797	0.2646	0.2646	
			BB68	12	BB68P4	2.5793	0.0000	2.5793	1	1	3.1620	0.3163	0.3163	0.5856
									2	1	3.7131	0.2693	0.2693	
					BB68P5	2.7467	0.0000	2.7467	1	1	3.2999	0.3030	0.3030	0.3030
					BB68P6	2.6188	0.0000	2.6188	1	1	3.1943	0.3131	0.3131	0.3131
					BB68P7	2.1490	0.0000	2.1490	1	1	2.8220	0.3544	0.3544	0.6461
									2	1	3.4282	0.2917	0.2917	
					BB68P8	2.7801	0.0000	2.7801	1	1	3.3278	0.3005	0.3005	0.5599
									2	1	3.8553	0.2594	0.2594	
					BB68P9	4.6474	0.0000	4.6474	1	1	4.9944	0.2002	0.2002	0.3868
									2	1	5.3603	0.1866	0.1866	
					BB68P10	2.8722	0.0000	2.8722	1	1	3.4051	0.2937	0.2937	0.5486
									2	1	3.9222	0.2550	0.2550	
					BB68P11	3.2436	0.0000	3.2436	1	1	3.7237	0.2686	0.2686	0.5065
									2	1	4.2018	0.2380	0.2380	
					BB68P12	2.5922	0.0000	2.5922	1	1	3.1725	0.3152	0.3152	0.5839
									2	1	3.7221	0.2687	0.2687	
					BB68P13	3.3765	0.0000	3.3765	1	1	3.8401	0.2604	0.2604	0.4927
									2	1	4.3052	0.2323	0.2323	
					BB68P14	2.8246	0.0000	2.8246	1	1	3.3651	0.2972	0.2972	0.5544
									2	1	3.8875	0.2572	0.2572	
					BB68P15	2.8693	0.0000	2.8693	1	1	3.4027	0.2939	0.2939	0.5490
									2	1	3.9201	0.2551	0.2551	

6.4.2.2 Blue Two Street: Case B (0.0000 – 0.0002)

The selected segment in this sample belongs to the old part of Baghdad. The sector is for residential purposes comprised of low-rise houses (1 – 2 storeys). Most they are built on an irregular shape and small plots like the earlier example. In 100 metres, there are 32 houses alongside the adjacent street, where the metric depth was removed entirely, and residents meet the street space without any intermediate space (Figures 6.74 and 6.75).

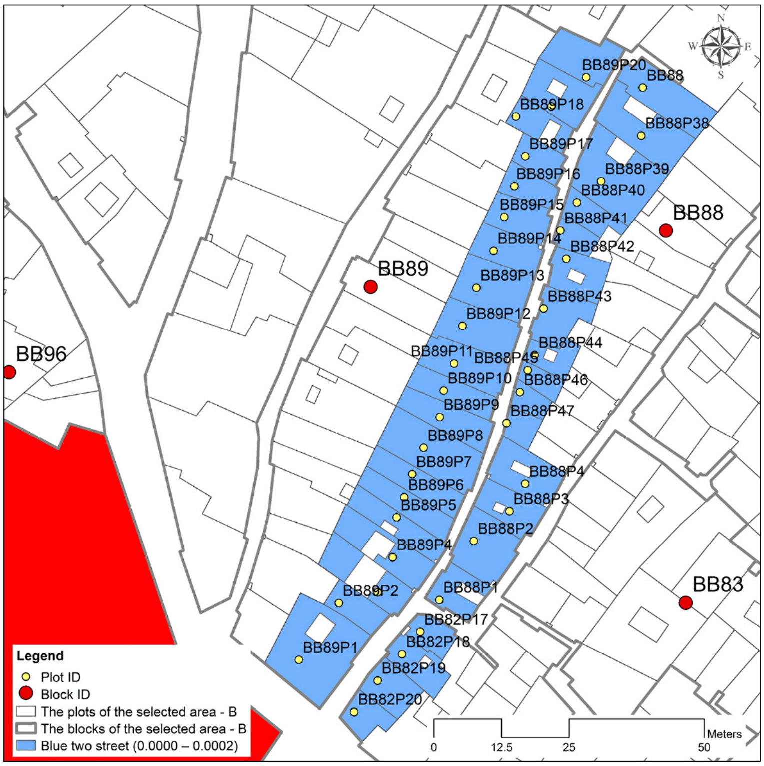


Figure 6.74. A blue two street from case study B in which displays a variable width of the street which ranged (1.74 - 3.88 m) that, however, contribute to diversiform the space that faces each house individually. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad that authorized by R.S.GIS.U (2017) and G.I.S.Department (2016).

Figure 6.75. A blue two street | Case B. It witnesses some the traditional houses in the Al-Karkh that, over the time, they turned into less attracted features because the Ignorance and neglect, and some of them are exploited for non-residential use. This situation is not far away from the oldest area of Baghdad in the case A as well Source: Photographed by author's team, 06/ Dec/2016.

Also, in this segment, there is a variable street width which ranged from 1.74 - 3.88 metres; this contributes to diversiform of the space that faces each house individually (Figures 6.74 and 6.75). The street offers a high degree of privacy, where only people who live there can use it, from contiguous *Mahallas*. The entrance to this street faces high-rise residential units after an undefined open space that has lost its border. Meanwhile, the second end is closed as a cul-de-sac alley (Figure 6.74). The adjacent houses permeate the edge through the main entrances. The intervisibility value (I_S) per floor is used within the permeability equation (P_S), to produce the permeability of a plot (P_P). This is then used for the selected street (P_S) (Figure 6.76 and Table 6.8).

Based on the research method:

$$Permeability\ of\ blue\ two\ street: Case\ B\ (P_{St}) \rightarrow \sum_{P=1}^{32} P_P = 16.53779$$

$$Constitutedness\ of\ blue\ two\ street: Case\ B\ (C_{St}) = \frac{16.53779}{32} = 0.51681$$

Along 100 metres, the permeability value for 32 buildings is 16.53779 and its constitutedness is 0.51681.

In one hundred metres for both blue one and two, the number of plots is dominant because the plot area is small and an irregular shape. Increasing the number of parcels maximises the permeability value of the selected street as a whole. Moreover, the depth factor in both examples is zero, where all doors are located directly adjacent to the street edge without any intermediate spaces.

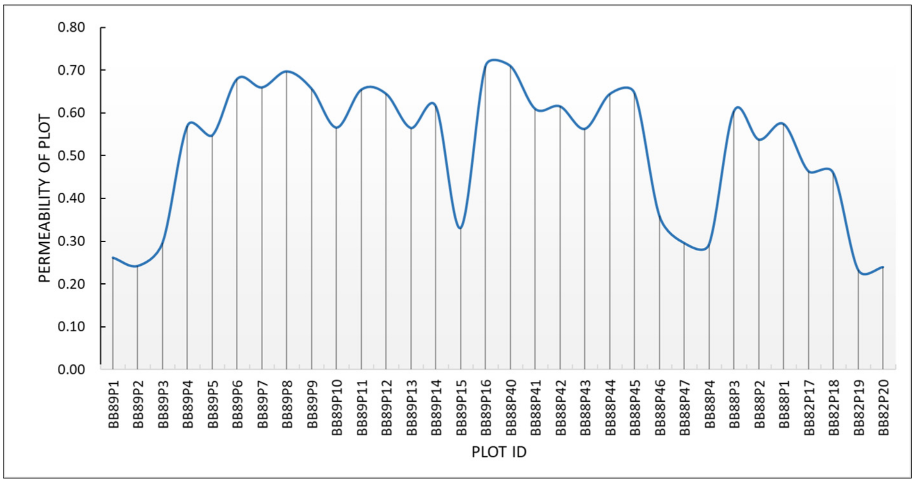


Figure 6.76. The Permeability value per building (plot) along 100 metres. Case B: blue two street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

Table 6.8. Blue two street: case study B. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of the building.

Case study: B | Street: Blue two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
B	Blue	0.0000 - 0.0002	BB89	16	BB89P1	3.36	0.00	3.36	1	1	3.8280	0.2612	0.2612	0.2612
					BB89P2	3.71	0.00	3.71	1	1	4.1351	0.2418	0.2418	0.2418
					BB89P3	2.83	0.00	2.83	1	1	3.3710	0.2966	0.2966	0.2966
					BB89P4	2.70	0.00	2.70	1	1	3.2599	0.3068	0.3068	0.5701
									2	1	3.7969	0.2634	0.2634	
					BB89P5	2.88	0.00	2.88	1	1	3.4138	0.2929	0.2929	0.5474
									2	1	3.9298	0.2545	0.2545	
					BB89P6	1.93	0.00	1.93	1	1	2.6593	0.3760	0.3760	0.6795
									2	1	3.2956	0.3034	0.3034	
					BB89P7	2.06	0.00	2.06	1	1	2.7544	0.3631	0.3631	0.6595
									2	1	3.3728	0.2965	0.2965	
					BB89P8	1.82	0.00	1.82	1	1	2.5803	0.3876	0.3876	0.6969
									2	1	3.2322	0.3094	0.3094	
					BB89P9	2.08	0.00	2.08	1	1	2.7704	0.3610	0.3610	0.6563
									2	1	3.3858	0.2954	0.2954	
					BB89P10	2.73	0.00	2.73	1	1	3.2899	0.3040	0.3040	0.5656
									2	1	3.8226	0.2616	0.2616	
					BB89P11	2.09	0.00	2.09	1	1	2.7802	0.3597	0.3597	0.6543
									2	1	3.3939	0.2946	0.2946	
					BB89P12	2.16	0.00	2.16	1	1	2.8306	0.3533	0.3533	0.6444
									2	1	3.4353	0.2911	0.2911	
					BB89P13	2.74	0.00	2.74	1	1	3.2967	0.3033	0.3033	0.5645
									2	1	3.8285	0.2612	0.2612	
					BB89P14	2.36	0.00	2.36	1	1	2.9875	0.3347	0.3347	0.6152
									2	1	3.5657	0.2804	0.2804	
					BB89P15	2.41	0.00	2.41	1	1	3.0215	0.3310	0.3310	0.3310
					BB89P16	1.74	0.00	1.74	1	1	2.5249	0.3961	0.3961	0.7097
									2	1	3.1881	0.3137	0.3137	
			BB88	12	BB88P40	1.74	0.00	1.74	1	1	2.5249	0.3961	0.3961	0.7097
									2	1	3.1881	0.3137	0.3137	
					BB88P41	2.41	0.00	2.41	1	1	3.0215	0.3310	0.3310	0.6092
									2	1	3.5942	0.2782	0.2782	
					BB88P42	2.36	0.00	2.36	1	1	2.9875	0.3347	0.3347	0.6152
									2	1	3.5657	0.2804	0.2804	
					BB88P43	2.76	0.00	2.76	1	1	3.3093	0.3022	0.3022	0.5626
									2	1	3.8393	0.2605	0.2605	
					BB88P44	2.16	0.00	2.16	1	1	2.8327	0.3530	0.3530	0.6440
									2	1	3.4370	0.2910	0.2910	
					BB88P45	2.15	0.00	2.15	1	1	2.8226	0.3543	0.3543	0.6459
									2	1	3.4287	0.2917	0.2917	
					BB88P46	2.10	0.00	2.10	1	1	2.7847	0.3591	0.3591	0.3591
					BB88P47	2.85	0.00	2.85	1	1	3.3857	0.2954	0.2954	0.2954
					BB88P4	2.89	0.00	2.89	1	1	3.4201	0.2924	0.2924	0.2924
					BB88P3	2.44	0.00	2.44	1	1	3.0527	0.3276	0.3276	0.6038
									2	1	3.6205	0.2762	0.2762	
					BB88P2	2.97	0.00	2.97	1	1	3.4848	0.2870	0.2870	0.5375
									2	1	3.9916	0.2505	0.2505	
					BB88P1	2.67	0.00	2.67	1	1	3.2348	0.3091	0.3091	0.5740
									2	1	3.7753	0.2649	0.2649	
			BB82	4	BB82P17	3.68	0.00	3.68	1	1	4.1072	0.2435	0.2435	0.4635
									2	1	4.5451	0.2200	0.2200	
					BB82P18	3.72	0.00	3.72	1	1	4.1466	0.2412	0.2412	0.4595
									2	1	4.5807	0.2183	0.2183	
					BB82P19	3.89	0.00	3.89	1	1	4.2967	0.2327	0.2327	0.2327
					BB82P20	3.76	0.00	3.76	1	1	4.1816	0.2391	0.2391	0.2391

6.4.2.3 Yellow One Street: Case B (0.0002 – 0.0017)

The example is in the oldest part of Al-Karkh region, which is recognisable for its zigzag street pattern (Figure 6.77 and 6.78).

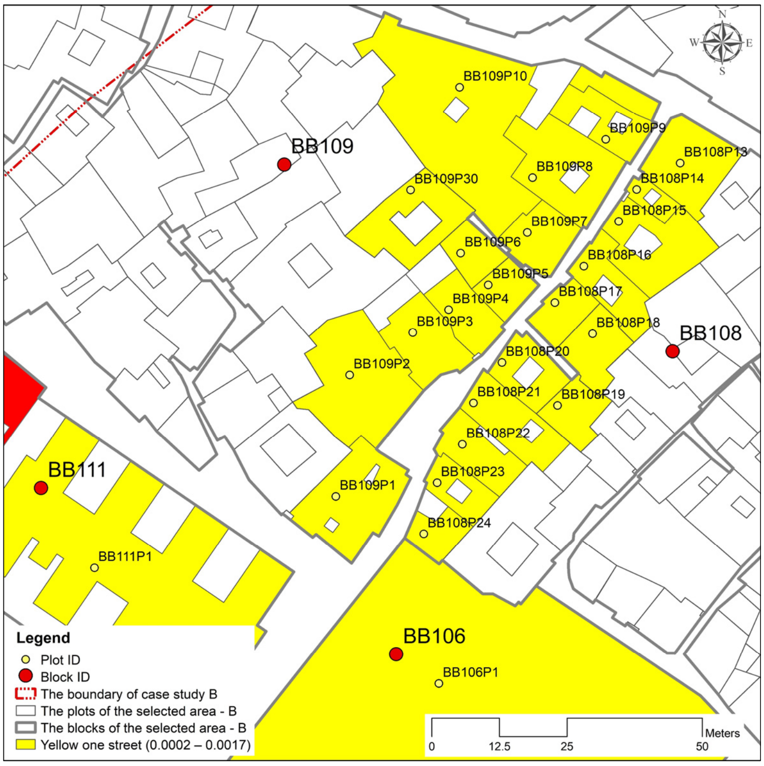


Figure 6.77. A yellow one street from case study B that shows the traditional alley with irregular plots' layout with varied street width and short cul-de-sacs routes to reach the houses that recessed back from the street edge. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad that authorized by R.S.GIS.U (2017) and G.I.S.Department (2016).

Figure 6.78. A yellow one street | Case B. Source: Photographed by author's team, 12/ Dec/2016.

The functional use of this segment is residential, where houses consist of one and two storeys with a highly private edge that is penetrated by the main entrances to link the street space. Along 100 metres, there are 23 homes where 18 directly access the adjacent street. The metric depth is zero excluding five units that are recessed. Like other links in this traditional zone, the street continues in different widths, ranging from 0.96 to 20.66 metres.

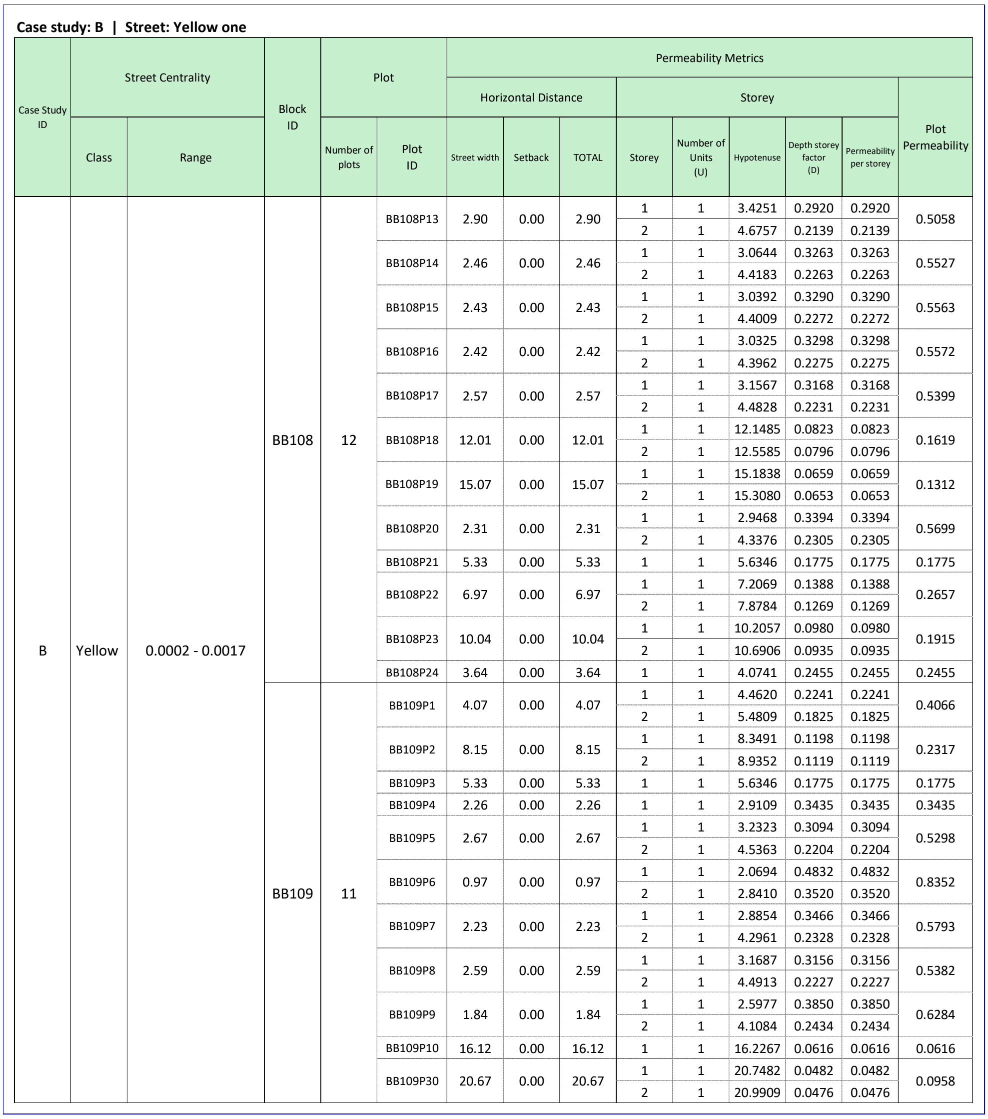
The permeability of building (P_B) is the total permeability for each storey (P_S) that calculates as an inverse intervisibility index (I_S) in order to multiply this by the number of units (Table 6.9). The permeability value is calculated thus:

$$Permeability\ of\ yellow\ one\ street|Case\ B\ (P_{St}) \rightarrow \sum_{P=1}^{23} P_P = 8.88271$$

$$Constitutedness\ of\ yellow\ one\ street|Case\ B\ (C_{St}) = \frac{8.88271}{23} = 0.38620$$

In Figure 6.79, the fluctuation of the permeability values across the plots within 100 metres is affected by the differentiation in street width and the plot's storey. However, all share the same criteria in terms of the number of units per storey.

Table 6.9. Yellow one street: case study B. The Intervisibility values as (Depth Storey Factor) and Permeability for each building storey.



Case study: B | Street: Yellow one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
B	Yellow	0.0002 - 0.0017	BB108	12	BB108P13	2.90	0.00	2.90	1	1	3.4251	0.2920	0.2920	0.5058
									2	1	4.6757	0.2139	0.2139	
					BB108P14	2.46	0.00	2.46	1	1	3.0644	0.3263	0.3263	0.5527
									2	1	4.4183	0.2263	0.2263	
					BB108P15	2.43	0.00	2.43	1	1	3.0392	0.3290	0.3290	0.5563
									2	1	4.4009	0.2272	0.2272	
					BB108P16	2.42	0.00	2.42	1	1	3.0325	0.3298	0.3298	0.5572
									2	1	4.3962	0.2275	0.2275	
					BB108P17	2.57	0.00	2.57	1	1	3.1567	0.3168	0.3168	0.5399
									2	1	4.4828	0.2231	0.2231	
					BB108P18	12.01	0.00	12.01	1	1	12.1485	0.0823	0.0823	0.1619
									2	1	12.5585	0.0796	0.0796	
					BB108P19	15.07	0.00	15.07	1	1	15.1838	0.0659	0.0659	0.1312
									2	1	15.3080	0.0653	0.0653	
					BB108P20	2.31	0.00	2.31	1	1	2.9468	0.3394	0.3394	0.5699
									2	1	4.3376	0.2305	0.2305	
					BB108P21	5.33	0.00	5.33	1	1	5.6346	0.1775	0.1775	0.1775
					BB108P22	6.97	0.00	6.97	1	1	7.2069	0.1388	0.1388	0.2657
									2	1	7.8784	0.1269	0.1269	
					BB108P23	10.04	0.00	10.04	1	1	10.2057	0.0980	0.0980	0.1915
									2	1	10.6906	0.0935	0.0935	
					BB108P24	3.64	0.00	3.64	1	1	4.0741	0.2455	0.2455	0.2455
			BB109	11	BB109P1	4.07	0.00	4.07	1	1	4.4620	0.2241	0.2241	0.4066
									2	1	5.4809	0.1825	0.1825	
					BB109P2	8.15	0.00	8.15	1	1	8.3491	0.1198	0.1198	0.2317
									2	1	8.9352	0.1119	0.1119	
					BB109P3	5.33	0.00	5.33	1	1	5.6346	0.1775	0.1775	0.1775
					BB109P4	2.26	0.00	2.26	1	1	2.9109	0.3435	0.3435	0.3435
					BB109P5	2.67	0.00	2.67	1	1	3.2323	0.3094	0.3094	0.5298
									2	1	4.5363	0.2204	0.2204	
					BB109P6	0.97	0.00	0.97	1	1	2.0694	0.4832	0.4832	0.8352
									2	1	2.8410	0.3520	0.3520	
					BB109P7	2.23	0.00	2.23	1	1	2.8854	0.3466	0.3466	0.5793
									2	1	4.2961	0.2328	0.2328	
					BB109P8	2.59	0.00	2.59	1	1	3.1687	0.3156	0.3156	0.5382
									2	1	4.4913	0.2227	0.2227	
					BB109P9	1.84	0.00	1.84	1	1	2.5977	0.3850	0.3850	0.6284
									2	1	4.1084	0.2434	0.2434	
					BB109P10	16.12	0.00	16.12	1	1	16.2267	0.0616	0.0616	0.0616
					BB109P30	20.67	0.00	20.67	1	1	20.7482	0.0482	0.0482	0.0958
									2	1	20.9909	0.0476	0.0476	

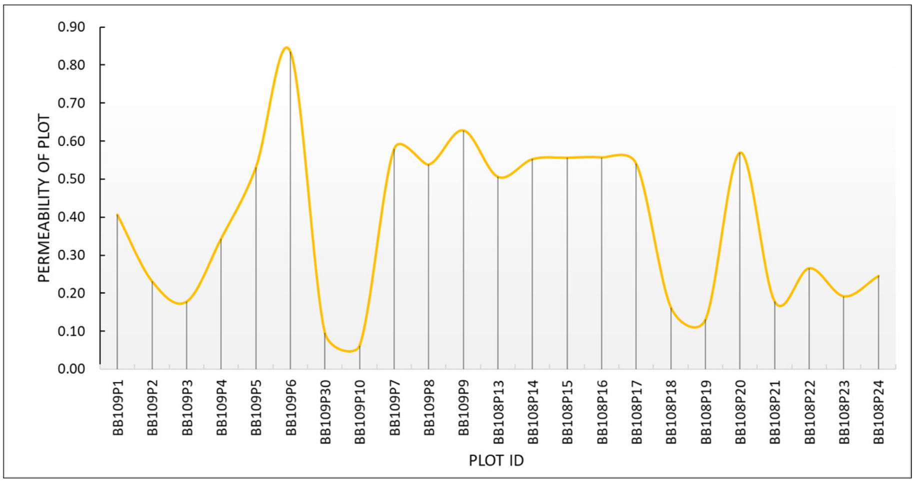


Figure 6.79. The Permeability value per building (plot) along the 100 metres. Case B: yellow one street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

6.4.2.4 Yellow Two Street: Case B (0.0002 – 0.0017)

The yellow segment can be defined as a transitional pattern between the old traditional configuration and modern planning. It includes some characteristics that combine the irregular shape of plots and the varied width of a street. The primary function of the street edge is residential; 28 residential houses are placed in direct contact with the outdoor space without metrical distance and intermediate areas, where their main entrances are linked to the street (Figures 6.80 and 6.81).

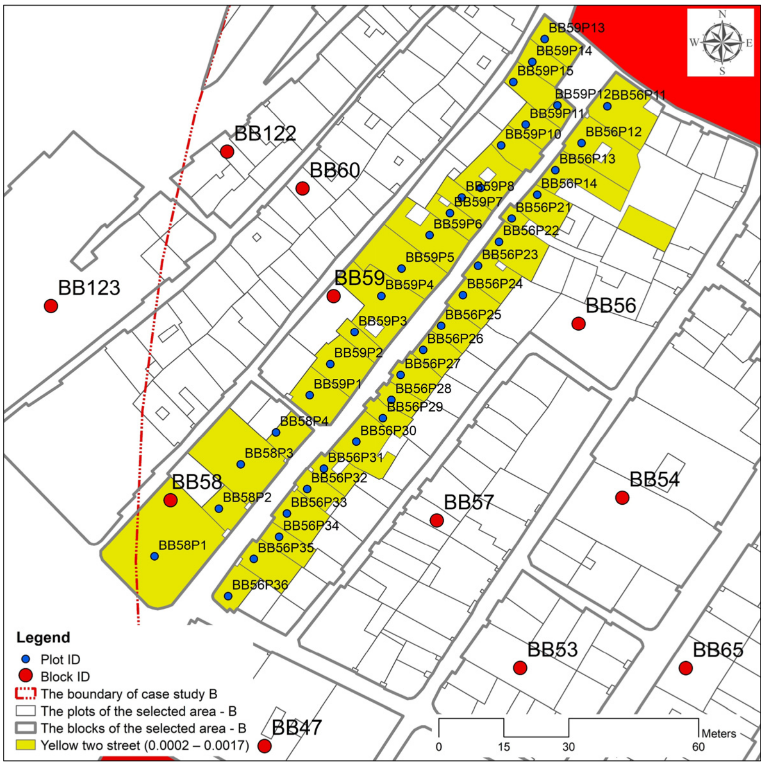


Figure 6.80. Yellow two street from case study B that displays a transitional pattern between the old traditional pattern and modern scheme. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and G.I.S.Department (2016).


Figure 6.81. Yellow two street: Case B. Providing a transitional pattern between the old traditional pattern and modern scheme. Source: Photographed by author's team, 06/ Dec/2016.

Table 6.10. Yellow two street: case study B. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: B | Street: Yellow two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
B	Yellow	0.0002 - 0.0017	BB56	14	BB56P11	9.5225	0.0000	9.5225	1	1	9.6966	0.1031	0.1031	0.2042
									2	1	9.8900	0.1011	0.1011	
					BB56P12	3.3777	0.0000	3.3777	1	1	3.8411	0.2603	0.2603	0.4926
									2	1	4.3062	0.2322	0.2322	
					BB56P13	3.5813	0.0000	3.5813	1	1	4.0213	0.2487	0.2487	0.2487
					BB56P14	3.6214	0.0000	3.6214	1	1	4.0571	0.2465	0.2465	0.4687
									2	1	4.4999	0.2222	0.2222	
					BB56P21	3.0788	0.0000	3.0788	1	1	3.5811	0.2792	0.2792	0.2792
					BB56P22	3.2501	0.0000	3.2501	1	1	3.7294	0.2681	0.2681	0.2681
					BB56P23	3.2032	0.0000	3.2032	1	1	3.6886	0.2711	0.2711	0.2711
					BB56P24	3.7204	0.0000	3.7204	1	1	4.1457	0.2412	0.2412	0.4596
									2	1	4.5799	0.2183	0.2183	
					BB56P25	5.1083	0.0000	5.1083	1	1	5.4259	0.1843	0.1843	0.1843
					BB56P26	5.3341	0.0000	5.3341	1	1	5.6390	0.1773	0.1773	0.1773
					BB56P27	3.9694	0.0000	3.9694	1	1	4.3705	0.2288	0.2288	0.4378
									2	1	4.7844	0.2090	0.2090	
					BB56P28	4.1212	0.0000	4.1212	1	1	4.5088	0.2218	0.2218	0.4254
									2	1	4.9111	0.2036	0.2036	
					BB56P29	3.6197	0.0000	3.6197	1	1	4.0555	0.2466	0.2466	0.2466
					BB56P30	3.8865	0.0000	3.8865	1	1	4.2954	0.2328	0.2328	0.2328
			BB59	14	BB59P1	4.0411	0.0000	4.0411	1	1	4.4357	0.2254	0.2254	0.4319
									2	1	4.8440	0.2064	0.2064	
					BB59P2	4.0109	0.0000	4.0109	1	1	4.4082	0.2268	0.2268	0.2268
					BB59P3	3.9638	0.0000	3.9638	1	1	4.3654	0.2291	0.2291	0.4383
									2	1	4.7797	0.2092	0.2092	
					BB59P4	5.3291	0.0000	5.3291	1	1	5.6342	0.1775	0.1775	0.1775
					BB59P5	3.8489	0.0000	3.8489	1	1	4.2614	0.2347	0.2347	0.2347
					BB59P6	3.1204	0.0000	3.1204	1	1	3.6169	0.2765	0.2765	0.2765
					BB59P7	4.3837	0.0000	4.3837	1	1	4.7500	0.2105	0.2105	0.2105
					BB59P8	4.3471	0.0000	4.3471	1	1	4.7162	0.2120	0.2120	0.2120
					BB59P9	3.5630	0.0000	3.5630	1	1	4.0050	0.2497	0.2497	0.2497
					BB59P10	3.6020	0.0000	3.6020	1	1	4.0398	0.2475	0.2475	0.2475
					BB59P11	3.6999	0.0000	3.6999	1	1	4.1273	0.2423	0.2423	0.2423
					BB59P12	3.5260	0.0000	3.5260	1	1	3.9721	0.2518	0.2518	0.2518
					BB59P13	9.1640	0.0000	9.1640	1	1	9.3447	0.1070	0.1070	0.2118
									2	1	9.5453	0.1048	0.1048	
					BB59P14	8.9225	0.0000	8.9225	1	1	9.1080	0.1098	0.1098	0.2172
									2	1	9.3137	0.1074	0.1074	

Based on the study's approach, the permeability value for each plot is computed (Figure 6.82 and Table 6.10) and for the selected segment:

$$Permeability\ of\ yellow\ two\ street\ |Case\ B\ (P_{St}) \rightarrow \sum_{P=1}^{28} P_P = 8.02492$$

The constitutedness of the street (100 metres and 28 plots):

$$Constitutedness\ of\ yellow\ two\ street\ |Case\ B\ (C_{St}) = \frac{8.02492}{28} = 0.28660$$

Along the 100 metre length, the permeability value for 28 houses is 8.02492, and the constitutedness is 0.28660.

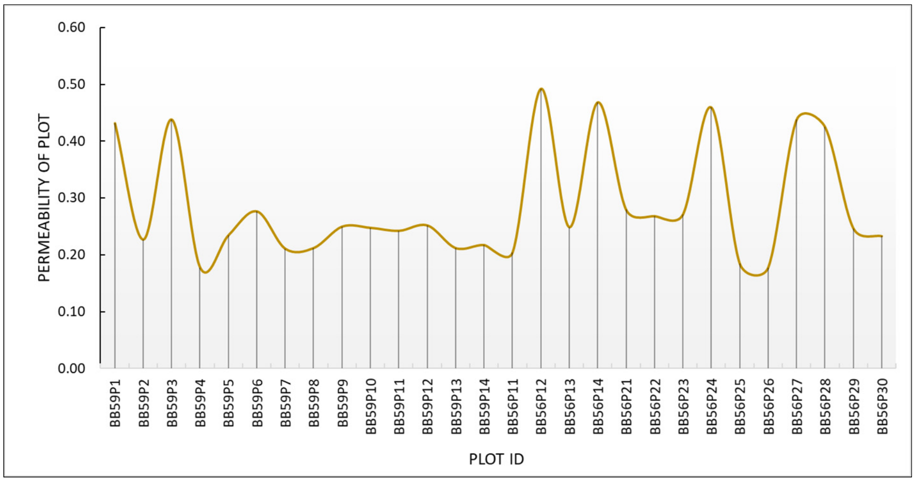


Figure 6.82. The Permeability value per building (plot) along 100 metres. Case B: yellow two street. The arrangement of plots is based on their place on the site rather than in an ascending and descending order.

6.4.2.5 Red One Street: Case B (0.0017 – 0.1397)

The selected street stands for the modernistic character of a new era of planning and urban design. It has a sharp edge alongside the oldest area of the Al-Karkh region, and represents a morphological mutation, where a new material, type, form, and high-rise units are positioned adjacent to the periphery of the traditional area (Figure 6.83). Along 100 metres, there are 10 buildings that consist of 6 – 7 storeys. Buildings are linked to the street on a serrated edge, but the concrete arcade that provides an intermediate space rectifies the line and provides a straight edge (Figure 6.84). The widest point of the designated street is about 40.20 metres, and the shortest distance between its two edges is 35.66 metres.

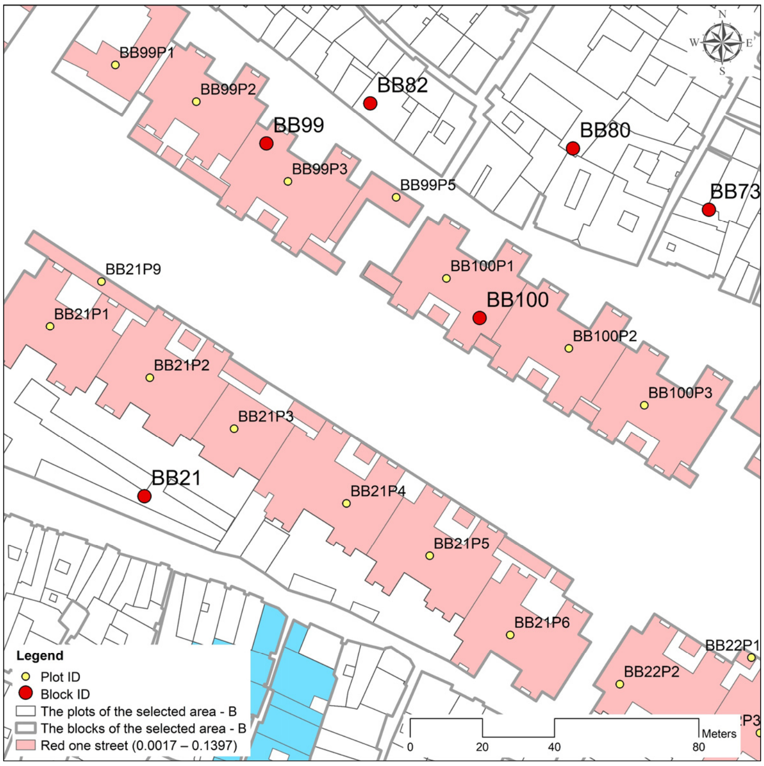


Figure 6.83. Red one street from case study B, which shows a modernistic style of planning and urban design with a rigid edge adjacent to the oldest part of Al-Karkh. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and G.I.S.Department (2016).

Figure 6.84. Red one street: Case B. It stands for a morphological mutation, where a new material, type, form, and high-rise units are sited adjacent to the periphery of the traditional area. Source: Photographed by author's team, 05-17/ Dec/2016.

The permeability value for each building (P_B) is computed, (Figure 6.85 and Table 6.11), and the total value of (P_S) is:

$$Permeability\ of\ red\ one\ street: Case\ B\ (P_{St}) \rightarrow \sum_{P=1}^{13} P_P = 5.08120$$

$$Constitutedness\ of\ red\ one\ street: Case\ B\ (C_{St}) = \frac{5.08120}{13} = 0.39086$$

Table 6.11. Red one street: case study B. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building.

Case study: B | Street: Red one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
B	Red	0.0017 - 0.1397	BB21	7	BB21P1	36.2751	12.6216	48.8967	1	1	48.9309	0.0204	0.0204	0.4586
									2	4	49.0343	0.0204	0.0816	
									3	4	49.3497	0.0203	0.0811	
									4	4	49.8439	0.0201	0.0803	
									5	4	50.5118	0.0198	0.0792	
									6	4	51.3465	0.0195	0.0779	
									7	2	52.3402	0.0191	0.0382	
					BB21P2	36.0000	7.6448	43.6448	1	1	43.6831	0.0229	0.0229	0.5107
									2	4	43.7989	0.0228	0.0913	
									3	4	44.1517	0.0226	0.0906	
									4	4	44.7034	0.0224	0.0895	
									5	4	45.4469	0.0220	0.0880	
									6	4	46.3729	0.0216	0.0863	
									7	2	47.4708	0.0211	0.0421	
					BB21P3	35.6662	5.9562	41.6224	1	6	41.6626	0.0240	0.1440	0.1440
					BB21P4	39.3766	8.2416	47.6182	1	1	47.6533	0.0210	0.0210	0.4703
									2	4	47.7595	0.0209	0.0838	
									3	4	48.0832	0.0208	0.0832	
									4	4	48.5903	0.0206	0.0823	
									5	4	49.2752	0.0203	0.0812	
									6	4	50.1306	0.0199	0.0798	
									7	2	51.1478	0.0196	0.0391	
					BB21P5	39.3183	8.5090	47.8273	1	1	47.8623	0.0209	0.0209	0.4684
									2	4	47.9680	0.0208	0.0834	
									3	4	48.2903	0.0207	0.0828	
									4	4	48.7953	0.0205	0.0820	
									5	4	49.4773	0.0202	0.0808	
									6	4	50.3292	0.0199	0.0795	
									7	2	51.3425	0.0195	0.0390	
					BB21P6	39.2578	13.7834	53.0412	1	1	53.0727	0.0188	0.0188	0.4243
									2	4	53.1681	0.0188	0.0752	
									3	4	53.4591	0.0187	0.0748	
									4	4	53.9156	0.0185	0.0742	
									5	4	54.5337	0.0183	0.0733	
									6	4	55.3078	0.0181	0.0723	
									7	2	56.2314	0.0178	0.0356	
					BB21P9				1	1				
			BB99	5	BB99P1	40.2040	4.3183	44.5223	1	1	44.5599	0.0224	0.0224	0.0224
					BB99P2	36.2751	11.4956	47.7707	1	1	47.8057	0.0209	0.0209	0.4689
									2	4	47.9115	0.0209	0.0835	
									3	4	48.2342	0.0207	0.0829	
									4	4	48.7398	0.0205	0.0821	
									5	4	49.4226	0.0202	0.0809	
									6	4	50.2754	0.0199	0.0796	
									7	2	51.2898	0.0195	0.0390	
					BB99P3	35.8538	5.8025	41.6563	1	1	41.6964	0.0240	0.0240	0.5335
									2	4	41.8177	0.0239	0.0957	
									3	4	42.1871	0.0237	0.0948	
									4	4	42.7642	0.0234	0.0935	
									5	4	43.5408	0.0230	0.0919	
									6	4	44.5065	0.0225	0.0899	
									7	2	45.6492	0.0219	0.0438	
					BB99P4				1	2				
					BB99P5	35.6662	22.1671	57.8333	1	6	57.8622	0.0173	0.1037	0.1037
			BB100	4	BB100P1	39.3766	6.0553	45.4319	1	1	45.4687	0.0220	0.0220	0.4917
									2	4	45.5800	0.0219	0.0878	
									3	4	45.9191	0.0218	0.0871	
									4	4	46.4498	0.0215	0.0861	
									5	4	47.1658	0.0212	0.0848	
									6	4	48.0587	0.0208	0.0832	
									7	2	49.1189	0.0204	0.0407	
					BB100P2	39.3183	6.0778	45.3961	1	1	45.4329	0.0220	0.0220	0.4921
									2	4	45.5443	0.0220	0.0878	
									3	4	45.8836	0.0218	0.0872	
									4	4	46.4148	0.0215	0.0862	
									5	4	47.1313	0.0212	0.0849	
									6	4	48.0248	0.0208	0.0833	
									7	2	49.0858	0.0204	0.0407	
					BB100P3	39.2578	6.1031	45.3609	1	1	45.3978	0.0220	0.0220	0.4925
									2	4	45.5092	0.0220	0.0879	
									3	4	45.8488	0.0218	0.0872	
									4	4	46.3804	0.0216	0.0862	
									5	4	47.0974	0.0212	0.0849	
									6	4	47.9916	0.0208	0.0833	
									7	2	49.0532	0.0204	0.0408	
					BB100P4				1	1				

Although the street is wider than other examples, the number of storeys and their units increase the permeability value of the street. The total permeability average gives the constitutedness of the selected street.

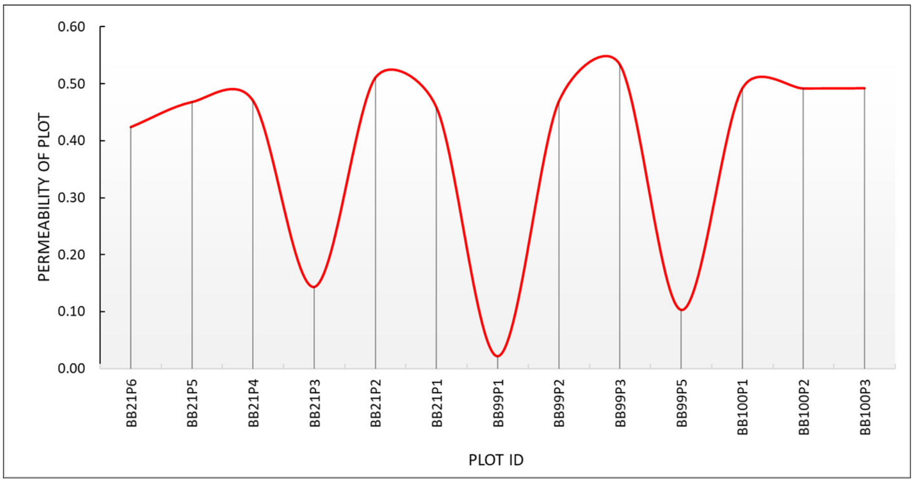


Figure 6.85. The Permeability value of per building (plot) along 100 metres. Case B: red one street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

6.4.2.6 Red Two Street: Case B (0.0017 – 0.1397)

The selected street is mostly used for automobile services and workshops. The residential spaces are located on the upper floors, especially for those properties away from the street intersection with other main streets (Figures 6.86 and 6.87). The segment is part of the grid pattern of a network, and represents an area that combines different type of land uses and activities. A vast area of some plots just consists of one storey; therefore, the total number of buildings is 15 on both sides with a regular width of 20 metres (Table 6.12).

Figure 6.86. Red two street: Case B. It shows automobile services and workshops. Source: Photographed by author’s team, 08/ Jan/2017.

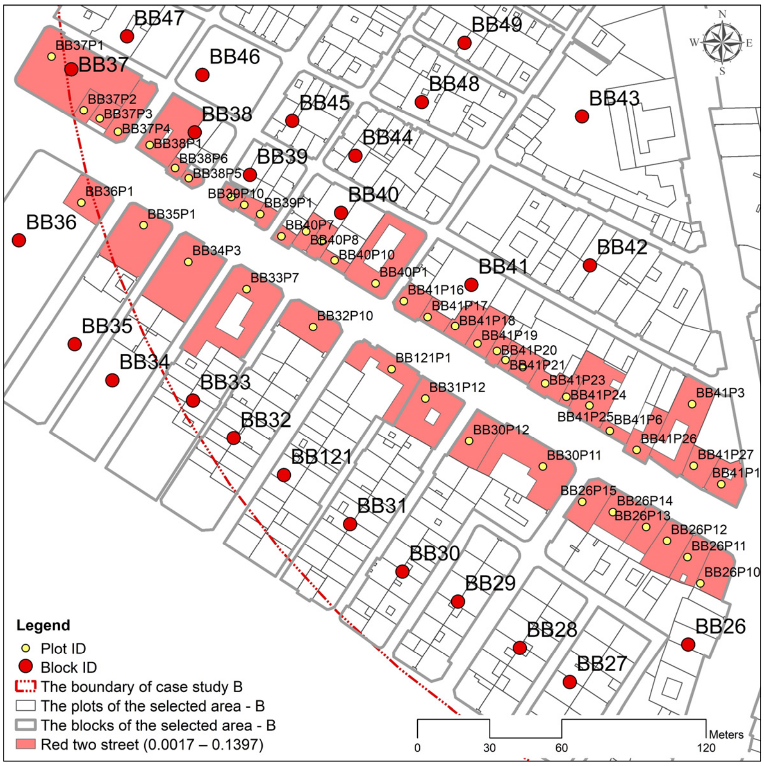


Figure 6.87. A red two street from case study B. It illustrates a grid pattern of street network. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017) and the G.I.S.Department (2016).

According to the study’s method, the permeability in this segment is calculated as:

$$Permeability\ of\ red\ two\ street: Case\ B\ (P_{St}) \rightarrow \sum_{P=1}^{15} P_P = 4.46307$$

The permeability per plot is calculated based on its value for each storey (Table 6.12 and Figure 6.88). The amount of constitutedness along 100 metres and 15 plots is therefore:

$$Constitutedness\ of\ red\ two\ street: Case\ B\ (C_{St}) = \frac{4.46307}{15} = 0.29754$$

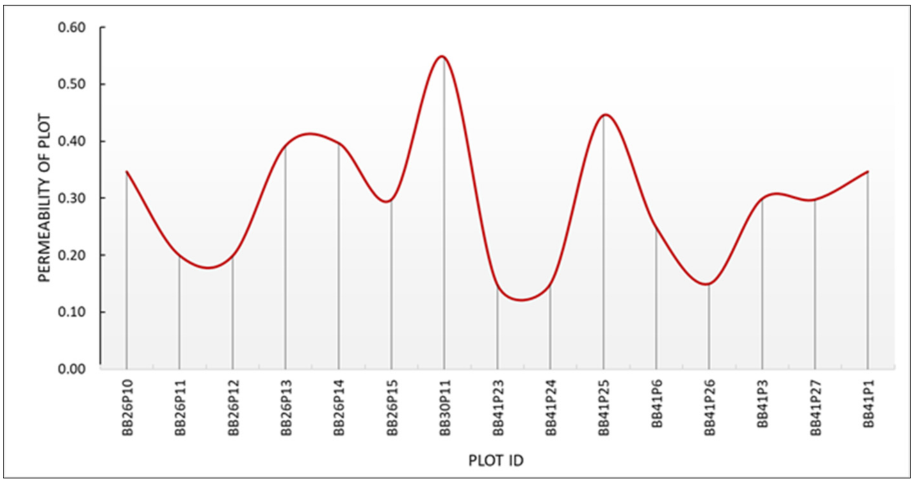
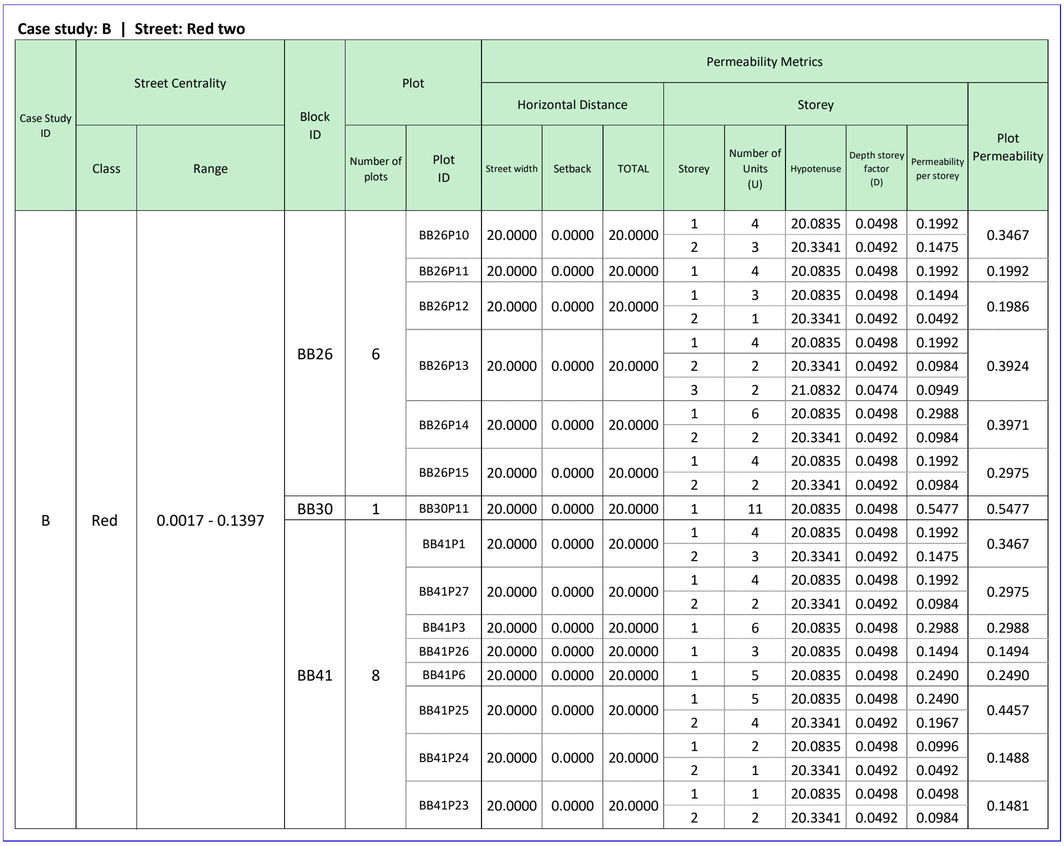


Figure 6.88. The Permeability value per building (plot) along 100 metres. Case B: red two street. The arrangement of plots based on their place on the site rather than in ascending and descending order.

Table 6.12. Red two street: case study B. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building.



Case study: B | Street: Red two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
B	Red	0.0017 - 0.1397	BB26	6	BB26P10	20.0000	0.0000	20.0000	1	4	20.0835	0.0498	0.1992	0.3467
									2	3	20.3341	0.0492	0.1475	
					BB26P11	20.0000	0.0000	20.0000	1	4	20.0835	0.0498	0.1992	0.1992
					BB26P12	20.0000	0.0000	20.0000	1	3	20.0835	0.0498	0.1494	0.1986
									2	1	20.3341	0.0492	0.0492	
					BB26P13	20.0000	0.0000	20.0000	1	4	20.0835	0.0498	0.1992	0.3924
									2	2	20.3341	0.0492	0.0984	
									3	2	21.0832	0.0474	0.0949	
					BB26P14	20.0000	0.0000	20.0000	1	6	20.0835	0.0498	0.2988	0.3971
									2	2	20.3341	0.0492	0.0984	
					BB26P15	20.0000	0.0000	20.0000	1	4	20.0835	0.0498	0.1992	0.2975
									2	2	20.3341	0.0492	0.0984	
			BB30	1	BB30P11	20.0000	0.0000	20.0000	1	11	20.0835	0.0498	0.5477	0.5477
			BB41	8	BB41P1	20.0000	0.0000	20.0000	1	4	20.0835	0.0498	0.1992	0.3467
									2	3	20.3341	0.0492	0.1475	
					BB41P27	20.0000	0.0000	20.0000	1	4	20.0835	0.0498	0.1992	0.2975
									2	2	20.3341	0.0492	0.0984	
					BB41P3	20.0000	0.0000	20.0000	1	6	20.0835	0.0498	0.2988	0.2988
					BB41P26	20.0000	0.0000	20.0000	1	3	20.0835	0.0498	0.1494	0.1494
					BB41P6	20.0000	0.0000	20.0000	1	5	20.0835	0.0498	0.2490	0.2490
					BB41P25	20.0000	0.0000	20.0000	1	5	20.0835	0.0498	0.2490	0.4457
									2	4	20.3341	0.0492	0.1967	
					BB41P24	20.0000	0.0000	20.0000	1	2	20.0835	0.0498	0.0996	0.1488
									2	1	20.3341	0.0492	0.0492	
					BB41P23	20.0000	0.0000	20.0000	1	1	20.0835	0.0498	0.0498	0.1481
									2	2	20.3341	0.0492	0.0984	

6.4.3 Case Study C: Paralleled Pattern

Case study C contains a high percentage of residential use within the 400-metre radius of the selected area. To the north-east, there is a large area for industrial purposes; this is separated between residential use and the Tigris river. From a morphological perspective, the street network can be classified as parallel, where the straight links that are perpendicular to each other. Besides its orthogonal pattern, a number of streets are characterised by a longer length than the others in the same area. The plot area is larger than in sample A and B. The plot-block system is more evident than the last two cases. Also, the layout of both plot and block are regular and readily recognisable.

The main street is collected and combined; it links the residential streets and, in this regard, the short side of the block is adjacent to the street's edge. Morphologically, the main route is constituted by the row of blocks through their short length, and that makes it more fragmented. It also represents a higher centrality of betweenness according to the Multiple Centrality Assessment (MCA) (Red class 0.0017 – 0.1397) (Figure 6.89).

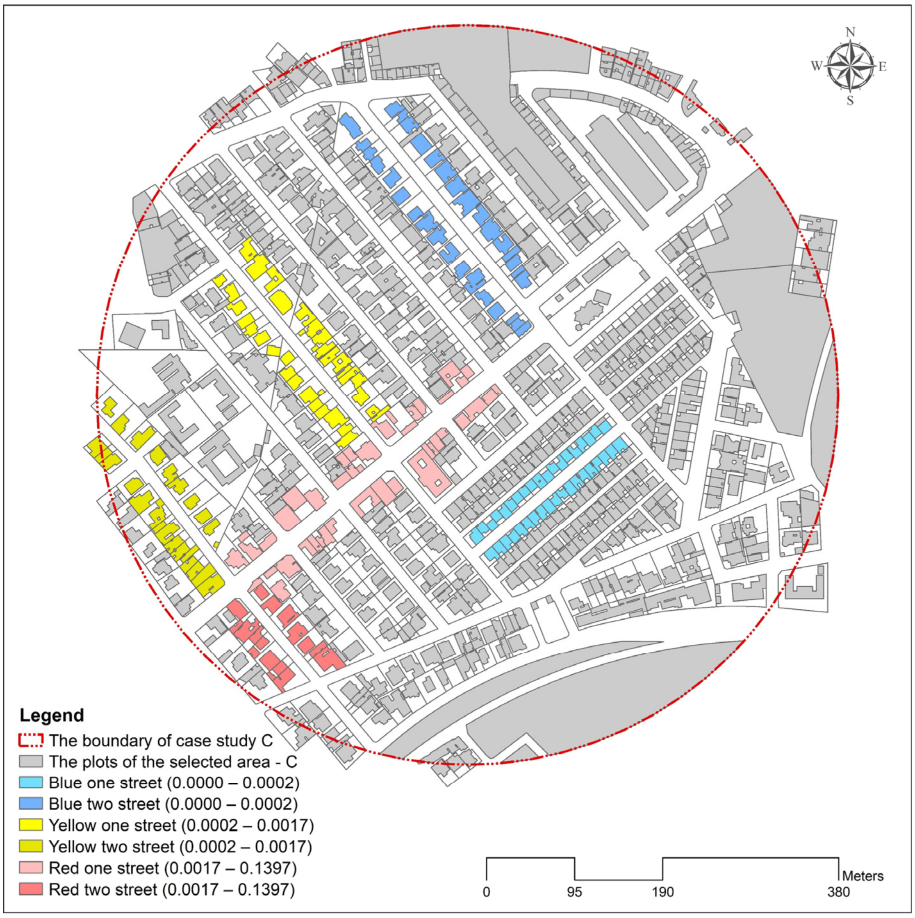


Figure 6.89. A map of the selected street of case study C: Paralleled pattern. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

6.4.3.1 Blue One Street: Case C (0.0000 – 0.0002)

The street can be characterised as a straight link, with a constant width of about 12 metres and the metric depth is varied (1.75 - 4.42 metres). Along the 100 meters, there are 20 houses on both sides of the street that have indirect access to the outdoor space. The primary use is for residential purposes, and the houses have mostly two floors. The plots' layout is similar for all units (10 × 15 metres) with exceptions at the corner of the street (Figures 6.90 and 6.91).

Figure 6.90. Blue one street: Case C. Source: Photographed by author's team, 16/ Dec/2016.

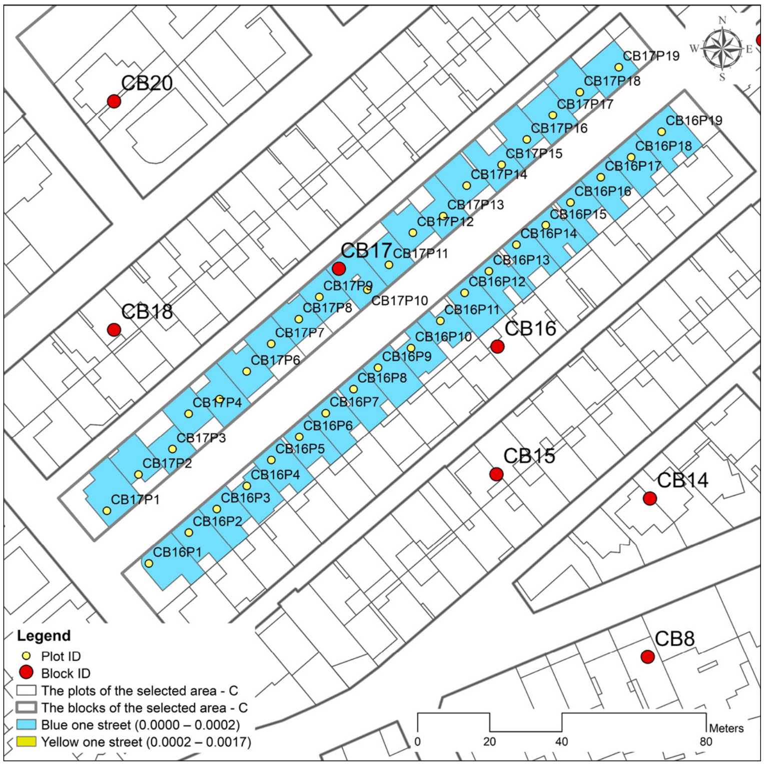


Figure 6.91. Blue one street from case study C that shows a constant street width of 12 meters but where the metric depth is varied (1.75 - 4.42 metres). Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

According to the study's method, the Intervisibility (I_S) per storey is used within the Permeability (P_S). To calculate the permeability of a building (P_P) from the total (P_S) (Table 6.13).

The value of the permeability in this sample is:

$$Permeability\ of\ blue\ one\ street\colon Case\ C\ (P_{St})\ \rightarrow \sum_{P=1}^{20} P_P\ =\ 2.76881$$

$$Constitutedness\ of\ of\ blue\ one\ street\colon Case\ C\ (C_{St}) = \frac{2.76881}{20} =\ 0.13844$$

Along 100 metres, the permeability value for 20 houses is 2.76881, and the constitutedness is 0.13844 (Figure 6.92). This chart shows a non-oscillated line, meaning that the units adjacent to the street edge have the same factors in terms of street width, metric depth, number of storeys and units. The private and public edge could be more modulated than that within cases A and B. The transitional edge between the private and public is modelled on one rhythm, and the edge is close to being one tone.

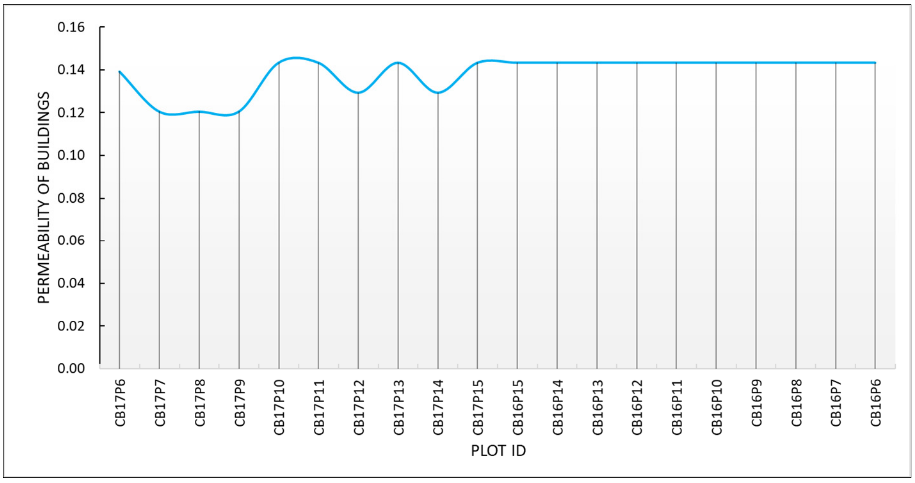


Figure 92. Permeability value per building (plot) along 100 metres. Case C: blue one street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

Table 6.13. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building. Blue one street: case study C.

Case study: C | Street: Blue one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
C	Blue	0.0000 - 0.0002	CB16	10	CB16P6	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P7	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P8	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P9	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P10	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P11	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P12	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P13	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P14	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB16P15	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
			CB17	10	CB17P6	12.0000	2.1704	14.1704	1	1	14.2879	0.0700	0.0700	0.1393
									2	1	14.4199	0.0693	0.0693	
					CB17P7	12.0000	4.4282	16.4282	1	1	16.5297	0.0605	0.0605	0.1206
									2	1	16.6439	0.0601	0.0601	
					CB17P8	12.0000	4.4282	16.4282	1	1	16.5297	0.0605	0.0605	0.1206
									2	1	16.6439	0.0601	0.0601	
					CB17P9	12.0000	4.4282	16.4282	1	1	16.5297	0.0605	0.0605	0.1206
									2	1	16.6439	0.0601	0.0601	
					CB17P10	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB17P11	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB17P12	12.0000	3.2776	15.2776	1	1	15.3867	0.0650	0.0650	0.1295
									2	1	15.5093	0.0645	0.0645	
					CB17P13	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
					CB17P14	12.0000	3.2776	15.2776	1	1	15.3867	0.0650	0.0650	0.1295
									2	1	15.5093	0.0645	0.0645	
					CB17P15	12.0000	1.7500	13.7500	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	

6.4.3.2 Blue Two Street: Case C (0.0000 – 0.0002)

Like the previous street, the width of the selected street is (12 metres). Along the 100 metres, there is a larger metric depth than blue one: C, as it ranges from 4.00 - 15.20 metres. There are 12 plots that often cover 600-metre squared for each, with a regular plot frontier (20 street edge × 30 depth). Some plots were divided into two areas, such as CB29P29 and CB29P30; this has led to an increase in the total number of plots (Figures 6.93 and 6.94, and Table 6.14). Residential use is dominant for this sector, and the houses consist of two storeys; all are placed at the rear of the plot away from the street edge and with considerable depth.

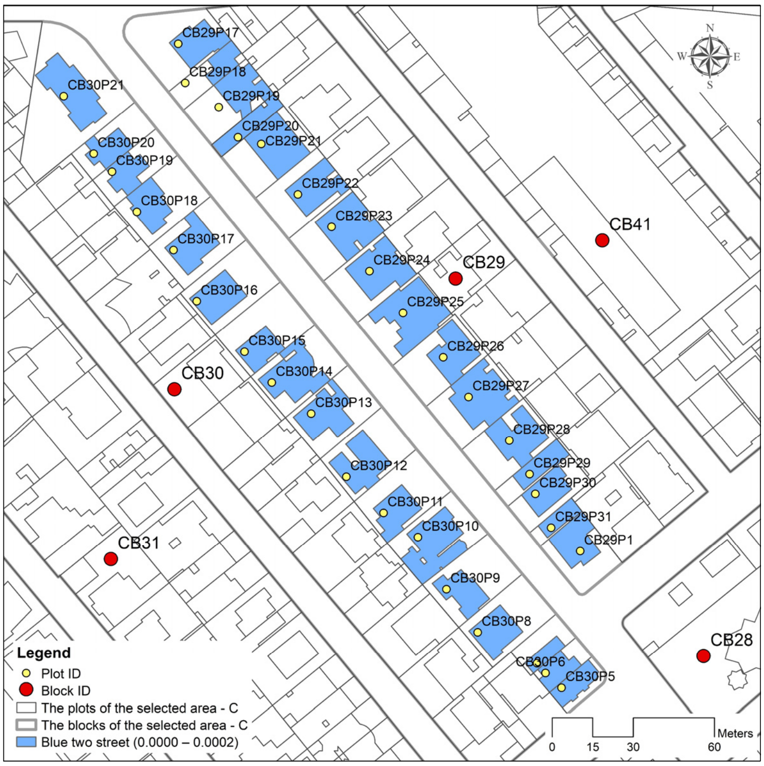


Figure 6.93. Blue two street from case study C. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 6.94. Blue two street: Case C. Source: Photographed by author's team, 08/ Dec/2016.

The intermediate space, in this case, belongs to the semi-public area, while the street edge is for public use. In addition, the houses' edges that face the adjacent street respond to shape the semi-private and then the street edge as a metric depth (Figure 6.93). Because of the large plot area, the number of houses within the 100 metres is less than blue one: C, and this affects the constitutedness value and its two indicators: intervisibility and permeability. The intervisibility value (I_S) per storey is added to the permeability index (P_S), the permeability of the building (P_P) is the total of (P_S), while the selected street (P_{St}) comes from the sum of (P_P) (Figure 6.95 and Table 6.14). Based on this study's method:

$$Permeability\ of\ blue\ two\ street|Case\ C\ (P_{St}) \rightarrow \sum_{P=1}^{12} P_P = 1.19022$$

$$Constitutedness\ of\ blue\ two\ street|Case\ C\ (C_{St}) = \frac{1.19022}{12} = 0.09919$$

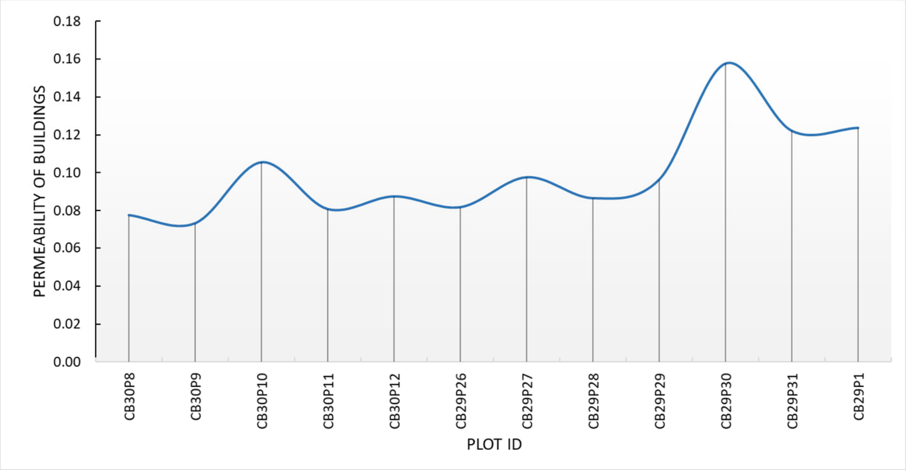


Figure 6.95. The Permeability value per building (plot) along the 100 metres. Case C: blue two street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

Table 6.14. Blue two street - case study C. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building.

Case study: C | Street: Blue two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
C	Blue	0.0000 - 0.0002	CB29	7	CB29P1	12.0000	4.0063	16.0063	1	1	16.1105	0.0621	0.0621	0.1237
									2	1	16.2276	0.0616	0.0616	
					CB29P31	12.0000	4.2187	16.2187	1	1	16.3215	0.0613	0.0613	0.1221
									2	1	16.4372	0.0608	0.0608	
					CB29P30	12.0000	6.6567	18.6567	1	1	18.7461	0.0533	0.0533	0.1577
									2	1	18.8469	0.0531	0.0531	
									3	1	19.4996	0.0513	0.0513	
					CB29P29	12.0000	8.6257	20.6257	1	1	20.7066	0.0483	0.0483	0.0964
									2	1	20.7979	0.0481	0.0481	
					CB29P28	12.0000	11.0028	23.0028	1	1	23.0754	0.0433	0.0433	0.0865
									2	1	23.1574	0.0432	0.0432	
					CB29P27	12.0000	8.3681	20.3681	1	1	20.4501	0.0489	0.0489	0.0976
									2	1	20.5425	0.0487	0.0487	
					CB29P26	12.0000	12.3591	24.3591	1	1	24.4277	0.0409	0.0409	0.0817
									2	1	24.5051	0.0408	0.0408	
			CB30	5	CB30P8	12.0000	13.6835	25.6835	1	1	25.7485	0.0388	0.0388	0.0776
									2	1	25.8220	0.0387	0.0387	
					CB30P9	12.0000	15.2022	27.2022	1	1	27.2636	0.0367	0.0367	0.0733
									2	1	27.3330	0.0366	0.0366	
					CB30P10	12.0000	6.8217	18.8217	1	1	18.9104	0.0529	0.0529	0.1055
									2	1	19.0103	0.0526	0.0526	
					CB30P11	12.0000	12.6636	24.6636	1	1	24.7313	0.0404	0.0404	0.0807
									2	1	24.8078	0.0403	0.0403	
					CB30P12	12.0000	10.7548	22.7548	1	1	22.8282	0.0438	0.0438	0.0875
									2	1	22.9110	0.0436	0.0436	

6.4.3.3 Yellow One Street: Case C (0.0002 – 0.0017)

Along 100 metres of the street length, there are 15 houses located on the adjacent edge with different metric depths ranging from 1.77 - 13.47 metres. The plot area is subdivided into several new areas; for example, two or more sub-plots within 600-metres square, such as CB32P47, CB23P48, CB33P8, and CB33P9. The functional use of this street is residential, and the houses have one and two floors with a semiprivate edge that is separate between the mass of the house and the public space. Like other streets in this pre-planning zone, the street continues in one width (12.00 metres) (Figures 6.96 and 6.97). The low density of houses in the modern area and the constitution of the street edge play a key role in forming the spatial configuration of a street and how to deal with the private edge.

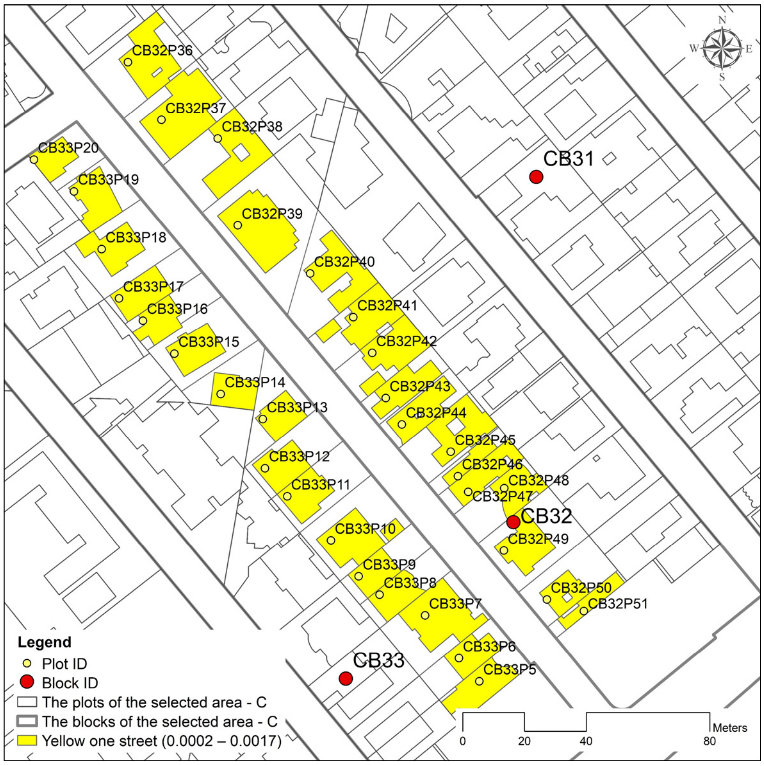


Figure 6.96. Yellow one street from case study C that shows the modern street with organised plot layout and continuing street width with varied setback (metric depth) as an intermediate space between two edges: private and public. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 6.97. Yellow one street: Case C. Source: Photographed by author's team, 08/ Dec/2016.

The permeability within the 100 metres length for houses (P_P) is 1.55010, and the constitutedness value is 0.10334 (Figure 6.98 and Table 6.15). The permeability value of per street (P_{St}):

$$Permeability\ of\ yellow\ one\ street{:}\ Case\ C\ (P_{St}) \rightarrow \sum_{P=1}^{15} P_P = 1.55010$$

$$Constitutedness\ of\ yellow\ one\ street{:}\ Case\ C\ (C_{St}) = \frac{1.55010}{15} = 0.10334$$

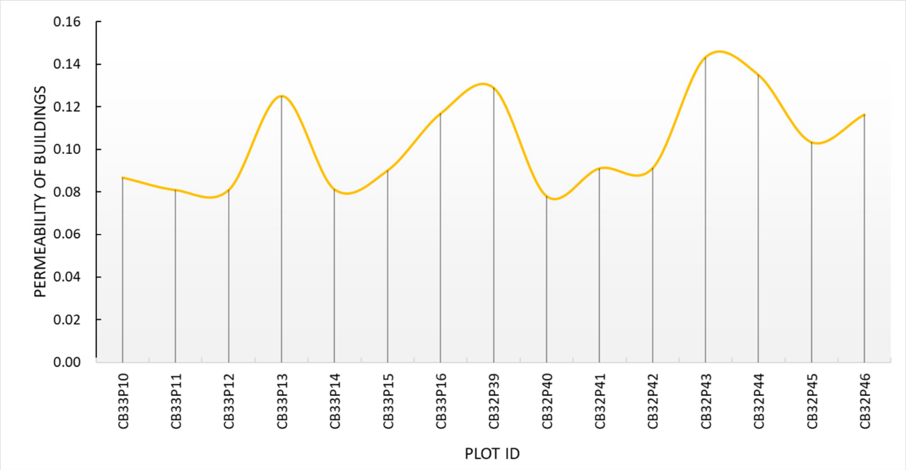


Figure 6.98. The Permeability value per building (plot) along 100 metres. Case C: yellow one street. The arrangement of plots based on their place on the site rather than in ascending or descending order.

Table 6.15. Yellow one street: case study C. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: C | Street: Yellow one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
C	Yellow	0.0002 - 0.0017	CB32	8	CB32P46	12.0000	5.0277	17.0277	1	1	17.1256	0.0584	0.0584	0.1164
									2	1	17.2359	0.0580	0.0580	
					CB32P45	12.0000	7.1997	19.1997	1	1	19.2866	0.0518	0.0518	0.1034
									2	1	19.3846	0.0516	0.0516	
					CB32P44	12.0000	2.6429	14.6429	1	1	14.7567	0.0678	0.0678	0.1349
									2	1	14.8845	0.0672	0.0672	
					CB32P43	12.0000	1.7733	13.7733	1	1	13.8942	0.0720	0.0720	0.1432
									2	1	14.0299	0.0713	0.0713	
					CB32P42	12.0000	9.7989	21.7989	1	1	21.8755	0.0457	0.0457	0.0912
									2	1	21.9619	0.0455	0.0455	
					CB32P41	12.0000	9.8117	21.8117	1	1	21.8883	0.0457	0.0457	0.0912
									2	1	21.9746	0.0455	0.0455	
					CB32P40	12.0000	13.4767	25.4767	1	1	25.5423	0.0392	0.0392	0.0782
									2	1	25.6163	0.0390	0.0390	
					CB32P39	12.0000	3.3382	15.3382	1	1	15.4469	0.0647	0.0647	0.1290
									2	1	15.5690	0.0642	0.0642	
			CB33	7	CB33P10	12.0000	10.9028	22.9028	1	1	22.9757	0.0435	0.0435	0.0869
									2	1	23.0580	0.0434	0.0434	
					CB33P11	12.0000	12.5716	24.5716	1	1	24.6396	0.0406	0.0406	0.0810
									2	1	24.7163	0.0405	0.0405	
					CB33P12	12.0000	12.5716	24.5716	1	1	24.6396	0.0406	0.0406	0.0810
									2	1	24.7163	0.0405	0.0405	
					CB33P13	12.0000	3.8210	15.8210	1	1	15.9264	0.0628	0.0628	0.1251
									2	1	16.0449	0.0623	0.0623	
					CB33P14	12.0000	12.4921	24.4921	1	1	24.5603	0.0407	0.0407	0.0813
									2	1	24.6373	0.0406	0.0406	
					CB33P15	12.0000	10.0530	22.0530	1	1	22.1287	0.0452	0.0452	0.0902
									2	1	22.2142	0.0450	0.0450	
					CB33P16	12.0000	13.3986	25.3986	1	1	25.4644	0.0393	0.0393	0.1169
									2	1	25.5387	0.0392	0.0392	
									3	1	26.0240	0.0384	0.0384	

6.4.3.4 Yellow Two Street: Case C (0.0002 – 0.0017)

The plot areas are varied for the 13 houses that are situated on the public edge. The metric depth is different from one house to other and labelled between 0.00 – 12.00 metres to create an intermediate space, which falls entirely within the semi-private realm. The street width is 12 metres, which is constituted by the houses with two storeys per house (Figures 6.99 and 6.100).

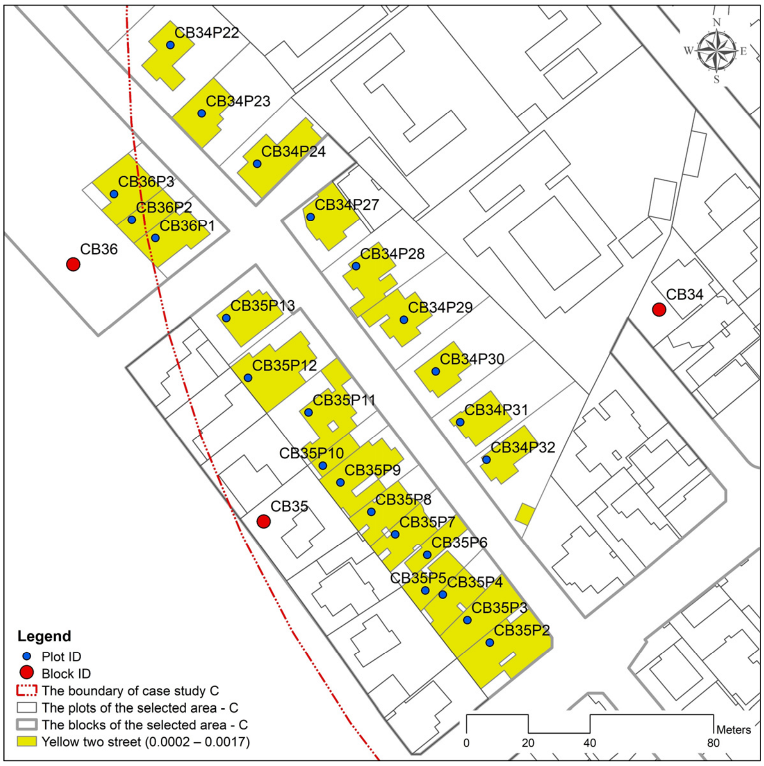


Figure 6.99. Yellow two street from case study C that displays a new street network pattern and plots that link to the public space through an intermediate space, which is represented as a metric depth. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 6.100. A yellow two street: Case C. Source: Photographed by author's team, 08/ Dec/2016.

The constitutedness of the segment is calculated by summing the permeability of houses and then dividing this by the total number of these houses (Figure 6.101 and Table 6.16). Based on the study's approach, the permeability and constitutedness values are:

$$Permeability\ of\ yellow\ two\ street\colon Case\ C\ (P_{St}) \rightarrow \sum_{P=1}^{13} P_P = 1.48548$$

$$Constitutedness\ of\ of\ yellow\ two\ street\colon Case\ C\ (C_{St}) = \frac{1.48548}{13} = 0.11427$$

Figure 6.101 shows that three plots have the same permeability value: CB34P28, CB34P29, and CB34P30, while the values for CB34P31, CB35P11 and CB35P12 are close to each other. The graphics line can be represented as an interlinked edge between the private and public.

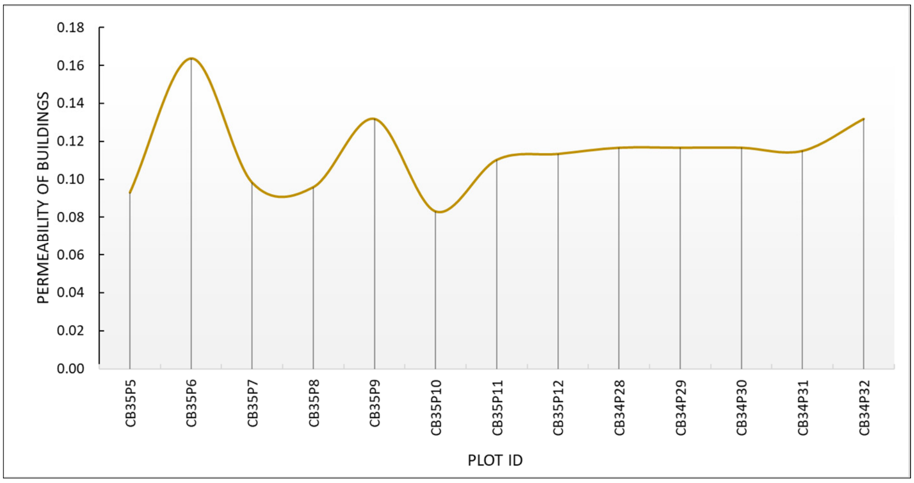
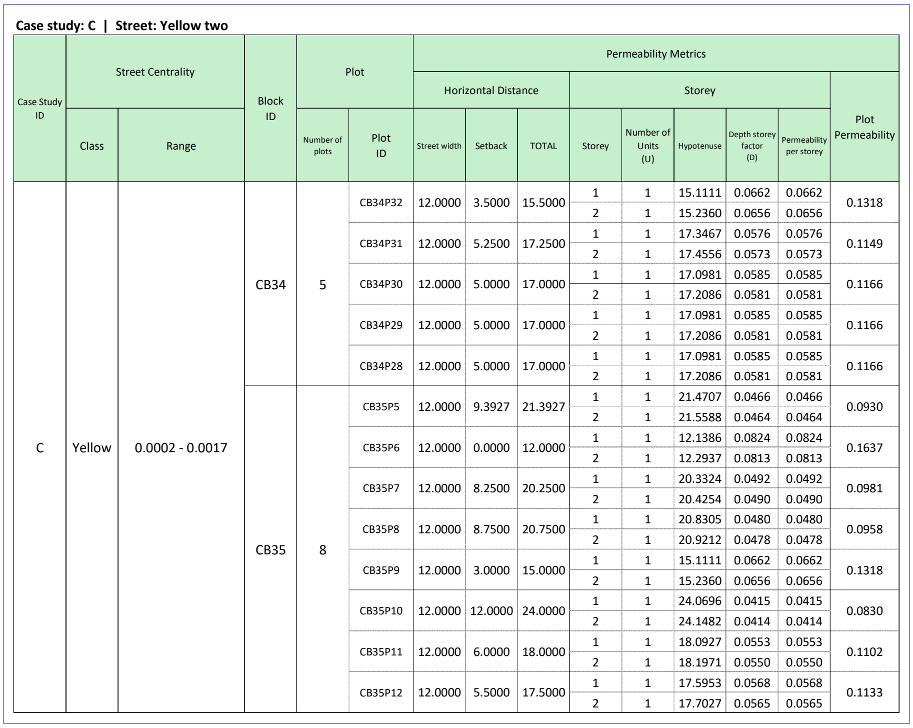


Figure 6.101. The Permeability value per building (plot) along the 100 metres. Case C: yellow two street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

Table 6.16. Yellow two street: case study C. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.



Case study: C | Street: Yellow two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
C	Yellow	0.0002 - 0.0017	CB34	5	CB34P32	12.0000	3.5000	15.5000	1	1	15.1111	0.0662	0.0662	0.1318
									2	1	15.2360	0.0656	0.0656	
					CB34P31	12.0000	5.2500	17.2500	1	1	17.3467	0.0576	0.0576	0.1149
									2	1	17.4556	0.0573	0.0573	
					CB34P30	12.0000	5.0000	17.0000	1	1	17.0981	0.0585	0.0585	0.1166
									2	1	17.2086	0.0581	0.0581	
					CB34P29	12.0000	5.0000	17.0000	1	1	17.0981	0.0585	0.0585	0.1166
									2	1	17.2086	0.0581	0.0581	
					CB34P28	12.0000	5.0000	17.0000	1	1	17.0981	0.0585	0.0585	0.1166
									2	1	17.2086	0.0581	0.0581	
			CB35	8	CB35P5	12.0000	9.3927	21.3927	1	1	21.4707	0.0466	0.0466	0.0930
									2	1	21.5588	0.0464	0.0464	
					CB35P6	12.0000	0.0000	12.0000	1	1	12.1386	0.0824	0.0824	0.1637
									2	1	12.2937	0.0813	0.0813	
					CB35P7	12.0000	8.2500	20.2500	1	1	20.3324	0.0492	0.0492	0.0981
									2	1	20.4254	0.0490	0.0490	
					CB35P8	12.0000	8.7500	20.7500	1	1	20.8305	0.0480	0.0480	0.0958
									2	1	20.9212	0.0478	0.0478	
					CB35P9	12.0000	3.0000	15.0000	1	1	15.1111	0.0662	0.0662	0.1318
									2	1	15.2360	0.0656	0.0656	
					CB35P10	12.0000	12.0000	24.0000	1	1	24.0696	0.0415	0.0415	0.0830
									2	1	24.1482	0.0414	0.0414	
					CB35P11	12.0000	6.0000	18.0000	1	1	18.0927	0.0553	0.0553	0.1102
									2	1	18.1971	0.0550	0.0550	
					CB35P12	12.0000	5.5000	17.5000	1	1	17.5953	0.0568	0.0568	0.1133
									2	1	17.7027	0.0565	0.0565	

6.4.3.5 Red One Street: Case C (0.0017 – 0.1397)

Red one is a commercial street in the centre of the selected area. The adjacent buildings along the 100 metres witnessed a significant change where residential use was transformed into commercial use in order to benefit from street's characteristics. The selected street represents the changeable ability of the existing urban form in adopting a new use (Figure 6.102). The street is constituted by the short side of adjacent blocks. The segment includes 12 buildings; eight of which access the street directly, while the rest have a metric depth of 2.50 – 3.50 metres, and the street width is 20 metres. Furthermore, the number of storeys is different (1 – 4 floors) (Figure 6.103). The different impact of buildings along the 100 metres is evident in Figure 6.104; these images illustrate that the permeability line fluctuates and differs from one building to another. In this selected segment, the buildings' height is a crucial factor in formulating the permeability value and street width. Furthermore, the original use of these buildings was for residential purposes, but they were later exploited for different purposes.

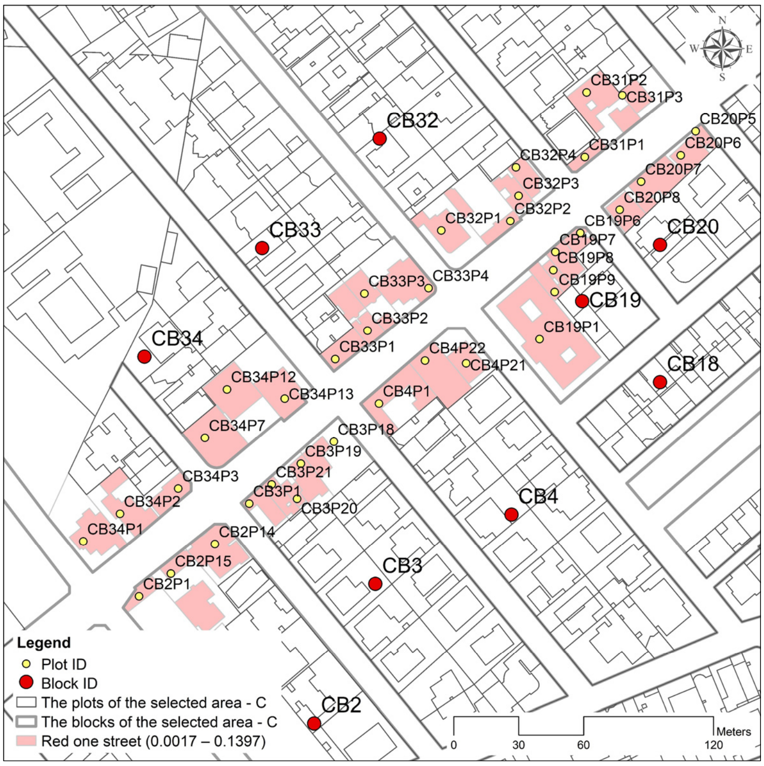


Figure 6.102. Red one street: C which illustrates a significant change from residential to commercial use to benefit from street's characteristics. Some landlords tend to cut off the adjacent part to the street for different reasons. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

In terms of the permeability value for each building, (P_P) is totalled, (Table 6.17 and Figure 105). The total value of (P_{St}):

$$Permeability\ of\ red\ one\ street\ |Case\ C\ (P_{St}) \rightarrow \sum_{P=1}^{12} P_P = 4.52691$$

$$Constitutedness\ of\ red\ one\ street\ |Case\ C\ (C_{St}) = \frac{4.52691}{12} = 0.37724$$

Along the 100 metre length, the permeability value for 12 buildings is 4.52691, and the constitutedness value is 0.37724.

Figure 6.103. Red one street: Case C. The houses tend to cut off the adjacent part, and the street is now used for commercial purposes. Source: Photographed by author's team, 05-08/ Jan/2017.

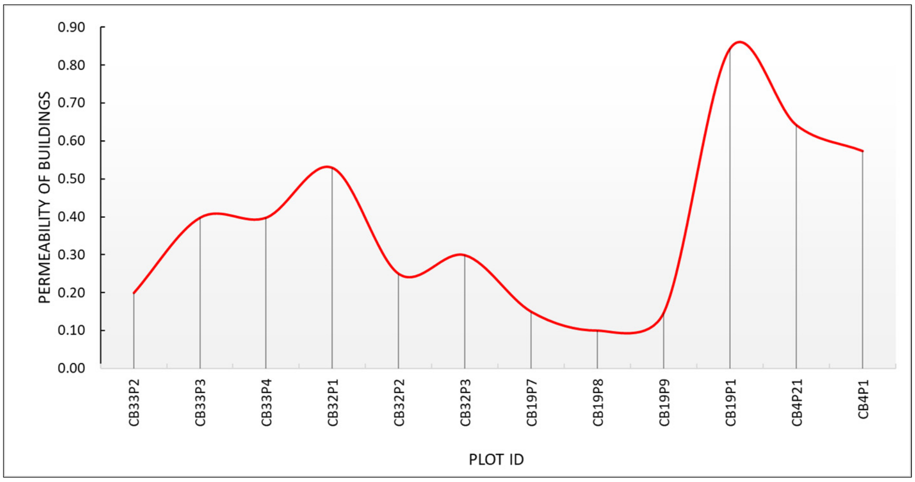


Figure 6.104. The Permeability value per building (plot) along 100 metres. Case C: red one street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

Table 6.17. Red one street: case study C. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: C | Street: Red one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
C	Red	0.0017 - 0.1397	CB33	3	CB33P2	20.00	0.00	20.00	1	3	20.0835	0.0498	0.1494	0.1989
									2	1	20.1776	0.0496	0.0496	
					CB33P3	20.00	0.00	20.00	1	5	20.0835	0.0498	0.2490	0.3976
									2	3	20.1776	0.0496	0.1487	
					CB33P4	20.00	0.00	20.00	1	6	20.0835	0.0498	0.2988	0.3979
									2	2	20.1776	0.0496	0.0991	
			CB32	3	CB32P1	20.00	2.50	22.50	1	6	22.5742	0.0443	0.2658	0.5290
									2	6	22.7975	0.0439	0.2632	
					CB32P2	20.00	0.00	20.00	1	5	20.0835	0.0498	0.2490	0.2490
					CB32P3	20.00	0.00	20.00	1	4	20.0835	0.0498	0.1992	0.2983
									2	2	20.1776	0.0496	0.0991	
			CB19	4	CB19P7	20.00	0.00	20.00	1	1	20.0835	0.0498	0.0498	0.1489
									2	2	20.1776	0.0496	0.0991	
					CB19P8	20.00	0.00	20.00	1	1	20.0835	0.0498	0.0498	0.0994
									2	1	20.1776	0.0496	0.0496	
					CB19P9	20.00	0.00	20.00	1	1	20.0835	0.0498	0.0498	0.1475
									2	1	20.1776	0.0496	0.0496	
									3	1	20.7885	0.0481	0.0481	
					CB19P1	20.00	3.50	23.50	1	10	23.5711	0.0424	0.4242	0.8447
									2	10	23.7850	0.0420	0.4204	
			CB4	2	CB4P21	20.00	2.50	22.50	1	3	22.5742	0.0443	0.1329	0.6421
									2	4	22.7975	0.0439	0.1755	
									3	4	23.4681	0.0426	0.1704	
									4	4	24.4904	0.0408	0.1633	
					CB4P1	20.00	2.50	22.50	1	8	22.5742	0.0443	0.3544	0.5737
									2	5	22.7975	0.0439	0.2193	

6.4.3.6 Red Two Street: Case C (0.0017 – 0.1397)

The second red street in this selected space is within the residential use area. There are 15 houses that have access to the street, represented through metric depth (Figure 6.105). The space that separates the public and private edge is classed as a semi-private area. The depth of the intermediate spaces differs from one house to other (0.00 – 14.00 metres). Excepting one house, the two storey height is dominant, and the street is 11 metres wide (Figures 6.105 and 6.106).

Figure 6.105. A red two street: Case C. It shows residential edge in which involve different metric depth from the public edge. Source: Photographed by author’s team, 08/ Jan/2017.

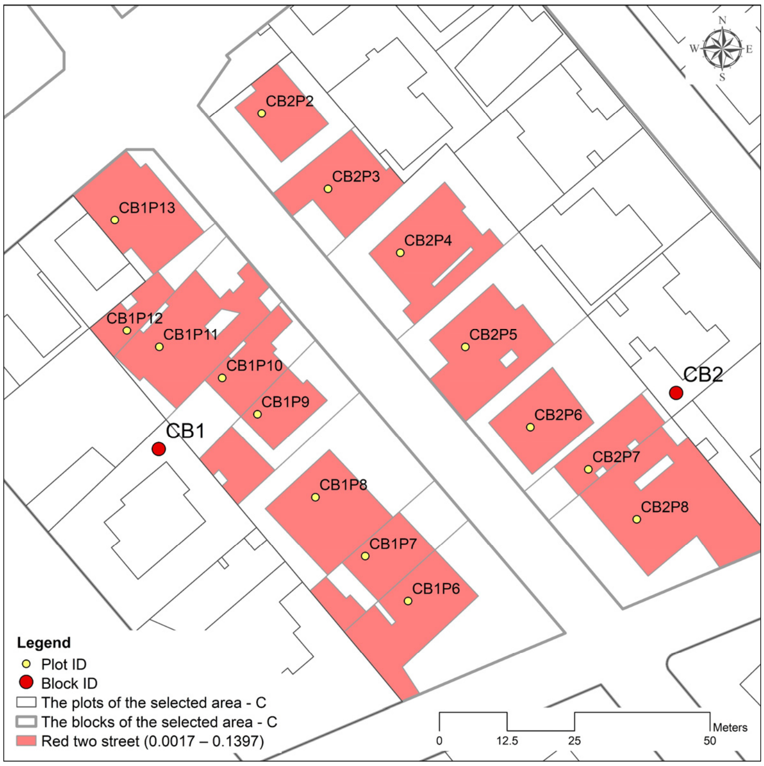


Figure 6.106. A red two street from case study C that is occupied by residential houses on both sides. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Based on the MCA analysis, this street represents a high value of betweenness regardless of the street type and function. The centrality measurement deals with the relative position of a link and its relationship with other links and nodes in the network. According to this study's method, the permeability per storey (P_S) is computed and then for each individual plot (P_P) (Table 6.18 and Figure 6.107). The permeability value of the selected segment (P_{St}) is:

$$Permeability\ of\ red\ two\ street: Case\ C\ (P_{St}) \rightarrow \sum_{P=1}^{15} P_P = 1.90575$$

The constitutedness value is the permeability of the street (P_{St}) divided by the total number of houses in this segment:

$$Constitutedness\ of\ red\ two\ street: Case\ C\ (C_{St}) = \frac{1.90575}{15} = 0.12705$$

Although the selected segment in Figure 6.107 is employed for residential use, and street width is constant, the permeability value is varied from one house to another. The fluctuation in permeability occurred due to the variances in metric depth, where each house is setback at different distances. In this sense, metric depth is not only a response to the private realm, but also formulates the street edge. The main character of the street edge not only comes from the dividing line between the public and private, which is represented by the plot boundary, but also from the building edge itself.

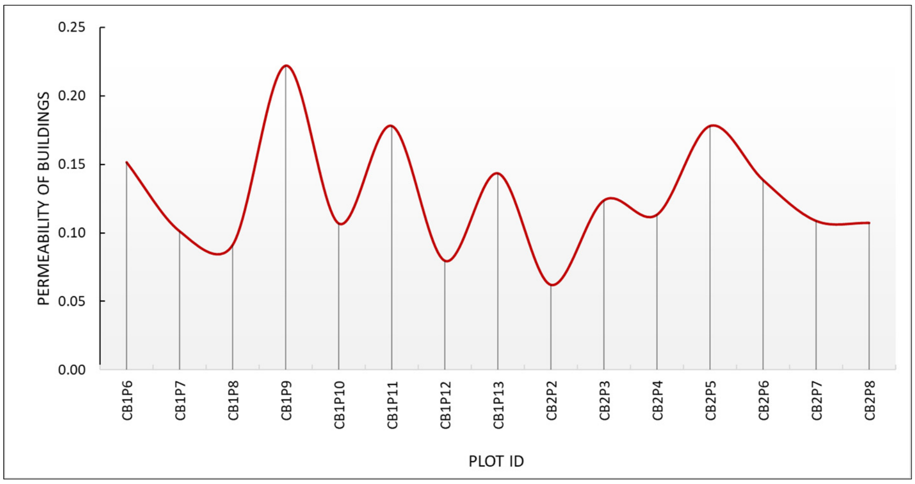


Figure 6.107. A chart outlines the value of Permeability per building (plot) along 100 meters. Case C – red two street. The arrangement of plots based on their place on the site rather than ascending and descending order.

Table 6.18. Red two street: case study C. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: C | Street: Red two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
C	Red	0.0017 - 0.1397	CB1	8	CB1P6	11.00	2.00	13.00	1	1	13.1280	0.0762	0.0762	0.1515
									2	1	13.2716	0.0753	0.0753	
					CB1P7	11.00	8.63	19.63	1	1	19.7165	0.0507	0.0507	0.1012
									2	1	19.8124	0.0505	0.0505	
					CB1P8	11.00	10.80	21.80	1	1	21.8815	0.0457	0.0457	0.0912
									2	1	21.9679	0.0455	0.0455	
					CB1P9	11.00	2.00	13.00	1	1	13.1280	0.0762	0.0762	0.2220
									2	1	13.2716	0.0753	0.0753	
									3	1	14.1831	0.0705	0.0705	
					CB1P10	11.00	7.58	18.58	1	1	18.6721	0.0536	0.0536	0.1068
									2	1	18.7733	0.0533	0.0533	
					CB1P11	11.00	0.00	11.00	1	1	11.1510	0.0897	0.0897	0.1780
									2	1	11.3196	0.0883	0.0883	
					CB1P12	11.00	14.00	25.00	1	1	25.0668	0.0399	0.0399	0.0797
									2	1	25.1423	0.0398	0.0398	
					CB1P13	11.00	2.75	13.75	1	1	13.8711	0.0721	0.0721	0.1435
									2	1	14.0070	0.0714	0.0714	
			CB2	7	CB2P2	11.00	5.00	16.00	1	1	16.1042	0.0621	0.0621	0.0621
					CB2P3	11.00	5.00	16.00	1	1	16.1042	0.0621	0.0621	0.1237
									2	1	16.2214	0.0616	0.0616	
					CB2P4	11.00	6.50	17.50	1	1	17.5953	0.0568	0.0568	0.1133
									2	1	17.7027	0.0565	0.0565	
					CB2P5	11.00	0.00	11.00	1	1	11.1510	0.0897	0.0897	0.1780
									2	1	11.3196	0.0883	0.0883	
					CB2P6	11.00	3.25	14.25	1	1	14.3669	0.0696	0.0696	0.1386
									2	1	14.4982	0.0690	0.0690	
					CB2P7	11.00	7.25	18.25	1	1	18.3414	0.0545	0.0545	0.1087
									2	1	18.4444	0.0542	0.0542	
					CB2P8	11.00	7.50	18.50	1	1	18.5902	0.0538	0.0538	0.1073
									2	1	18.6918	0.0535	0.0535	

6.4.4 Case Study D: Loop-grid Pattern

Case study D can be classified as more modern than the former three cases A, B, and C. The street network follows a loop-grid pattern, and the plot area and block boundary is homologous. The selected area was planned and designed according to the plot-block system, and the street network was an inevitable result of the intermediate space that separates a private and public space. The main streets of D are the widest in comparison with the previous three cases, while the connected streets that reach between blocks are diversified in length and width. Semi-looped or U shaped streets are evident in this example. The dominant use of this area is for residential purposes, and the adjacent edge of main streets involve different types of use and activity (Figure 6.108).

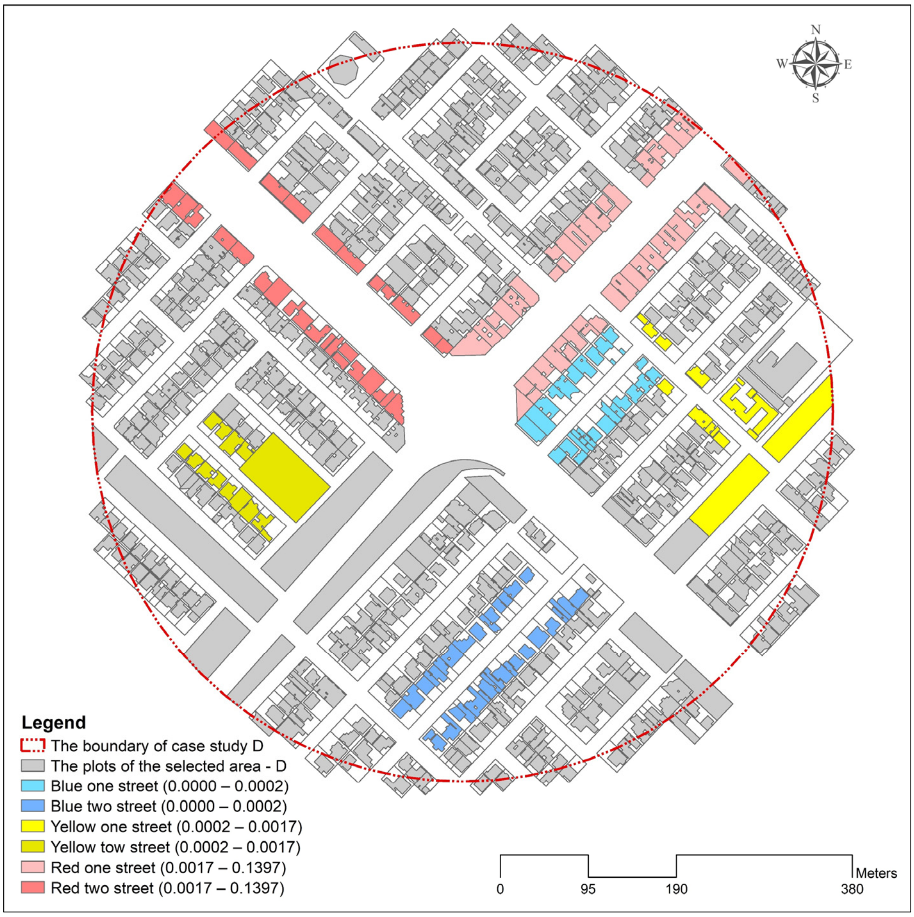


Figure 6.108. A map of the selected street of case study D: loop-grid pattern. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

6.4.4.1 Blue One Street: Case D (0.0000 – 0.0002)

This example comprises 18 houses that are placed on both sides of the street directly opposite each other along the 100 metres (Figure 6.109). These houses reach the adjacent edge through an intermediate space represented as a metric depth and introduced by two values (0.00 – 16.50 metres). The street width is 14.00 metres for all units except three; DB24P3, DB24P4 and DB24P5, where the width was 14.50 metres. The layout of plots is upright on the public edge; they have two different plot dimensions; plots within DB24 include 15.00 street edge × 34.00 metre depth, and DB31 consisted of 15.00 street edge × 32.00 metre depth; as such, they share the same street edge.

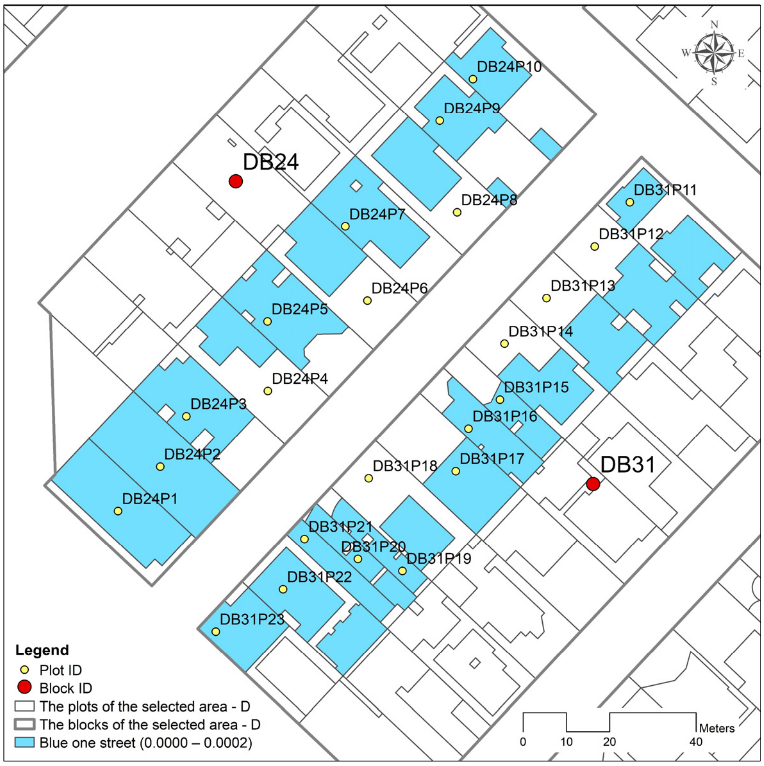


Figure 6.109. Blue one street from case study D. It Illustrates a modern alley and wide width where the metric depth is varied. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

The three plots (DB31P19, DB31P20, and DB31P21) belong to the same plot, which are divided into these sub-plots. Residential use is the dominant occupation, where houses often consist of two storeys and are positioned on regular plots to face the street with semi-private spaces (Figures 6.109 and 6.110).

Figure 6.110. A blue one street: Case D. Source: Photographed by author’s team, 12/ Dec/2016.

According to the study's method, the intervisibility (I_S) for each storey is used within the permeability (P_S), which is then used to calculate the permeability of a building (P_P) as the total number of (P_S) (Table 6.19 and Figure 6.111). The permeability value for the selected (P_{St}) street in this sample:

$$Permeability\ of\ blue\ one\ street\colon Case\ D\ (P_{St})\ \rightarrow \sum_{P=1}^{18} P_P\ =\ 1.55361$$

$$Constitutedness\ of\ blue\ one\ street\colon Case\ D\ (C_{St}) = \frac{1.55361}{18} =\ 0.08631$$

The permeability values of plots are less variable (Figure 6.111) where all have an approximate degree that ranged from 0.0643 to 0.0959. In comparison, four plots share a close permeability value (0.1118 - 0.1410) namely; DB31P19, Db31P20, DB21P21, and DB31P22. These are sub-plots as they previously belonged to one plot area, and their highest permeability value arises due to the reduced metric depth from the street edge.

Table 6.19. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building. Blue one street: case study D.

Case study: D | Street: Blue one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
D	Blue	0.0000 - 0.0002		7	DB24P3	14.50	9.50	24.00	1	1	24.0696	0.0415	0.0415	0.0830
									2	1	24.1482	0.0414	0.0414	
					DB24P4	14.50	16.50	31.00	1	1	31.0539	0.0322	0.0322	0.0643
									2	1	31.1149	0.0321	0.0321	
					DB24P5	14.50	12.00	26.50	1	1	26.5630	0.0376	0.0376	0.0752
									2	1	26.6343	0.0375	0.0375	
					DB24P6	14.00	16.00	30.00	1	1	30.5548	0.0327	0.0327	0.0654
									2	1	30.6167	0.0327	0.0327	
					DB24P7	14.00	8.50	22.50	1	1	23.0726	0.0433	0.0433	0.0865
									2	1	23.1546	0.0432	0.0432	
					DB24P8	14.00	12.50	26.50	1	1	27.0619	0.0370	0.0370	0.0738
									2	1	27.1318	0.0369	0.0369	
					DB24P9	14.00	16.00	30.00	1	1	30.5548	0.0327	0.0327	0.0654
									2	1	30.6167	0.0327	0.0327	
			DB31	11	DB31P12	14.00	15.75	29.75	1	1	29.8062	0.0336	0.0336	0.0670
									2	1	29.8697	0.0335	0.0335	
					DB31P13	14.00	14.25	28.25	1	1	28.3091	0.0353	0.0353	0.0706
									2	1	28.3760	0.0352	0.0352	
					DB31P14	14.00	10.50	24.50	1	1	24.5682	0.0407	0.0407	0.0813
									2	1	24.6452	0.0406	0.0406	
					DB31P15	14.00	12.72	26.72	1	1	26.7834	0.0373	0.0373	0.0746
									2	1	26.8541	0.0372	0.0372	
					DB31P16	14.00	6.72	20.72	1	1	20.8045	0.0481	0.0481	0.0959
									2	1	20.8953	0.0479	0.0479	
					DB31P17	14.00	15.00	29.00	1	1	29.0576	0.0344	0.0344	0.0688
									2	1	29.1227	0.0343	0.0343	
					DB31P18	14.00	14.50	28.50	1	1	28.5586	0.0350	0.0350	0.0700
									2	1	28.6249	0.0349	0.0349	
					DB31P19	14.00	3.74	17.74	1	1	17.8369	0.0561	0.0561	0.1118
									2	1	17.9428	0.0557	0.0557	
					DB31P20	14.00	0.59	14.59	1	1	14.7069	0.0680	0.0680	0.1354
									2	1	14.8351	0.0674	0.0674	
					DB31P21	14.00	0.00	14.00	1	1	14.1190	0.0708	0.0708	0.1410
									2	1	14.2525	0.0702	0.0702	
					DB31P22	14.00	2.00	16.00	1	1	16.1042	0.0621	0.0621	0.1237
									2	1	16.2214	0.0616	0.0616	

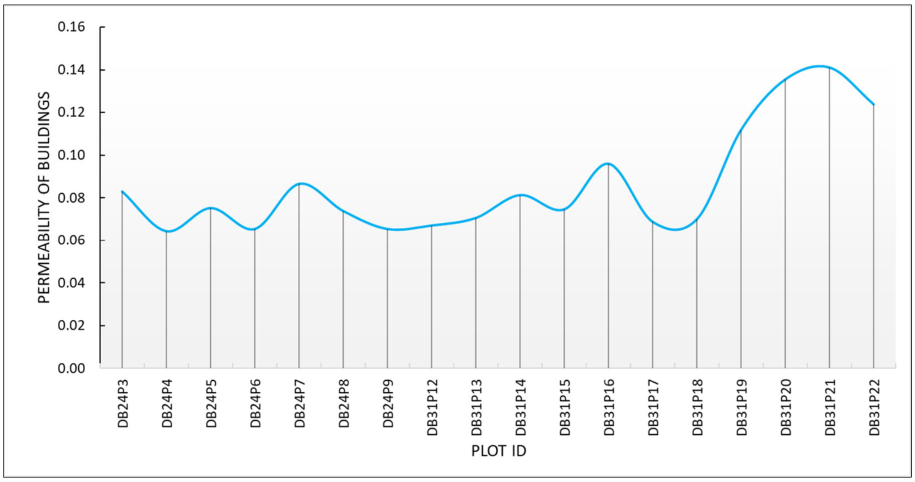


Figure 6.111. A chart shows the value of Permeability per building (plot) along 100 meters. Case D – blue one street. The arrangement of plots based on their place on the site rather than ascending and descending order.

6.4.4.2 Blue Two Street: Case D (0.0000 – 0.0002)

Like the preceding samples, this segment represents a straight link that is defined by two rows of continuous houses on both sides. Within a 100-metre length and 15.50 metres of street width, there are 14 homes that face each other. These are placed at the rear of the plot from the street edge at a different metric depth (0.00 – 14.50 metres). The houses often consist of two floors (Figures 6.112 and 6.113).

Figure 6.112. Blue two street from case study D. It represents a straight street that is defined by two rows of continuous houses on both its sides Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

In this segment, the plot dimensions are (20 adjacent the street edge × 30 as the depth). Furthermore, some exemptions arise where one plot is divided into three sub-plots, such as DB36P30, DB36P31, and DB31P32 (Figures 6.112 and 6.113). The difference in the permeability value for most plots is clear (Figure 6.114). As the street width is constant in this example, the main factor that affects the degree of permeability is the metric depth.

Figure 6.113. A blue two street: Case D. Source: Photographed by author's team, 13/ Dec/2016.

Based on this study's method, the adjacent homes have access to the street edge through their main entrances, and the permeability (P_S) for storeys derive from the intervisibility per storey (I_S) which is multiplied by the number of its units. The permeability for one house (P_B) is the total of (P_S), and for selected street (P_{St}) it is the sum of (P_P) (Figure 6.114 and Table 6.20).

$$Permeability\ of\ blue\ two\ street{:}\ Case\ D\ \ (P_{St}) \rightarrow \sum_{P=1}^{14} P_P\ =\ 1.22756$$

$$Constitutedness\ of\ blue\ two\ street{:}\ Case\ D = \frac{1.22756}{14} =\ 0.08768$$

The number of storeys and their units are similar for most houses except DB35P7 which consists of three floors. Like the previous example (blue one: D), the new sub-plots increase the permeability value not only for a single plot, but also for the entire selected street. Also, the newest sub-plots emerged from the division of original plots and tend to adopt a small metric depth. Sometimes the depth is zero, and this due to the new plot's area being too small to meet all requirements.

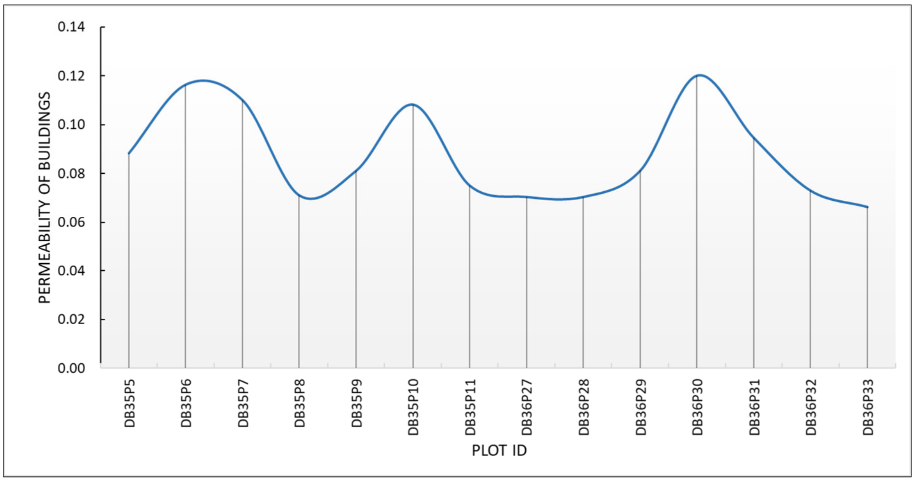
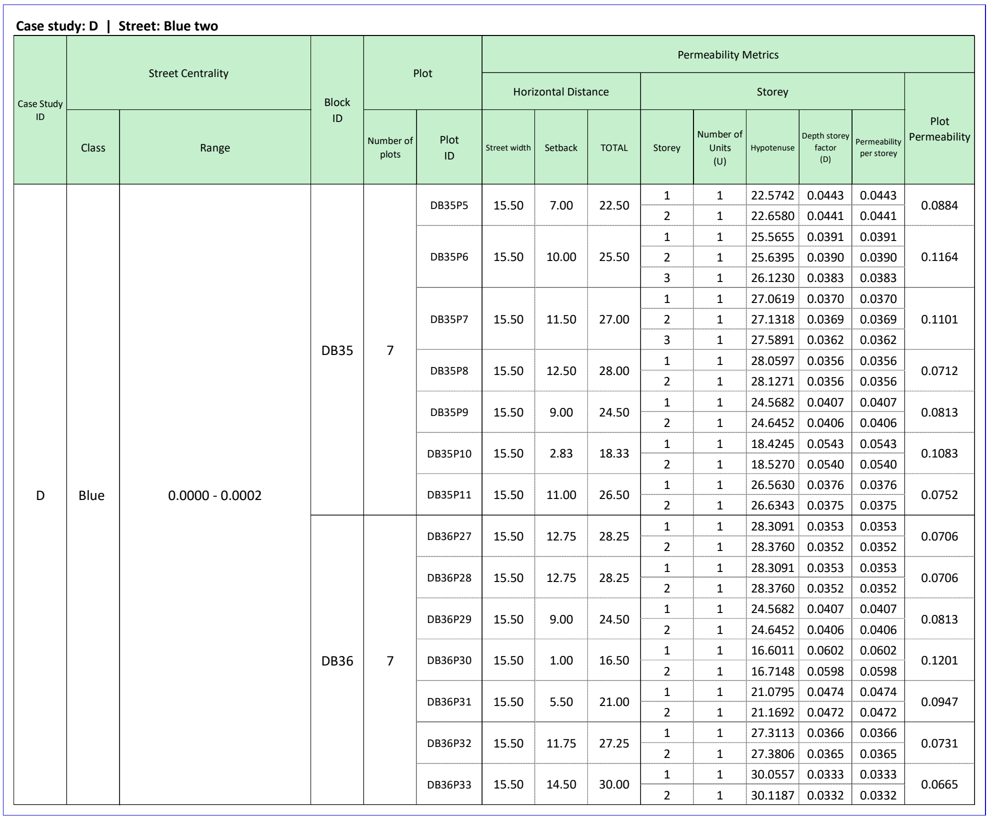


Figure 6.114. The Permeability value per building (plot) along 100 metres. Case D: blue two street. The arrangement of plots based on their place on the site rather than in ascending or descending order.

Table 6.20. Blue two street: case study D. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.



Case study: D | Street: Blue two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
D	Blue	0.0000 - 0.0002	DB35	7	DB35P5	15.50	7.00	22.50	1	1	22.5742	0.0443	0.0443	0.0884
									2	1	22.6580	0.0441	0.0441	
					DB35P6	15.50	10.00	25.50	1	1	25.5655	0.0391	0.0391	0.1164
									2	1	25.6395	0.0390	0.0390	
									3	1	26.1230	0.0383	0.0383	
					DB35P7	15.50	11.50	27.00	1	1	27.0619	0.0370	0.0370	0.1101
									2	1	27.1318	0.0369	0.0369	
									3	1	27.5891	0.0362	0.0362	
					DB35P8	15.50	12.50	28.00	1	1	28.0597	0.0356	0.0356	0.0712
									2	1	28.1271	0.0356	0.0356	
					DB35P9	15.50	9.00	24.50	1	1	24.5682	0.0407	0.0407	0.0813
									2	1	24.6452	0.0406	0.0406	
					DB35P10	15.50	2.83	18.33	1	1	18.4245	0.0543	0.0543	0.1083
									2	1	18.5270	0.0540	0.0540	
					DB35P11	15.50	11.00	26.50	1	1	26.5630	0.0376	0.0376	0.0752
									2	1	26.6343	0.0375	0.0375	
			DB36	7	DB36P27	15.50	12.75	28.25	1	1	28.3091	0.0353	0.0353	0.0706
									2	1	28.3760	0.0352	0.0352	
					DB36P28	15.50	12.75	28.25	1	1	28.3091	0.0353	0.0353	0.0706
									2	1	28.3760	0.0352	0.0352	
					DB36P29	15.50	9.00	24.50	1	1	24.5682	0.0407	0.0407	0.0813
									2	1	24.6452	0.0406	0.0406	
					DB36P30	15.50	1.00	16.50	1	1	16.6011	0.0602	0.0602	0.1201
									2	1	16.7148	0.0598	0.0598	
					DB36P31	15.50	5.50	21.00	1	1	21.0795	0.0474	0.0474	0.0947
									2	1	21.1692	0.0472	0.0472	
					DB36P32	15.50	11.75	27.25	1	1	27.3113	0.0366	0.0366	0.0731
									2	1	27.3806	0.0365	0.0365	
					DB36P33	15.50	14.50	30.00	1	1	30.0557	0.0333	0.0333	0.0665
									2	1	30.1187	0.0332	0.0332	

6.4.4.3 Yellow One Street: Case D (0.0002 – 0.0017)

The shortest dimension of blocks constitutes the selected street in this sample. It has a fragmented link on both edges, where each short side of a block sequentially faces the other on the opposite side, to shape a T-shape intersection. Along the 100 metre length, there are just six houses that are located at the corner of each block, with some exceptions for DB27 as a school, DB33 as one house, and DB54 and DB55 which are open areas. The street width is

15.00 metres, and the metric depth differs between the plots (0.00 – 8.50 metres) (Figure 6.115). The number of units is often one for each floor, where the houses encompass just two storeys. Furthermore, owners of some houses tend to cut an original plot into two or three parts as a new sub-plot; thus, the dimensions of the original plot are 15.00 × 33.00, or 32.00, 32.50 metres. These plots face the adjacent edge through their long dimension (Figure 6.116).

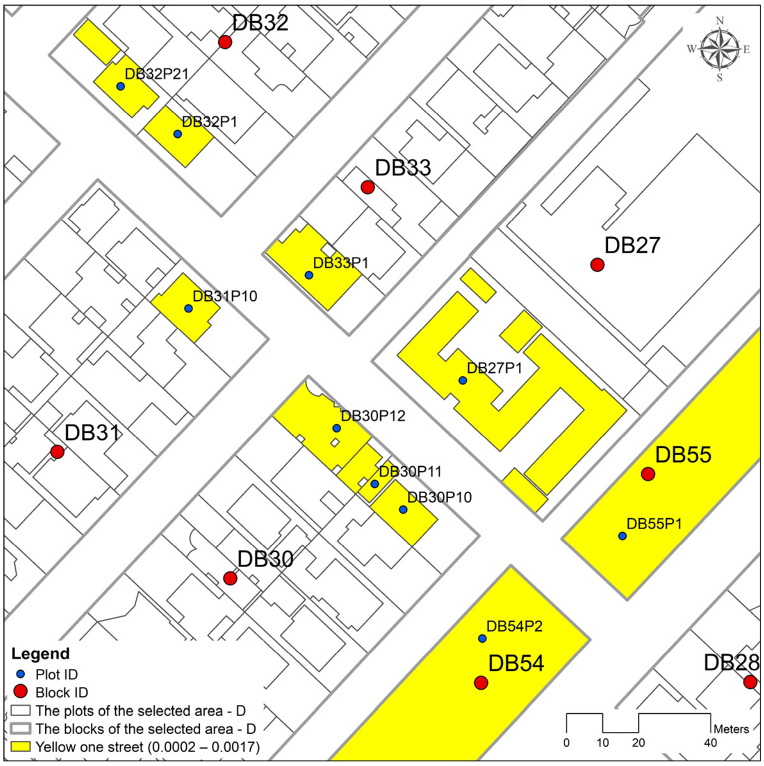


Figure 6.115. Yellow one street from case study D where the shortened dimension of blocks constitutes the selected street. It appears as a fragmented street at both edges. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 6.116. Yellow one street: Case D. Source: Photographed by author's team, 12/ Dec/2016.

The permeability of the house (P_{B}) is the total permeability value for each floor (P_{S}) that is analysed as an inverse intervisibility value (I_{S}) and multiplied by the number of units (Table 6.21 and Figure 6.117). The permeability value for selected street:

$$Permeability\ of\ yellow\ one\ street{:}\ Case\ D\ (P_{St}) \rightarrow \sum_{B=1}^{6} P_B = \ 1.94009$$

$$Constitutedness\ of\ yellow\ one\ street{:}\ Case\ D\ (C_{St}) = \frac{1.94009}{6} = \ 0.32335$$

The low density of houses in this sector and the constitution of the street edge is a significant factor in shaping the spatial configuration of a street and how to respond to the private edge. Figure 6.117 and Table 6.21 illustrate that the degree of permeability for all plots ranged from 0.1019 - 0.1318, while for plot DB27P1, (P_P) is 1.3576.

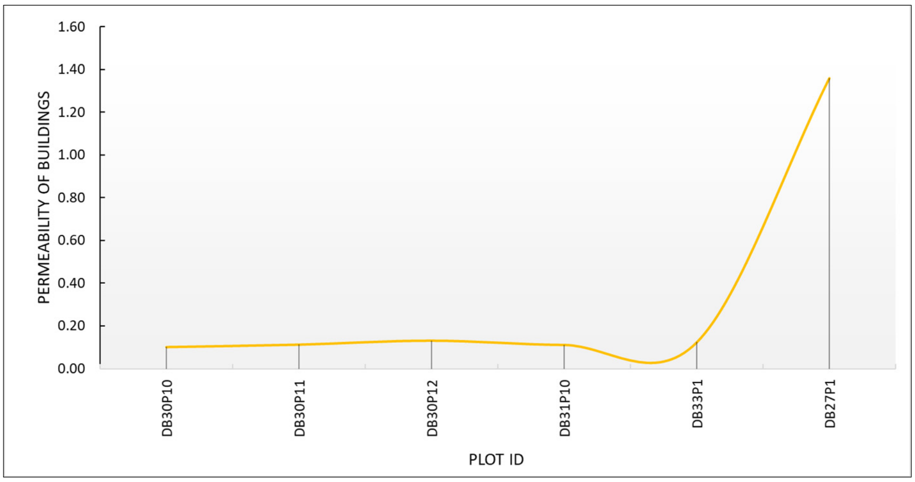


Figure 6.117. A chart illustrates the value of Permeability per building (plot) along 100 meters. Case D – yellow one street. The arrangement of plots based on their place on the site rather than ascending and descending order.

Table 6.21. Yellow one street: case study D. The Intervisibility values as (Depth Storey Factor) and Permeability for each storey of a building.

Case study: D | Street: Yellow one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
D	Yellow	0.0002 - 0.0017	DB30	3	DB30P10	15.00	4.50	19.50	1	1	19.5856	0.0511	0.0511	0.1019
									2	1	19.6821	0.0508	0.0508	
					DB30P11	15.00	2.50	17.50	1	1	17.5953	0.0568	0.0568	0.1133
									2	1	17.7027	0.0565	0.0565	
					DB30P12	15.00	0.00	15.00	1	1	15.1111	0.0662	0.0662	0.1318
									2	1	15.2360	0.0656	0.0656	
			DB31	1	DB31P10	15.00	2.75	17.75	1	1	17.8440	0.0560	0.0560	0.1118
									2	1	17.9498	0.0557	0.0557	
			DB33	1	DB33P1	15.00	1.00	16.00	1	1	16.1042	0.0621	0.0621	0.1237
									2	1	16.2214	0.0616	0.0616	
			DB27	1	DB27P1	15.00	8.50	23.50	1	32	23.5711	0.0424	1.3576	1.3576

6.4.4.4 Yellow Two Street: Case D (0.0002 – 0.0017)

Yellow two is a typical street that represents a modern network pattern. It has a straight line and an orthogonal layout that constitutes both the private and public edge. The private edge is shaped by the profile of buildings that are recessed to create an intermediate space as a metric depth between the street and private space. In this segment, 11 houses face each other directly and are separated by two spaces; the street and the setback, where the street width is 12.00 metres, and the metric depth are varies (7.75 – 10.00 metres) (Figure 6.118). Two storeys are a typical height for the selected houses, and all share the same plot size and dimensions (16.00 × 25.00 metres) (Figure 6.119).

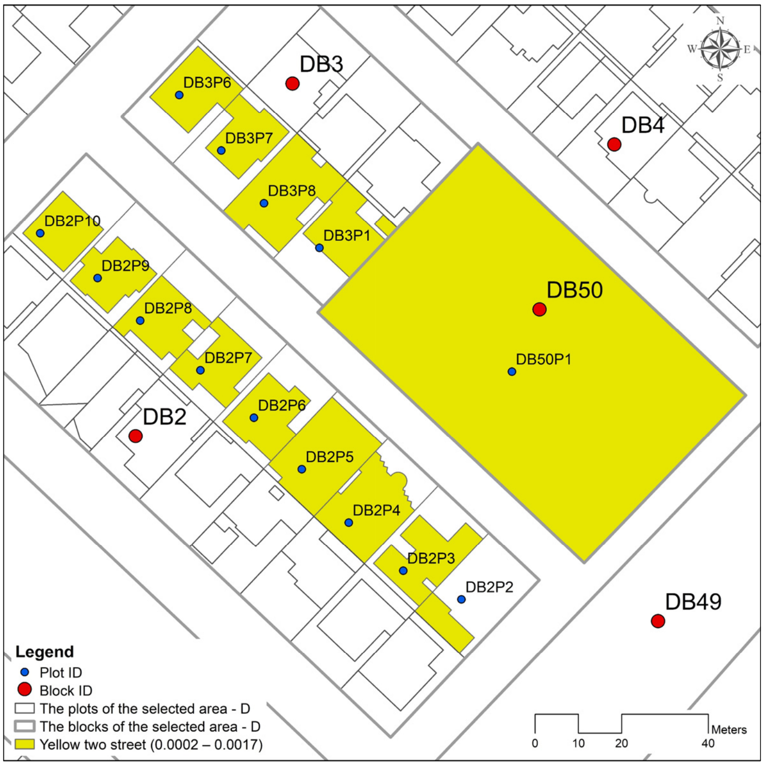


Figure 6.118. Yellow two street from case study D where the private edge is shaped by the profile of buildings that are recessed to create an intermediate space as a metric depth between the street and private space. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 6.119. Yellow two street: Case D. Source: Photographed by author's team, 13/ Dec/2016.

Based on the study's approach, the permeability value along 100 metres:

$$\mathit{Permeability\ of\ yellow\ two\ street}\ (P_{St}) \rightarrow \sum_{B=1}^{11} P_B = 1.20467$$

$$Constitutedness\ of\ yellow\ two\ street\ (C_{St}) = \frac{1.20467}{11} = \ 0.10952$$

In Figure 6.120, two plots show a high permeability value (0.1410), namely DB2P5 and DB3P8. These two houses have a minimum metric depth of 2.00 metres. Meanwhile, amongst the remaining houses, the permeability is between 0.0904 and 0.1262 (Table 6.22).

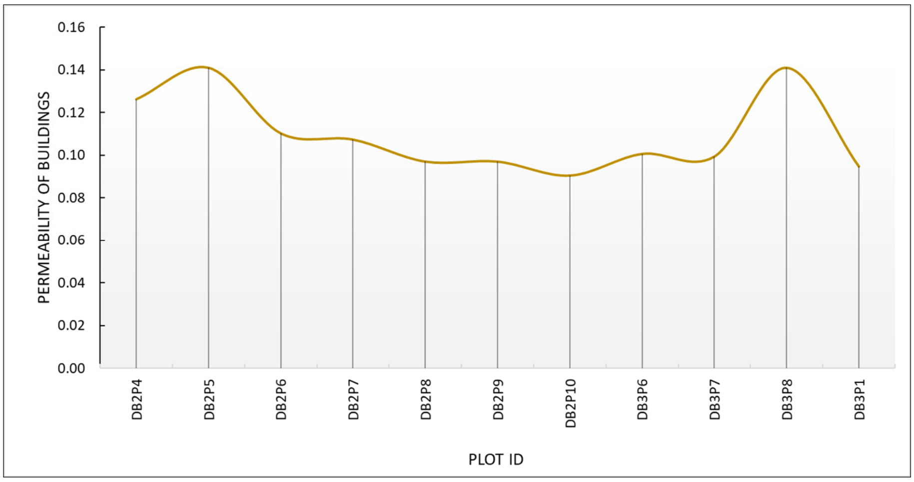


Figure 6.120. The Permeability value per building (plot) along 100 metres. Case D – yellow two street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

Table 6.22. Yellow two street: case study B. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: D | Street: Yellow two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
D	Yellow	0.0002 - 0.0017	DB2	7	DB2P4	12.0000	3.6805	15.6805	1	1	15.7868	0.0633	0.0633	0.1262
									2	1	15.9064	0.0629	0.0629	
					DB2P5	12.0000	2.0000	14.0000	1	1	14.1190	0.0708	0.0708	0.1410
									2	1	14.2525	0.0702	0.0702	
					DB2P6	12.0000	6.0000	18.0000	1	1	18.0927	0.0553	0.0553	0.1102
									2	1	18.1971	0.0550	0.0550	
					DB2P7	12.0000	6.5000	18.5000	1	1	18.5902	0.0538	0.0538	0.1073
									2	1	18.6918	0.0535	0.0535	
					DB2P8	12.0000	8.5000	20.5000	1	1	20.5814	0.0486	0.0486	0.0970
									2	1	20.6733	0.0484	0.0484	
					DB2P9	12.0000	8.5000	20.5000	1	1	20.5814	0.0486	0.0486	0.0970
									2	1	20.6733	0.0484	0.0484	
					DB2P10	12.0000	10.0000	22.0000	1	1	22.0759	0.0453	0.0453	0.0904
									2	1	22.1615	0.0451	0.0451	
			DB3	4	DB3P6	12.0000	7.7500	19.7500	1	1	19.8345	0.0504	0.0504	0.1006
									2	1	19.9298	0.0502	0.0502	
					DB3P7	12.0000	8.0000	20.0000	1	1	20.0835	0.0498	0.0498	0.0994
									2	1	20.1776	0.0496	0.0496	
					DB3P8	12.0000	2.0000	14.0000	1	1	14.1190	0.0708	0.0708	0.1410
									2	1	14.2525	0.0702	0.0702	
					DB3P1	12.0000	9.0000	21.0000	1	1	21.0795	0.0474	0.0474	0.0947
									2	1	21.1692	0.0472	0.0472	

6.4.4.5 Red One Street: Case D (0.0017 – 0.1397)

One of the main routes for the selected area is red one street that accommodates commercial use and links the different connecting streets. The street includes several diversified activities, services and uses, besides an essential road for automobile flow. There are 14 buildings located on both sides of the 45.00 metre width and 100 metre length. These buildings leave about 2.50 metres (as a metric depth) from the adjacent edge and without a hard border; this allows people direct access. Both the street width and metric depth, in this case, is constant, while the buildings' height differs from one to another with a range of 1 – 6 storeys. The upper floors cover all the plot, while at the street level the ground floor is recessed (Figures 6.121 and 6.122).

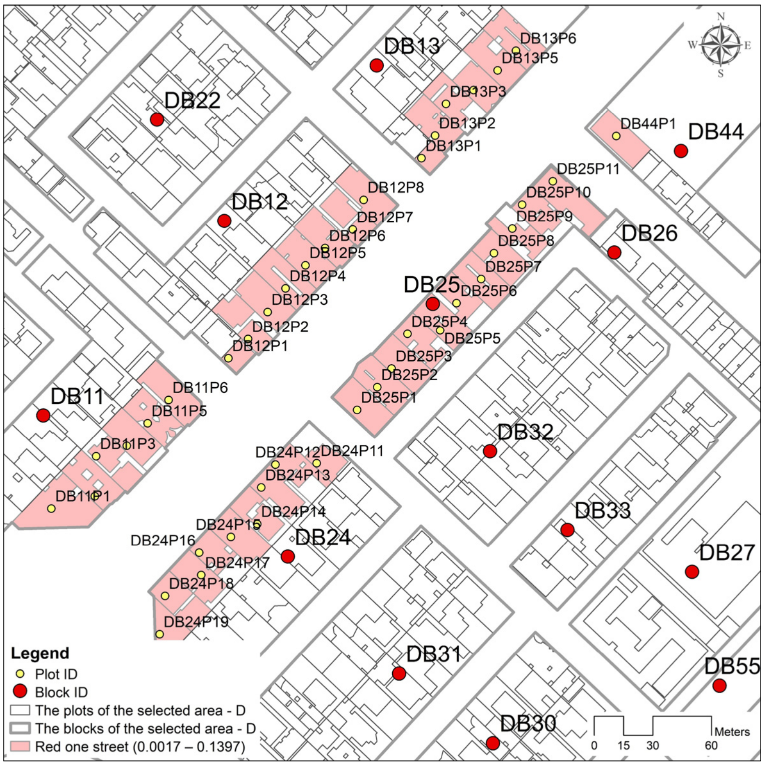


Figure 6.121. Red one street from case study D. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

Figure 6.122. Red one street: Case D. Source: Photographed by author's team, 12/ Dec/2016.

The permeability of a building (*P_B*) is the total permeability per storey (*P_S*) examined as an inverse intervisibility value (*I_S*) and multiplied by the number of units (Table 6.23 and Figure 6.123). The permeability value for the selected street (*P_{St}*):

$$Permeability\ of\ red\ one\ street: Case\ D\ \ (P_{St}) \rightarrow \sum_{B=1}^{14} P_B = \ 3.78199$$

$$Constitutedness\ of\ red\ one\ street: Case\ D\ (C_{St}) = \frac{3.78199}{14} = \ 0.27014$$

In this example, the graphic line in Figure 6.123 shows a high fluctuation in the permeability value of plots along 100 metres on both sides of the selected street. This is despite the street having one width and the setback being similar for most plots, except DB11P4. The differentiation in building height is the primary factor that changes the permeability, besides the number of units per storey, which is another critical factor.

Table 6.23. Red one street: case study D. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case studv: D l Street: Red one

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
D	Red	0.0017 - 0.1397	DB11	6	DB11P1	45.00	2.50	47.50	1	8	47.5352	0.0210	0.1683	0.3362
									2	8	47.6416	0.0210	0.1679	
					DB11P2	45.00	2.50	47.50	1	4	47.5352	0.0210	0.0841	0.2928
									2	4	47.6416	0.0210	0.0840	
									3	4	47.9662	0.0208	0.0834	
									4	2	48.4745	0.0206	0.0413	
					DB11P3	45.00	2.50	47.50	1	5	47.5352	0.0210	0.1052	0.1470
									2	1	47.6416	0.0210	0.0210	
									3	1	47.9662	0.0208	0.0208	
					AB11P4	45.00	4.00	49.00	1	1	47.5352	0.0210	0.0210	0.0210
					AB11P5	45.00	2.50	47.50	1	8	47.5352	0.0210	0.1683	0.3775
									2	5	47.6416	0.0210	0.1050	
									3	5	47.9662	0.0208	0.1042	
					AB11P6	45.00	2.50	47.50	1	8	47.5352	0.0210	0.1683	0.4193
									2	6	47.6416	0.0210	0.1259	
									3	6	47.9662	0.0208	0.1251	
			DB24	8	DB24P11	45.00	2.50	47.50	1	8	47.5352	0.0210	0.1683	0.4995
									2	4	47.6416	0.0210	0.0840	
									3	4	47.9662	0.0208	0.0834	
									4	4	48.4745	0.0206	0.0825	
									5	4	49.1610	0.0203	0.0814	
					DB24P12	45.00	2.50	47.50	1	5	47.5352	0.0210	0.1052	0.1889
									2	2	47.6416	0.0210	0.0420	
									3	2	47.9662	0.0208	0.0417	
					DB24P13	45.00	2.50	47.50	1	5	47.5352	0.0210	0.1052	0.1472
									2	2	47.6416	0.0210	0.0420	
					DB24P14	45.00	2.50	47.50	1	6	47.5352	0.0210	0.1262	0.1262
					DB24P15	45.00	2.50	47.50	1	3	47.5352	0.0210	0.0631	0.1471
									2	4	47.6416	0.0210	0.0840	
					DB24P16	45.00	2.50	47.50	1	4	47.5352	0.0210	0.0841	0.1471
									2	3	47.6416	0.0210	0.0630	
					DB24P17	45.00	2.50	47.50	1	7	47.5352	0.0210	0.1473	0.7641
									2	6	47.6416	0.0210	0.1259	
									3	6	47.9662	0.0208	0.1251	
									4	6	48.4745	0.0206	0.1238	
									5	6	49.1610	0.0203	0.1220	
									6	6	50.0183	0.0200	0.1200	
					DB24P18	45.00	2.50	47.50	1	4	47.5352	0.0210	0.0841	0.1681
									2	4	47.6416	0.0210	0.0840	

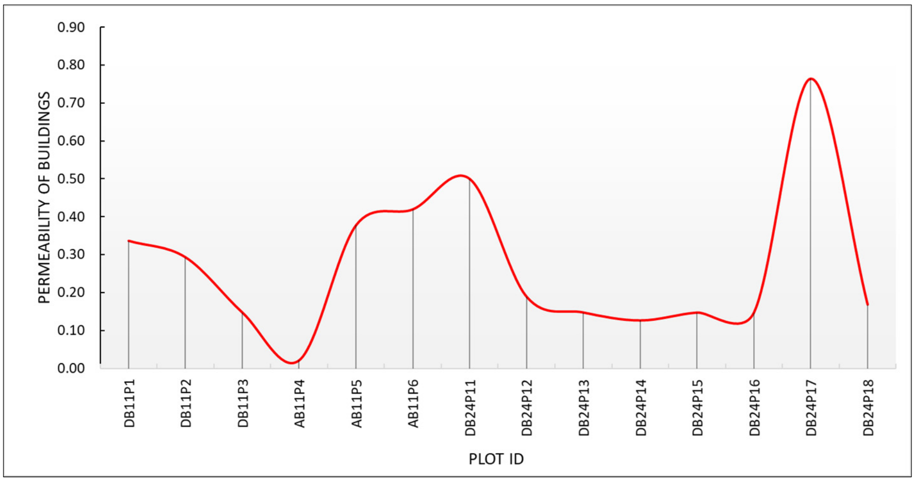


Figure 6.123. The Permeability value per building (plot) along 100 metres. Case D: red one street. The arrangement of plots is based on their place on the site rather than in ascending or descending order.

6.4.4.6 Red Two Street: Case D (0.0017 – 0.1397)

The second red street has the widest segment across all three former cases. Like the earlier example, the main use of the street is for commercial purposes, and it can be considered a primary route for car movement with a width of 60 metres. Along the 100 metres, seven buildings constitute the street edge, and their height is between 2 – 3 storeys. The soft border that offers direct access for people determines the relationship between the building's edge and the adjacent street. In some parts of the street, the shortest side of the adjacent blocks are responsible for shaping the public edge, meaning that the degree of permeability between the blocks is high, whilst at the same time the street seems to be more fragmented (Figures 6.124 and 6.125).

Figure 6.124. Red two street: Case D. It shows automobile services and workshops. Source: Photographed by author's team, 13/ Dec/2016.

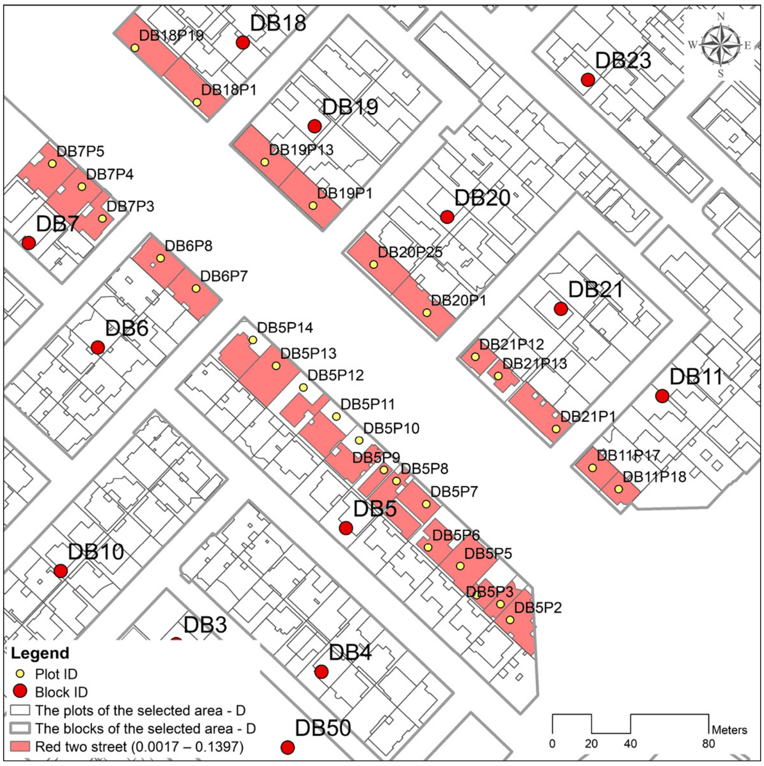


Figure 6.125. Red two street from case study D. Source: Drawn by the author based on the georeferencing aerial imagery and Base Map Baghdad authorised by R.S.GIS.U (2017).

According to the study's method, the permeability per storey and per building is computed (Table 6.24 and Figure 6.126). The total permeability value for the selected segment is:

$$Permeability\ of\ red\ two\ street: Case\ D\ \ (P_{St}) \rightarrow \sum_{B=1}^{7} P_B = 1.27766$$

The constitutedness value in this example comes from the total permeability divided by the number of plots within the chosen street:

$$Constitutedness\ of\ red\ two\ street: Case\ D = \frac{1.27766}{7} = 0.18252$$

Where the street width and the metric depth are constant in this example, the permeability value fluctuates, especially in DB6 and DB7. This means that the number of storeys and their units governs the degree of permeability in this segment. Moreover, some plots have adopted different uses, from residential to commercial purposes, such as DB7P3 and DB7P4.

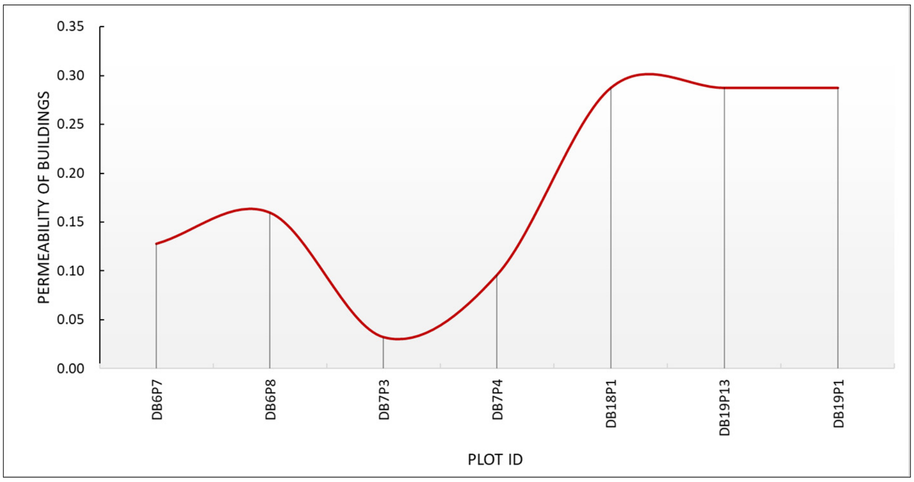


Figure 6.126. The Permeability value per building (plot) along 100 metres. Case D: red two street. The arrangement of plots based on their place on the site rather than in ascending or descending order.

Table 6.24. Red two street: case study D. The Intervisibility values as (Depth Storey Factor) and the Permeability for each storey of a building.

Case study: D | Street: Red two

Case Study ID	Street Centrality		Block ID	Plot		Permeability Metrics								
						Horizontal Distance			Storey					Plot Permeability
	Class	Range		Number of plots	Plot ID	Street width	Setback	TOTAL	Storey	Number of Units (U)	Hypotenuse	Depth storey factor (D)	Permeability per storey	
D	Red	0.0017 - 0.1397	DB19	2	DB19P1	60.00	2.50	62.50	1	10	62.5268	0.0160	0.1599	0.2875
									2	4	62.6077	0.0160	0.0639	
									3	4	62.8550	0.0159	0.0636	
					DB19P13	60.00	2.50	62.50	1	10	62.5268	0.0160	0.1599	0.2875
									2	4	62.6077	0.0160	0.0639	
									3	4	62.8550	0.0159	0.0636	
			DB18	1	DB18P1	60.00	2.50	62.50	1	10	62.5268	0.0160	0.1599	0.2875
									2	4	62.6077	0.0160	0.0639	
									3	4	62.8550	0.0159	0.0636	
			DB7	2	DB7P4	60.00	2.50	62.50	1	5	62.5268	0.0160	0.0800	0.0960
									2	1	62.5570	0.0160	0.0160	
					DB7P3	60.00	7.50	67.50	1	1	62.5268	0.0160	0.0160	0.0320
									2	1	62.5570	0.0160	0.0160	
			DB6	2	DB6P8	60.00	2.50	62.50	1	4	62.5268	0.0160	0.0640	0.1596
									2	3	62.6077	0.0160	0.0479	
									3	3	62.8550	0.0159	0.0477	
					DB6P7	60.00	2.50	62.50	1	4	62.5268	0.0160	0.0640	0.1277
									2	2	62.6077	0.0160	0.0319	
									3	2	62.8550	0.0159	0.0318	

6.5 Conclusion

Defining the street edge was the primary aim of this chapter in order to highlight the different interpretations and meanings of the three fundamental elements that function together to formulate the street. These elements are the street, the private edge, and the public edge. The transformation in the urban structure from the traditional pattern to the modern model not only changes the morphological dimension but also influenced the relationship between the private and public realm. The manipulation of private and public relations could be the primary condition to figure out the street life and how people interact with each other. Permeability, intervisibility and metric depth are three variables employed to measure the relationship between the private realm and the street space at a micro level. These three factors are experienced by those who use a street when dealing with the street scope within a specific segment. The permeability, intervisibility and metric depth are different between the traditional area and the modern parts.

The notion of the constitutedness was employed to examine the street's edges, including the permeability. Each factor was addressed in detail by processes that derived the basic equation from the edge's characteristics and applied this to the selected streets in this study. Constitutedness represents the micro level of a street segment that is used to evaluate the interrelationship between the private and public realm and how could affect street life and social interactions along the street edge (Chapters Seven and Eight). Across the four selected areas, there was a significant disparity between the centrality value and the two measurements: constitutedness and permeability. In some samples, the streets that belong to the same category, for example, low (blue | 0.0000 – 0.0002), yielded close results regarding the constitutedness and its variables. Moreover, a comparison of the outcomes throughout the six streets in one sample gave a significant variance between the segments themselves, which belonged to different centrality values.

The highest centrality value of betweenness (red one and two) in two areas (A and B) reflected the least constitutedness and permeability as compared to the blue (low betweenness) and the yellow (medium betweenness) in the same chosen areas. The relationship is notably different in samples C and D regarding the degree of the centrality and its relationship to both constitutedness and permeability. Excepting some consideration for red two streets, the high betweenness paralleled the high constitutedness and permeability values. Meanwhile, the blue class of centrality represented a lower amount of permeability and constitutedness. In traditional patterns within the historical area (case study A), the degree of the centrality responds inversely to the constitutedness and permeability. This is also partially true for case study B. In the pre-planned pattern that is represented by samples C and D, the relationship amongst the betweenness and both constitutedness and permeability tend to move in parallel. Thus, whenever the centrality of the street is high the permeability and constitutedness values are great and vice versa. Chapter Nine will discuss the main correlation and comparison regarding every single sample, both individually and then among the four case studies in terms of the constitutedness and permeability in connection with the street centrality (betweenness) MCA.

MEASURING URBAN FORM AND URBAN LIFE
FOUR CASE STUDIES IN BAGHDAD, IRAQ

VOLUME 2

HAIDER JASIM ESSA AL-SAAIDY

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University of Strathclyde
Department of Architecture

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Part Two

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Haider Jasim Essa Al-Saaidy

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SECTION THREE

MEASURING HUMAN ACTIVITIES

Chapter Seven

Urban Form and Human Activities

Conceptual Framework

7.1 Introduction

In this chapter, the street and social life will be addressed according to the three categories of activities that can be observed along the street edge, which are: necessary versus optional, individual versus social, and staying versus moving. These three types of activities take place in a street when people respond either to the street's edge or interact with each other. The primary aim of this chapter is to quantify the different responses of people who use the street. Direct observations are based on the ethnographic technique that allows the observer to record people's reactions and interactions without interference or affecting people's behaviour.

The main aim of this chapter is to create a conceptual framework of human activities with clear classification in relation to the three categories: necessary, individual and social and their opposites, which will be discussed later in this chapter. Furthermore, there is a lack of hard border between these activities when experiencing street life. However, priorities play a crucial role in distinguishing between different street life activities.

7.2 Human Activities: Urban Form

In behaviour-environment interaction, Canter (1975, p 9) argues that, "the environment providing perceptual stimuli … [and] also be thought of as a filter … we are always in the environment to carry out certain activities, and we usually carry out these activities with other individuals … this is the fact that we actively modify, build and influence our physical surroundings" For this reason, Canter (1975, p 13) alludes that, "the physical environment surrounds and supports all human activities. It is, therefore, expected that the study of human-environment should be as complex and multi-faceted as is the range of studies of human behaviour".

Many urban studies and research examined the nature of influences of the built environment on human activities, whether psychological, social, and functional, such as Brownson et al. (2009), Caro (2007), Craig et al. (2002), Greenwald et al. (2001) Handy et al. (2002), King et al. (2002), Shay et al. (2003), Sun et al. (2012). A considerable number of scholars addressed the interrelationship between human activities and use patterns. The density and diversity of land use analysis determine the nature of activities that are likely to take place; these accord with the uses along a street. Jacobs (1961, p 230, 348) refers to that, "in dense, diversified city area, people still walk … the more intensely various and close-grained the diversity in an area, the more walking [where] life attracts life".

Montgomery (1998) states that activity is an inevitable result that derives from two distinct but quite related concepts: vitality and diversity. The former means a successful urban space and its characterisation from others. It considers the pedestrian flow where people in and around the street can benefit from the facilities that the street offers, at different times of the day. It is a place where people meet for various purposes; "… the presence of an active street life, and generally the extent to which a place feels alive or lively. Indeed, successful places appear to have their own pulse or rhythm, a life force" (Montgomery 1998, p 97). (Figure 7.1).

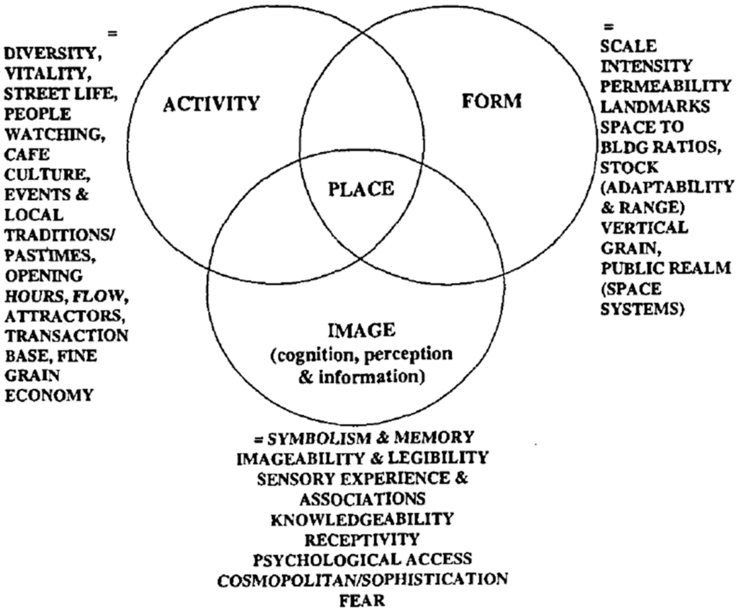


Figure 7.1. Three essential entities in formulating the vitality of urban place: activity, form physical attributes, and image (meaning and conception), Montgomery (1998, p 98). Source: based on Canter (1977, p 158); Gehl (2010a, p 21) and Punter (1991).

Montgomery (1998) suggests that secondary diversity relates to enterprises and services which respond to primary uses and offer different amenities in serving consumers' needs. Thus, "areas of high development density can be planned to accommodate and stimulate mixed-use and self-generating secondary diversity, [in this regard], diversity must be sufficiently complex to stimulate public contact, transactions and street life … for this to happen, streets need to be active, to accommodate and generate diversity, and they must be permeable. They must also engender a sense of belonging, familiarity and the respect of users" (Montgomery 1998, p 103, 105, 109). Canter (1975) states that, to enable space operation, it is necessary to examine the relationship between several groupings of spatial interactions; people in relation to physical objects, people with regard to other people, groups in relation to physical environment and groups with regard to other groups.

Moreover, land use, to some extent, deals with large-scale (global and local or even neighbourhood), while the activities pattern tends to address uses at the micro and street scales. In a sense, the oldest built environment in the most traditional area emanates from the street scope and daily needs that might be characterised as high-frequency activities. While in a pre-planned order, the activity pattern is controlled by the top-down approach that determines the activities according to land use-based action. The difference between the traditional and modern neighbourhoods add to the other characteristics that define the activity pattern, such as the street pattern and block-plot system besides the land use itself. These play a significant role in formulating the relationship of people to the street edge. To track the activity pattern, the current study addresses three types of human activity, namely: necessary versus optional, individual as opposed to social, and staying against moving. Three pairs of activity are likely to happen in the street in different ways with various densities. Thus, the street scale is the domain to examine human activities after defining each kind of activity and disclosing the ability of the street edge to formulate the interaction, whether between people and the edge (private and public) or between people themselves. This interaction with its interfaces (human - edge) is responsible for promoting street life and, in turn, social interaction.

7.2.1 Spatial Configuration and Activities Pattern

Gehl (2010a, p 9) states that, “urban structures and planning influence human behaviour and the ways in which cities operate”. This attracts attention to the humanity of street as a pulsatile path through various activities. Jacobs diagnoses different issues that cause a decrease in the social life of outdoor spaces. Jacobs (1961, p 29) states that, “street in cities serve many purposes besides carrying vehicles, and city sidewalks - the pedestrian part of the street – serve many purposes besides carrying pedestrians … a city sidewalk by itself is nothing”. A community organises its functions spatially, and this affects human behaviour through the distribution pattern of activities and their locations along the street; these might also be characterised by the integrated street that has a high number of connections to other streets within a short metric distance (Van Nes 2009).

Despite having their own private spaces, people still demand spaces to interact socially and/or economically with other members of the community. Human activities tend to take their place in a physical space, where the mechanism of the organisation of activities depends on society itself (privately and officially). In turn, they impact the built environment as well. Consequently, the spatial configuration of a built environment helps to shape human behaviour in the urban space based on the possibilities for social control, and opportunities for economic activity and social interaction (Van Nes 2009).

During their study of the traditional area at South Bank of London, Penn et al. (1998) diagnosed four factors which work together to enable apparently natural relationships between various types of activities and facilities. These factors can be summarised as follows: "the network of streets and spaces in an area produces a pattern of natural pedestrian and vehicular movement. Most movement in urban areas is through movement. Once shops have set up on a street they become destinations for to movement in their own right. And through movement alone is not enough to produce a successful urban shopping area" (Penn et al. 1998, p 82). Hence, the movement pattern and street network with land use play a significant role in emanating the activities in certain urban places. Hillier (1999a) adopts centrality as a process to study the centre, such as in a city. Apparently, the concentration of mixed use of activities and functional diversity are placed in a prominent location in a city, called a centre or sub-centre. Also, Hillier (1999a) adopts the term 'live centrality' to express the spectrum of activities that collectively form the centrality elements, such as retail, markets, catering, entertainment and other activities that engage people, and in turn, benefit from movement. Van Nes (2002) states that the location of functions or activities depends on the configuration of the grid pattern where movement takes place.

Recently, the emphasis has been placed on the notion of the active and inactive edge in terms of theoretical or practical investments in the urban field. These refer to the capacity of the edges to attract and hold people by creating and continuing social activities, which thereby make the urban edge a socio-spatial factor in the urban fabric (Thwaites et al. 2013). This meaning also is denoted by Alexander (1977) who states that an effective and attractive edge that takes a scalloped shape includes various activities as pockets; moreover, "to make the space lively, the scalloped edge must surround the space completely" (Alexander 1977, p 601). Marshall (2005b) distinguishes between patterns of physical entities and patterns of activity or use. The former concerns roads, land use areas, built area, and open spaces, whilst the second addresses trip-making, commercial activities, or trajectories of movement (Marshall 2005b). (Figure 7.2). Moreover, Marshall (2007, p 110) refers to that, "the social space of streets is the single contiguous public off of which private spaces are carved. … in this sense, the public-private filtering of the building-plot-street system enables settlements to exist – they enable large agglomeration of humans to coexist in a limited area. This is why the streets are not merely voids between blocks of buildings, but must be seen as integral to the concept and fabric of a city" where the same meaning has been addressed in street life and urban form in Chapter Three.

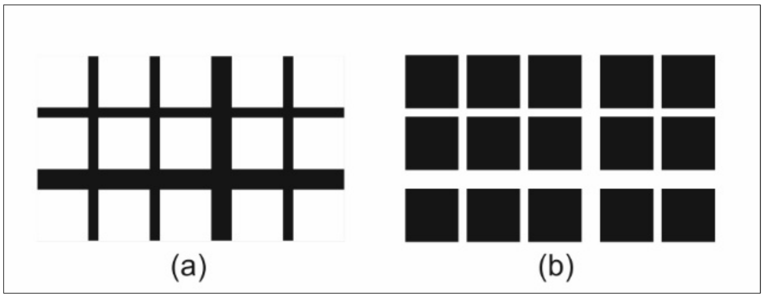


Figure 7.2. The classification depends on the purpose of its application. (a) The transport modeller might see a 'cross-nodal network' of routes where they constitute the adjacent buildings, while (b) a planner or developer might see a 'square tessellation' of land parcels where the streets constitute the edge of buildings. Source: based on Marshall (2005b, p 23).

At the global and local scale, the spatial configuration of urban elements; plot, block and street network are the essential entities that lead human activities and control the distribution pattern of activities. Furthermore, the underlying characteristics of each urban element (in terms of shape, size, number, and its interrelation to the other components in space), also determine the type of present or potential activities. Regarding the micro scale, the street as a transitional edge is constituted by adjacent buildings and their characteristics play a crucial role in controlling the interrelationship between the private and public space and the level of interaction between them.

7.2.2 Street Characteristics and Activities Pattern

Computing the value of the street in terms of its proportional position to the surrounding links within the network system is another significant aspect in evaluating the level of human activity and the degree of its presence in a particular area. Can et al. (2015) suggest that, when integration and connectivity in spatial patterns are higher, social interaction will increase. Additionally, modern urban areas are likely to be more introverted than the inner city and traditional regions. Most often, activities in modernist areas tend to be located on the edge where the primary route contrasts with inner parts in the traditional city. Carmona et al. (2010) state that the term street and other labels, such as boulevard and avenue, reveal design elements lacking in the term 'road'. The main goal of these labels is to accommodate and reconcile the demands of the movement, social life space, and urban activities. Collectively and substantially they need to emerge in the same physical space.

Thus, the notion of the street is to define social space and to secure an effective connection with the whole network system (Carmona et al. 2010). Different terminologies and definitions are given to identify the street space itself and its relation to others. Kostof (1992) argues that the history of the street so far has to be addressed, either as an urban form or as an institution. On the one hand, the street belongs to the architecture and urban study archives as it is a physical phenomenon. The street is an entity that consists of a roadway, usually a pedestrian way, and bordering buildings; however, the street as an institution is a critical theme. In this regard, the street has an economic role and social importance.

The traditional aim of the street is to enable the movement to exchange goods, conduct social exchange and communicate. These three aspects are inseparably related to the street space, where those activities are located, and then to the whole street life (Kostof 1992, p 189). Porta et al. (2012) explain the relationship between street centrality and economic activities in a certain area of Barcelona by adopting the measure of Multiple Centrality Assessment. The aim of using MCA analysis is to quantify the centrality value and its relationship to economic activities. According to Porta et al. (2012), two kinds of economic activity can be recognised: primary and secondary. In the relationship between economic activities and spatial networks lies a fundamental question about the mechanism of distribution of activities in the urban context and the role of urban structure, functions and other capabilities in shaping this relationship (Porta et al. 2012).

7.3 Defining Human Activities

The aimed of urban space usage is to create an interactional relationship between individuals as occupants of space and activities within a behavioural framework. This relationship can also cover the nature of linkages between individuals and with the kind of activities present in the same space. The reinforcing factors in a particular space might be utterly different from one space to another, and between regions and countries according to a series of considerations. In other words, what may be an enhanced factor in a given space might be a debilitating factor in another one place (Whyte 1980). A clear pattern of activity relates to the classification process of compound parameters, which increases in limited areas or specified spatial dimensions. However, minimal or single settings mainly affect large-scale classifications, and this can refer to the comprehensive analysis of commercial streets. This is likely to be irrelevant in creating the distinctive urban characteristics of a whole city. Rapoport (1990) argues that the environment is perceived by people, which causes a reaction before any act is taken to specifically analyse it. There are two types of meanings embodied in a built environment, latent and manifest, since that environment apparently grants cues for behaviour and represents a form of people's behaviour. These two types of meanings relate to the nature of the activity of buildings within a whole urban context. This can be classified into four components for each activity: (1) the activity proper, (2) the specific way of doing it, (3) additional, adjusted, or associated activities that become part of the activity system, and (4) the meaning of the activity (Rapoport 1977; 1990, p 15).

In this respect, Chapin (1968) refers to an outline working schema based on human activity systems, which includes two steps; the first is behavioural constructs through the spatial structure of the city as a physical construct as the second step. According to Chapin (1968, p 12), "environment is construed not only as a structure of land uses and communications channels with physical dimensions but also as a structure of institutions with significant social and economic dimensions, all influencing and begin influenced by human activity". To examine and evaluate a human activity that could occur in an environment, Chapin (1968) suggests a linear scale that consists of minimum dissatisfactions and maximum satisfaction. Two factors can govern the stimulus of activities that are primarily reflected in human behaviour; these are *Pull* factors and *Push* factors, where the first decision is mostly based on *Push* factors, and the second is based on *Pull* factors. Furthermore, people stand between these *Push-Pull* factors in response to their surrounding physical environment (Figure 7.3).

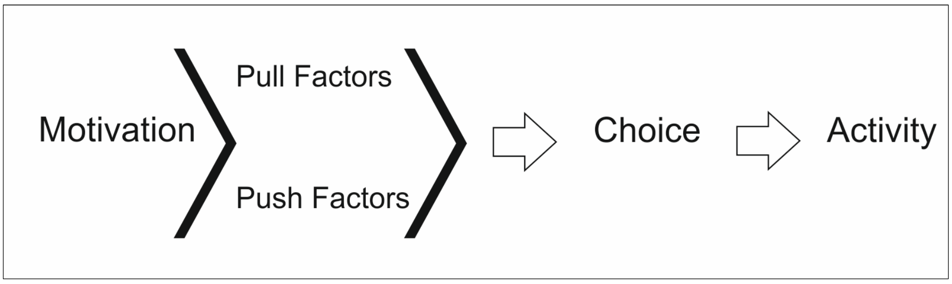


Figure 7.3. A linear relationship among three components of behaviour. Source: based on Chapin (1968, p 13).

Street space must be conceived as an outdoor milieu that contributes to the sense-making of a place through a considerable number of activities and facilities. This includes a place to relax and enjoy the urban experience, a venue for a range of different activities including entertainment, sport and play areas, a site for civic or political functions, and most importantly a place for walking or sitting-out. A strict interrelationship between the public space and people who live and work around it is an essential aim in raising the public space value through its spatial performance (Thompson 2002). A street is a place to meet people and is a place for people to have an opportunity to be intimate, anonymous and in some way private. It also promotes concentrated spaces for face-to-face activity (Thompson 2002).

The definition of activities is an essential characteristic of understanding and effectively interacting with urban space and acknowledges a symbolic and meaningful pattern. This helps to form the crucial determinants of activities and social interactions so that they coincide with the surrounding environment. This occurs by decoding the process of communication between people and the urban context which is mediated by the activities (Rapoport 1990). In this respect, physical form and activity are congruent, and this enables the adoption of the idea of the activity-based place (Broadbent 1980). Thus, according to Jacobs (1993), "the interplay of human activity with the physical place has an enormous amount to do with the greatness of a street. It is difficult or impossible to separate the two … streets are settings for activities that bring people together".

In his seminal work, Gehl (2010b) refers to three types of activity; necessary, optional and social activity (Figure 7.4). This classification of urban space activities can cover a large range of behaviours throughout people's presence in space. It might start with a small indicator, such as talking between people and ending with a festival or an annual activity to promote the value and quality of space. Diversity is considered one of the leading characters of three types of activities regarding the urban context (Gehl 2010a; 2010b; 2013). Thus, the street space in a city is a shared milieu that embraces people and activities alike. This sharing covers the responsibility of designing the street space where spaces are always much broader than the specialised expertise in designing the built environment. In other words, the design of a space, cannot be separated from daily life and the social activities of urban areas as well as other aspects and institutional considerations in making a decision (Carmona et al. 2010).

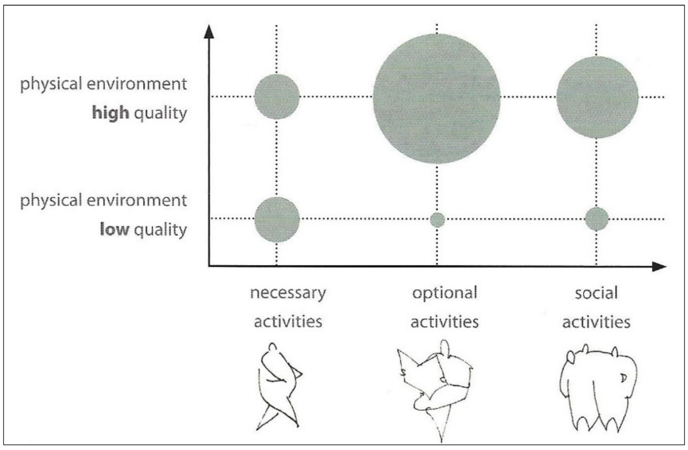


Figure 7.4. Graphic representation of the connection between outdoor quality and outdoor activity. An increase in outdoor quality gives a boost to optional activities. The increase in activity level invites a substantial increase in social activities. Source: Gehl (2010a, p 21).

7.3.1 Necessary versus Optional Activities

Necessary activities can be defined as a kind of compulsory act with a diverse degree of participation amongst others. The occurrence of these activities is not affected by the physical scope. It fluctuates due to dependence on the doer, where these activities constrain the interactions as a crucial part of their life, and regardless of the conditions of the surrounding environment (Gehl 2010b). The second is optional activities, which are based on the desires of participants and the extent to which they help to motivate the individuals to take part in these activities. Exterior conditions are regarded as one of the most critical factors in achieving this kind of activity, one of which is the built environment and natural conditions. Opportunities for occupancy of the place can increase if there are high-quality conditions within the place. Individuals are automatically attracted by places, which include what people like and desire (Gehl 2010b).

Jacobs (1961) tends to distinguish between two main activities: primary and secondary uses. The former is employed to bring people to particular places that function as an attractive point, such as offices, factories and dwellings, as well as the main destinations of, for example, educational institutions, entertainment centres, and recreation. In addition, museums, libraries and galleries are primary uses. The secondary uses serve the primary purposes and include a wide range of activities and events (Jacobs 1961). Porta et al. (2012) offer a description of primary activities by stating that, "primary activities are characterised by a larger-than-local market or catchment area; they are typically highly skilled, larger or more specialised economic activities such as wholesale, industry and those not related to the public or not mainly serving the end-users; and their location choice is more likely to be driven by a formal top-down decision-making process" (Porta et al. 2012, p 1476-1479). The distribution pattern of economic activities has significant implications since it influences the availability of land for particular economic uses and for people who benefit from these activities (Parker et al. 2004).

Furthermore, Porta et al. (2012) write descriptively about secondary activities by saying that a local market or catchment area characterise secondary activities, and these are typically retail and other services that serve the regular needs of the populace on a daily or frequent basis. Accordingly, secondary activities can be defined as the kind of economic setting that sustain and embody the sense of a lively and walkable local community at the scale of the neighbourhood (Porta et al. 2012). The primary uses are associated with, and represent, necessary activities, while the secondary uses are optional and social activities according to Gehl.

Moirongo (2002) refers to the relationship between street function and activity pattern. He states that the street is characterised by heterogeneous and mixed uses that tend to be for optional and social activities. In comparison, the street is identified by monofunctional and homogeneous uses that contain necessary activities. This, however, emphasises the earlier statements that necessary activities are obligatory for those accustomed to attending a regular activity for a particular purpose, such as school, work, shopping or waiting for someone. Meanwhile, the optional activities relate to a degree of desirability, besides the impulse factors that attract people's engagement with activity.

7.3.2 Individual versus Social Activities

Social activities tend to see individuals gathering in public spaces. These activities cover a wide range of people's acts while they are in a place. Spontaneity is one of the features of these activities, where people, at the same place, can meet each other and talk. It seems to be quite difficult to isolate and separate these three activities from each other within a certain space; however, the weight of activity may vary from one space to another (Gehl 2010b). Thwaites et al. (2013) pay more attention to social activity as a key factor in social restoration. Thus, social activity is, "soft, active or engaging edges are commonly associated with a social activity, usually generated by their capacity to hold the attention of passers-by. Such edges are also associated with having transitional qualities defining an overlap of adjacent realms, their social activity related to accessibility across it and opportunities to be stationary coupled with things that can hold attention" (Thwaites et al. 2013, p 81).

The need to return to social space and urban social activities has become a persistent demand in order to promote the vitality of a city. Shared places provide a platform to create an integral relationship between various aspects of a city's elements and its people. One of the aspects of shared space is to reduce motor flow and constrain its speed. Therefore, shared urban places are pedestrian orientated and give rights to people to invest in the street as a social milieu. The role of social interaction in an urban context is witnessed through its components, namely streets, sidewalks and parks, which represent intermediate spaces between activities and human behaviour. One of the concerns about urban space is the meaning of context in terms of cross-connection between activities and space (Carmona et al. 2010).

The range opportunities that could be offered by the street edge contribute significantly to create social life and attract people to share their activities with others. In this regard, Jacobs

(1961) prioritises the commercial, entertainment and other aspects represented by, for example, restaurants, shopping centres, retailers, and cafes. When located on the sidewalks of a street, these activities, help to entice people to use the street. If it does not attract social life and the sharing the street edge, the street functions as a transmit channel. Moreover, the activities generated by people help to promote street life, where people can be seen as magnetic points to attract others. As such, Jacobs (1961, p 37) alludes that, "the sight of people attracts still other people … people's love of watching activity and other people is constantly evident in cities everywhere"

According to Jacobs (1961), the primary mixed uses must be concurrently active with diversity. Effectiveness depends foremost on people who tend to use spaces for different purposes and reasons. However, efficiency, according to Jacobs (1961, p 163) means, "that the people using the streets at different times must actually use the same street [including] among them, people who will use some of the same facilities. All kinds of people can be presented [and] the mixture of people on a street at one time of day must bear some reasonably proportionate relationship to people there at other times of day". Engwicht (1999) defines the street according to aspects that have been ignored, and particularly in consideration of modern thought. Therefore, street reclaiming means, " [an] exchange space - an outdoor living room for social, cultural, and economic exchange, [and] as a place for the adult and those on the margin of society to share their street wisdom, [also] the street for adult play: people - watching, promenading, water, art celebration, festivals, eating, or just hanging out, [and] as the stage upon which those at the margin of society can make a contribution to community life. A vibrant street life is essential for any egalitarian, democratic society to a healthy political process" (Engwicht 1999, p 17 - 54).

7.3.3 Staying versus Moving

People's activities regarding the street milieu can be classified into two trends, namely: *through street-based movement* and *to street-based movement*, including those who are staying and moving. The reciprocal role between staying and moving relates to the pedestrian flow and the street edge which governs the level of stopping or walking. Movement is a crucial key to express a dynamic street. Carmona et al. (2010, p 201-203) state that, "movement is fundamental to understanding how places function. Pedestrian flows through public space are both at the heart of the urban experience and important in generating life and activity … most shops, for example, are not a sufficient magnet and have to be well-located with respect to the existing movement patterns. The land-use activity merely reinforces/multiplies the basic movement”

The opportunity for people to be able to stay or move in a space correlates to the space’s characteristics one of which is intervisibility and permeability through-in space. This is what Hillier (1996b, p 52) calls the strategic value of isovist when he argues that this makes intuitive sense because, if the primary activity of those who stay in public spaces is people-watching, then “… strategic spaces with areas close to - but not actually lying on - the main lines of movement are optimal”. For this reason, Jacobs (1961, p 139) states that, “a city’s collection of opportunities of all kinds, and the fluidity with which these opportunities and choices can be used, is an asset – not a detriment – for encouraging city – neighborhood stability”. The street edge is responsible, to a large extent, for generating the three main (and their oppositional) human activities. The street edge grants the opportunity for those who belong to a different gender, age, and cluster to use the street for different purposes and activities. Hence, the value of the street is not limited to only vehicular movement but offers a broad spectrum of opportunities for people to advantageously use the street.

7.4 Quantifying Human Activity

In this study, there are six streets for every single case that are examined to evaluate people’s activities and how they respond to the street edge. The ethnographic technique is adopted in this investigation through the observation of people’s behaviour throughout the selected street. Ethnography examines how persons behave in a space without any direct connection to them; this is achieved by conducting a direct field observation. To collect data from the field, two digital cameras were propped on a tripod, and both cameras were operated synchronically to record pedestrian flow, non-pedestrian flow (considered for future studies) in motorised (cars, vehicles, motorcycle etc.) spaces and non-motorised flow (bikes, human-powered cart). They also recorded other observed activities. Both cameras functioned for three spells per day; morning, noon and afternoon, during weekdays and weekends when each recording period covered approximately fifteen minutes. The distance separating the two cameras was 100 metres, which helped to unify the dimension regardless of the real length of the tested street. This was particularly relevant in the oldest areas compared with the modern ones.

The collected data from the observed streets are categorised and listed in tables that are prepared for this purpose; this enabled the conduct of statistical functions. The selected streets were determined according to the MCA analysis that responded to the same streets already examined in the constitutedness variables. The chosen streets were based on their centrality in terms of class and range and were: blue one, blue two, yellow one, yellow two, and red one and red two. Extracting the information from both cameras meant replaying the video and snapshots multiple times to capture people's behaviour in the street and to classify it appropriately. Furthermore, this meant coexisting with the street life and people in the field study. Two fundamental types of movement occur in the street: pedestrian flow and vehicular movement as non-pedestrian flow (considered for future studies). The first sort is classified according to kind, amount, and proximity. The kind considered the gender and age of people, and the volume, which calculated the number of pedestrians. The proximity referred to the grouping of pedestrians (Figure 7.5).

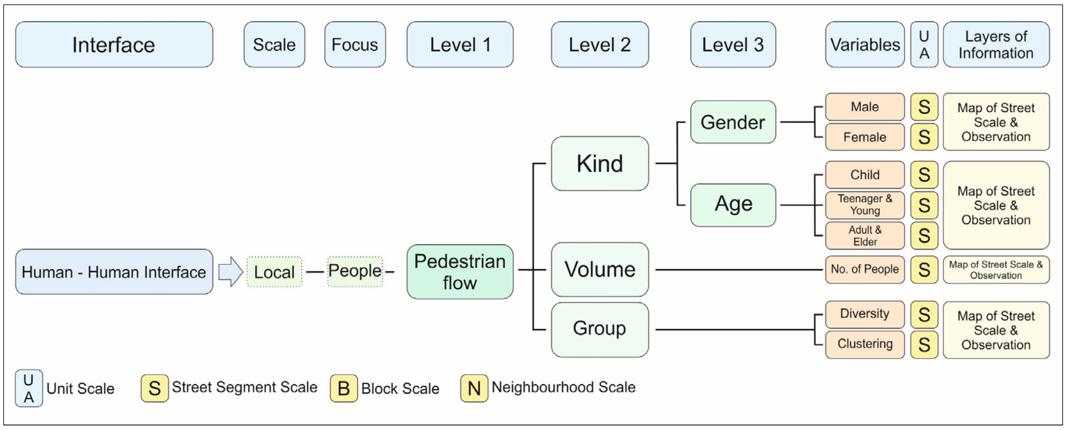


Figure 7.5. A chart displays the classification of the movement in the street into two main flows: pedestrian. Source: Drawn by the author.

The aim of the classification in Figure 7.5 is to evaluate the street edge and to the extent to which the edge, with its embodied activities attract people. In addition, this captured the age and gender of people and how they behaved; for example, whether they walked and stayed, or were alone or in a group. The level of pedestrian flow through the street and how people respond to both the private and public edge is a crucial question for the nature of the street life. Similarly, the physiognomies of the street edge play a key role in formulating people's behaviour and in controlling the interrelationship between both the human-edge interface and the human-human interface. Concerning non-pedestrian (vehicular) movement can be considered one of the leading issues in studying a street network, particularly where most of the street is designated for vehicular-based standards rather than human-based dimensions. In this regard, Gehl (2007) states that the dramatic evolution that markedly changed the atmosphere of cities, public spaces and public life in the Twentieth Century, was the influx of motor cars in substantial numbers. He also states that the, “city space continued to function as important social meeting place in the 20th century, until the planning ideals of modernism prevailed and coincided with the car invasion” (Gehl 2010b, p 25). However, modernism carried a new perspective of scale and proportion based on its ideal thoughts which stand away from what people perceive in order to their desires and aspirations with meaningful and comfortable (Gehl 2010a). The scale can be divided into two levels; the scale of the urban context in the city, and the scale of buildings in the city. The other dramatic changes in reading the city are that the city has become a milieu for cars rather than people, and the destruction of the human scale of the city in terms of high rise buildings and wide roads with larger open spaces which are far from a human scale, and tend to be antipedestrianism (Wiedenhoeft 1981).

7.5 Conclusion

Three significant actions could be reflected in people’s behaviour when they move through the street: necessary, individual and staying; moreover, their opposite actions are: optional, social and moving. This chapter highlighted the meaning of these activities. This chapter provided the conceptual framework through projecting its vocabularies on the four cases study: A (organic), B (hybrid), C (paralleled), and D (loop-grid pattern). Human activities and how people behave are not independent phenomena within the urban context; however, one can recognise the level of the relationship between those who use the street and the street itself. The spatial configuration of the urban form and the street’s characteristics are ranked most important in affecting the individual's’ response to the built environment.

However, establishing a clear boundary between human activity is not straightforward, and it is difficult for the observer to distinguish people’s movement and their intent and purpose. Therefore, the next chapter (eight) outlines and presents findings from the main technique adopted in this study, namely, to record human movement and behaviour by using two digital cameras. This method allowed the researcher to replay the recorded report as much as required. Nevertheless, the direct observations of, and coexistence with, people in the observed streets and the capturing of notes were more significant and helped to enrich the research. People who were observed in the chosen segments of each case study were classified into four main categories: human activities, kind, volume and group. Human activities refer to staying | moving; individual | social and necessary | optional. Kind included gender and age, volume referred to the number of people, and the group determined the pattern of clustering and the density of the group.

Chapter Eight

Human Activities in Baghdad

8.1 Introduction

After formulating the conceptual framework for human activity (Chapter Seven), the practical application of the activities will be described, and the results presented in this chapter. The mechanism used for this is based on the Multiple Centrality Assessment (MCA). This software application is employed to measure the street centrality for three indices: betweenness, closeness and straightness. The betweenness centrality is the primary factor in conducting an analytical study of the human activities in the streets in the four selected areas, namely: A (organic), B (hybrid), C (paralleled), and D (loop-grid pattern). From each selected area, six streets will be examined. These streets exemplified three categories of the betweenness value: low centrality (0.0000-0.0002-Blue); medium centrality (0.0002-0017-Yellow) and high centrality (0.0017-1397-Red). These three classes will be applied to the nominated street, where there will be two streets for each category. All related data concerning the human activities have been tabled in Appendix One.

In this chapter, five patterns shape people's activities, which can be named as: movement pattern, activity pattern, gender pattern, age pattern, and group pattern will be measured. In Appendix One, five patterns have been tabled in detail. One of the main aims of this chapter is to highlight the centrality value, its relationship to the movement of people, the pattern of activities generated by both those who use the street, and by the street edge. The comparison between the three centrality values, in terms of flow volume and activity pattern, is another significant aspect of disclosing the differences and disparities between the selected streets. The comparison will be stated both for every case individually, and as a whole correlation among the four cases; this will be presented in the subsequent chapters.

8.2 Human Activities and Street Centrality MCA

8.2.1 Case Study A: Organic Pattern

8.2.1.1 Blue One Street: Case Study A

In blue one street, the total number of people who used the street is calculated during the three different periods of time: morning, noon, and afternoon for fifteen minutes per period (Table 8.1). Most of the plots that constitute the street are for residential and commercial use, and some of plots are vacant. (Figure 5.79), (Figure 6.46 and 6.47). The movement pattern during the day shows that the total numbers of people who enter the selected street are 7 (morning), 15 (noon) and 6 (afternoon); these totals 28 overall. Meanwhile, those who exit are 9 (morning), 13 (noon) and 12 (afternoon), and the overall total is 34 (Figure 8.1). Midday seems to be a more significant period for the movement of people who go in and go out of the selected segment. From the observations, the street is employed as a connected link between other streets, rather than designed to directly benefit from its edges. These edges lack any opportunity to offer activities for the pedestrian.

Table 8.1. The pedestrian flow of the selected street: blue one (case study A).

Case study: A | Street: Blue one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	5	7	9	Number of people per activity	2	6	8	0	6	2
			Exiting	3									
			Total	8									
		St2	Entering	2				1	7	8	0	7	1
			Exiting	6									
			Total	8									
							Total	3	13	16	0	13	3
							Average	1.5	6.5	8	0.0	6.5	1.5
Noon	15 minutes	St1	Entering	9	15	13	Number of people per activity	12	6	18	0	15	3
			Exiting	9									
			Total	18									
		St2	Entering	6				5	5	10	0	6	4
			Exiting	4									
			Total	10									
							Total	17	11	28	0	21	7
							Average	8.5	5.5	14.0	0.0	10.5	3.5
Afternoon	15 minutes	St1	Entering	2	6	12	Number of people per activity	0	10	6	4	7	3
			Exiting	8									
			Total	10									
		St2	Entering	4				0	8	4	4	5	3
			Exiting	4									
			Total	8									
							Total	0	18	10	8	12	6
							Average	0.0	9.0	5.0	4.0	6.0	3.0
							Total average	**10**	**21**	**27**	**4**	**23**	**8**

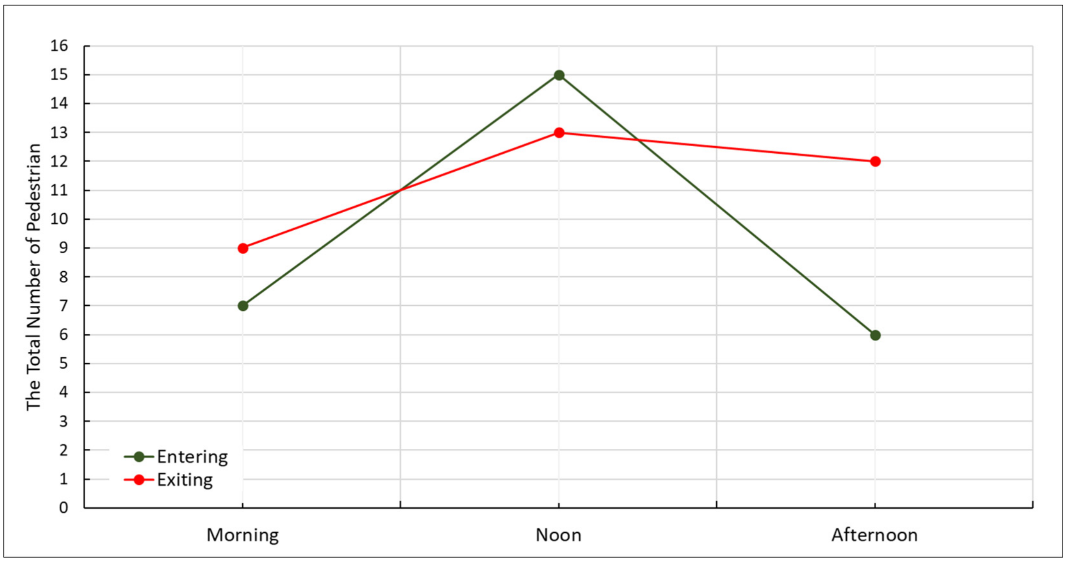


Figure 8.1. Movement pattern: pedestrian entering and exiting the blue one street (case study A).

Human activities that occur in blue one street oscillate; the values represent the total average of the three periods of daytime (morning, noon, and afternoon). Accordingly, necessary activities represent the maximum average (at 23 people) whereas optional activities total only eight individuals. In this street, social activities only total of four persons whilst individual activities comprise 27. The predisposition for staying in this street is also lower at ten persons, while the average total number for those who move is 21 people (Figure 8.2).

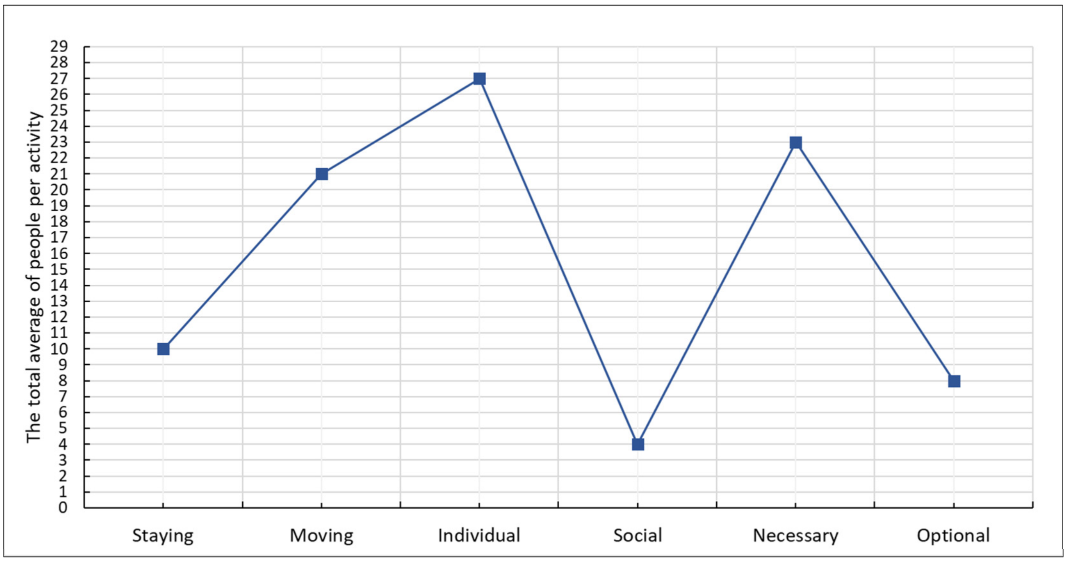


Figure 8.2. Activity pattern. The total average of people per activity in the selected street: blue one (case study A).

From Appendix One, the quantitative analysis includes the gender and the age categories, as well as the frequency for a group of people, ranges from 2-persons (2P) to 15-persons (15P). The observation reveals that the total number (average) of females is zero, while the overall average of males is 31 (Figure 8.3). Correspondingly, the classification according to their age exhibits a significant value; except for one boy, the street is almost completely occupied by those who belong to the adult-elder age group (Figure 8.4). The age pattern is an indicator that refers to the degree of street use by people of different ages including how a street might attract a specific age and why.

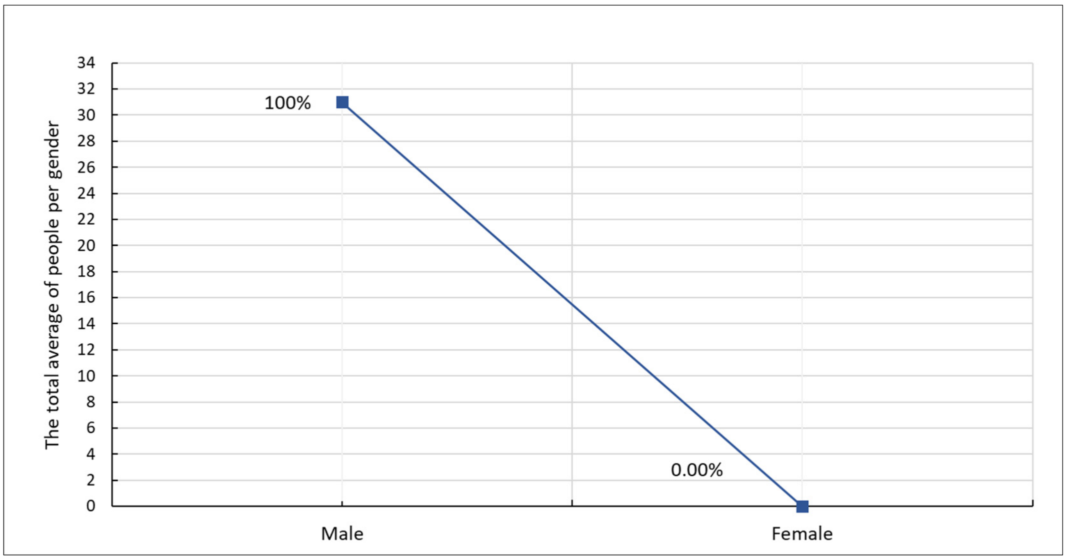


Figure 8.3. Gender pattern. The total average of pedestrians according to their gender. Blue one street: case study A.

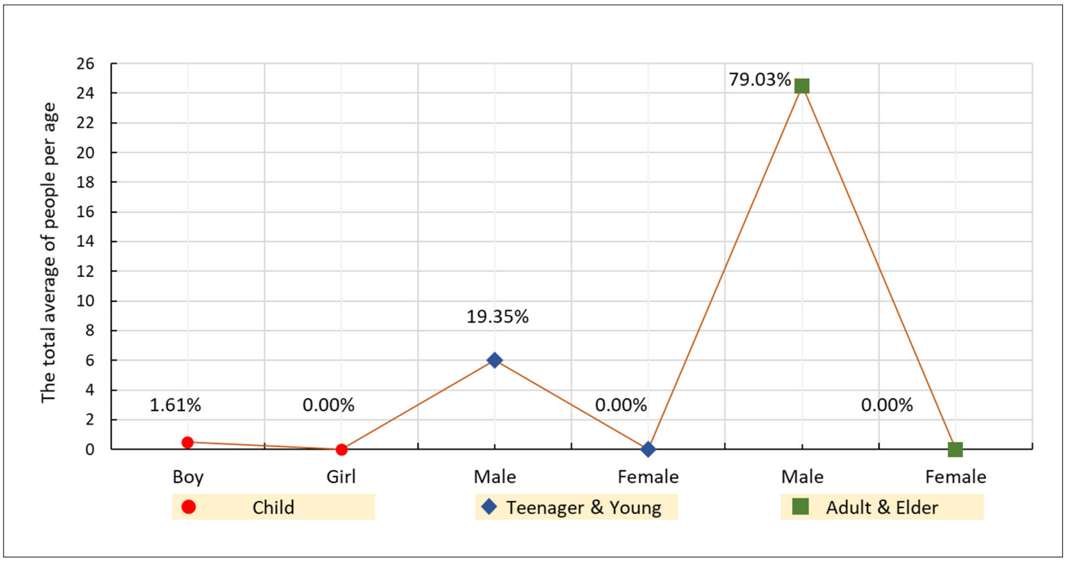


Figure 8.4. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Blue one street: case study A.

In relation to proximity in terms of diversity and clustering, the selected street indicates poor quantity as indicated by the number of groups and the number of people per group. Consequently, only one group consists of two-people and its frequency value is 4 (Figure 8.5). Blue one street: case A shows the lowest value of interaction between its edges and passersby, where a weak human-human and human-edge interface is dominant.

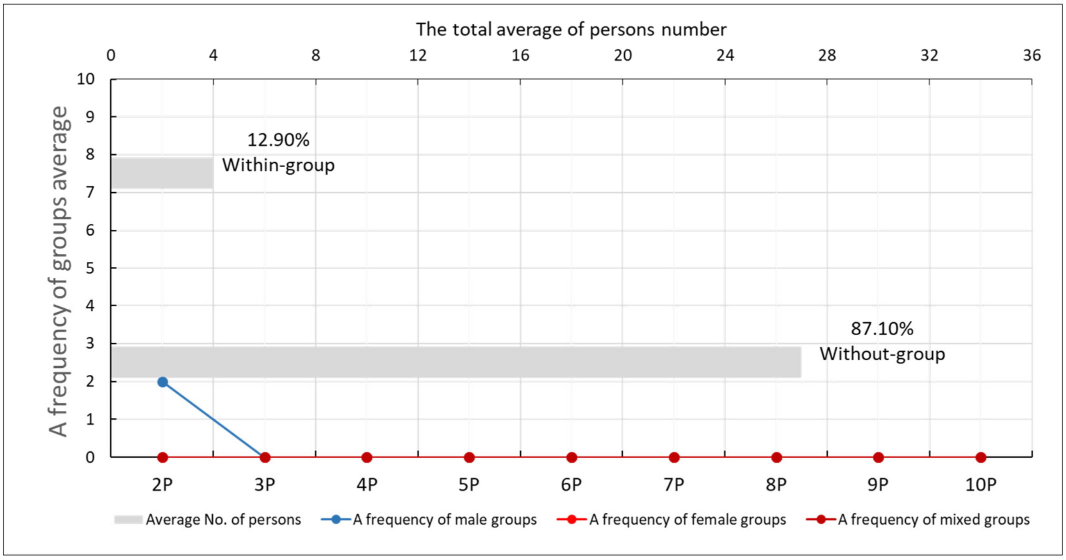
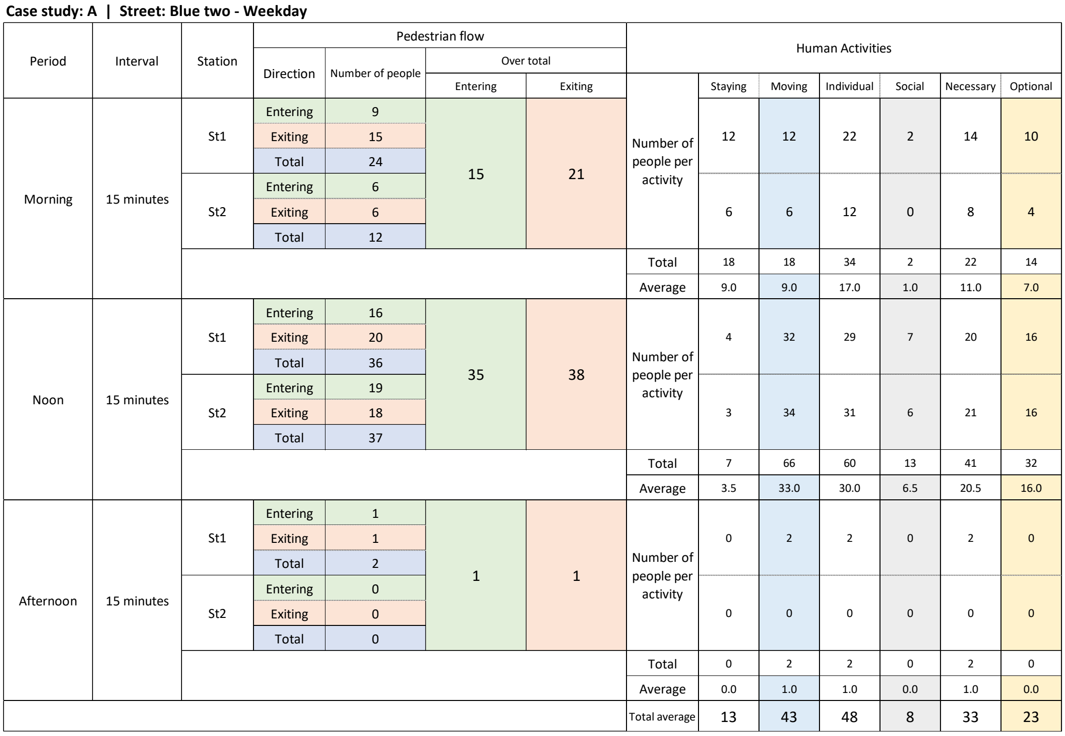


Figure 8.5. Group pattern. The number of groups, which is based on the total number of persons per group and the frequency value for each group. Blue one street: case study A.

8.2.1.2 Blue Two Street: Case Study A

The observation of the chosen street (Figure 6.46 and 6.50) during the day at three different times reveals the related values; these are sorted in Table 8.2. The table displays the total number of the pedestrian who use the street (entering and exiting), and the range of human activities. From the observation, the period at noon is more active in terms of pedestrian flow, when it attains 35 enterings and 38 exiting. In comparison, this quantity decreased in the morning by only 15 and 21 for entering and exiting respectively. The movement dramatically falls to one person for both entering and exiting in the afternoon (Figure 8.6).

Table 8.2. The pedestrian flow of the selected street: blue two - case study A.



Case study: A | Street: Blue two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	9	15	21	Number of people per activity	12	12	22	2	14	10
			Exiting	15									
			Total	24									
		St2	Entering	6				6	6	12	0	8	4
			Exiting	6									
			Total	12									
							Total	18	18	34	2	22	14
							Average	9.0	9.0	17.0	1.0	11.0	7.0
Noon	15 minutes	St1	Entering	16	35	38	Number of people per activity	4	32	29	7	20	16
			Exiting	20									
			Total	36									
		St2	Entering	19				3	34	31	6	21	16
			Exiting	18									
			Total	37									
							Total	7	66	60	13	41	32
							Average	3.5	33.0	30.0	6.5	20.5	16.0
Afternoon	15 minutes	St1	Entering	1	1	1	Number of people per activity	0	2	2	0	2	0
			Exiting	1									
			Total	2									
		St2	Entering	0				0	0	0	0	0	0
			Exiting	0									
			Total	0									
							Total	0	2	2	0	2	0
							Average	0.0	1.0	1.0	0.0	1.0	0.0
							Total average	13	43	48	8	33	23

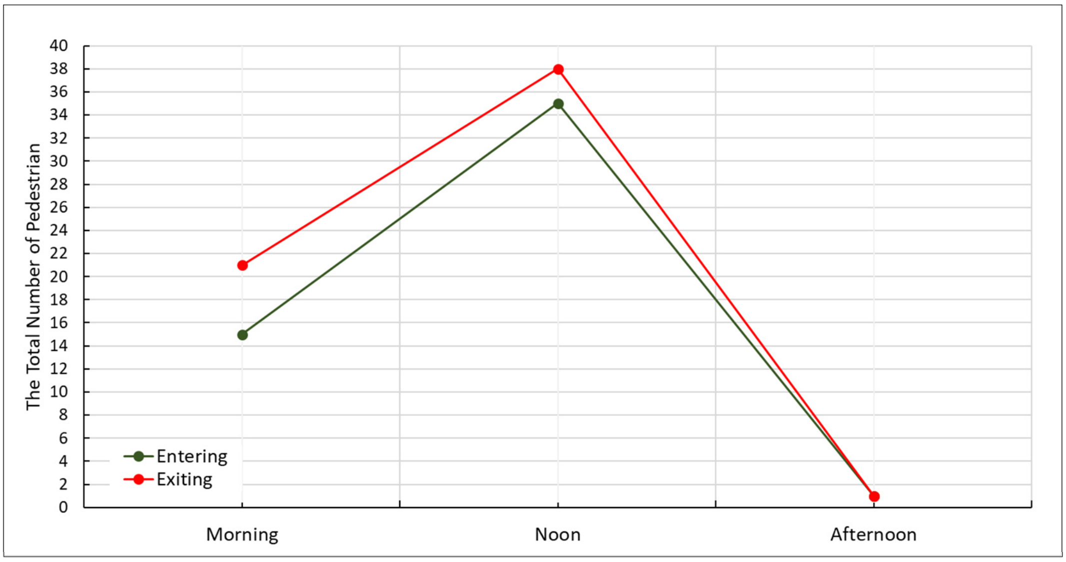


Figure 8.6. Movement pattern: pedestrians entering and exiting the blue two street: case study A.

Blue two fluctuated in the number of people per type of activity. The values represent the total average of persons per activity. A high quantity of people tends to pass through (43) the street instead of staying (19). In this regard, social activities were less prevalent (8 persons) than individual ones (48 persons). Social activities are limited and accessed by those who shops and use services when they chat with each other. Accordingly, the street and its function encourage necessary activities, where people come for particular purposes, for example, shopping or moving from one place to another by using the street as a connecting link (Figure 8.7).

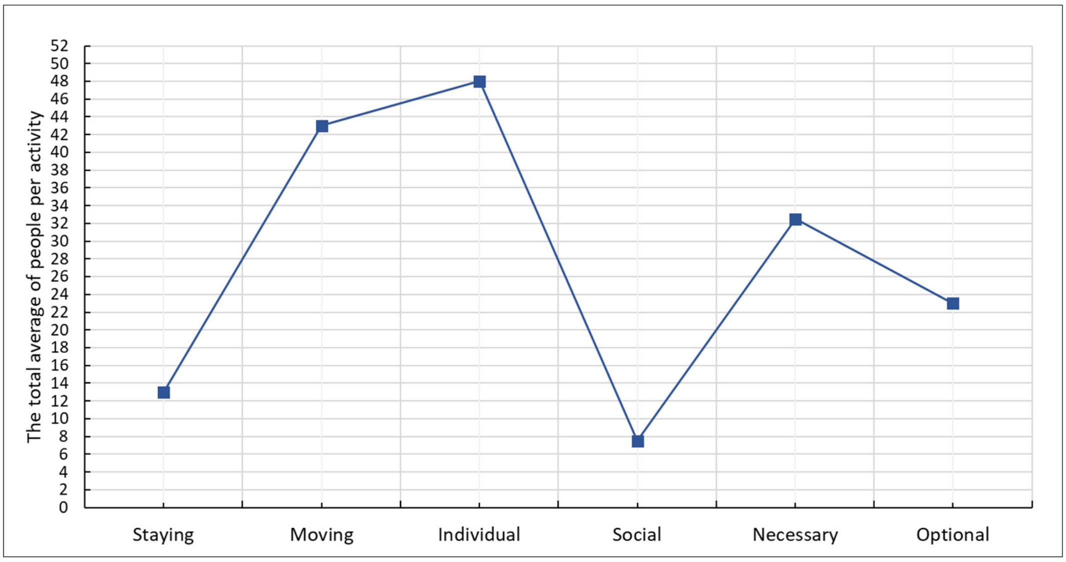


Figure 8.7. Activity pattern. The total average of people per activity in the selected street - Blue two: case study A.

From Appendix One, the presence of people and their classification in terms of gender and age categories besides the mapping of the groups exhibits a weak interaction between people and the street edge. Males were the only gender recorded, as there are no women attended during the periods of observation (Figure 8.8). The homogeneous use might determine the ability of the street to attract people from both genders.

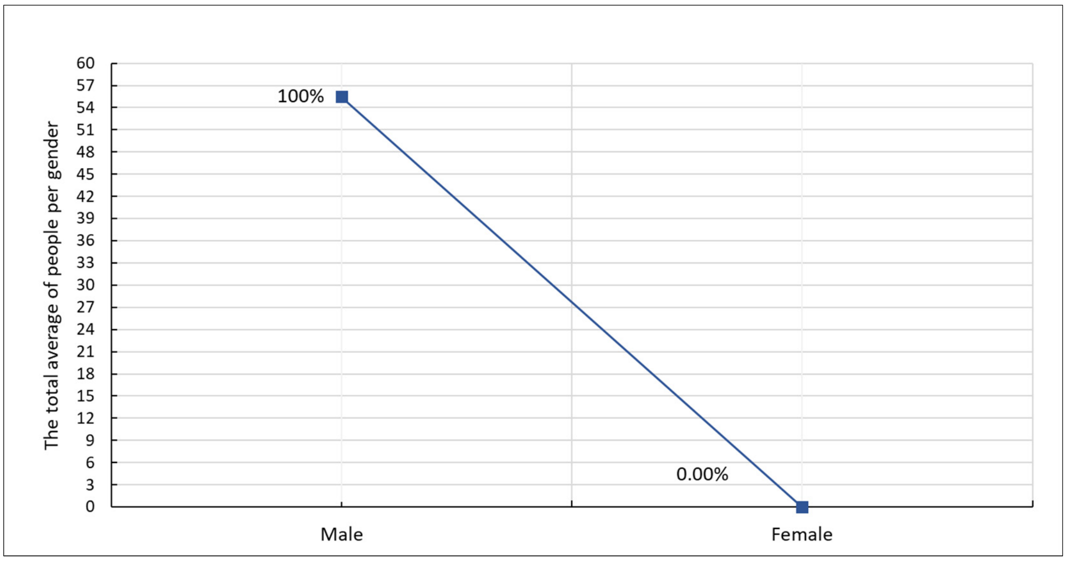


Figure 8.8. Gender pattern. The total average of pedestrians according to gender. Blue two street: case study A.

Calculating the age categories in this street shows that adult-elder people are most prevalent (38) from the total average, while teenager-young people only represent 18; other categories are not recorded (Figure 8.9). There were two significant patterns of age: child and female disappeared from this chosen street during the observation; however, this does not necessarily mean this street prevents these people from using it. The minimal presence of people in the experimental street affected the number of groups that recorded within the observation. Thus, a group includes two persons, and its frequency is six; in comparison, one group occurred consisting of three persons (Figure 8.10). From the observations outlined, the indicators and illustrations of blue two street in sample A illustrate that the ability of the street to attract people is moderate.

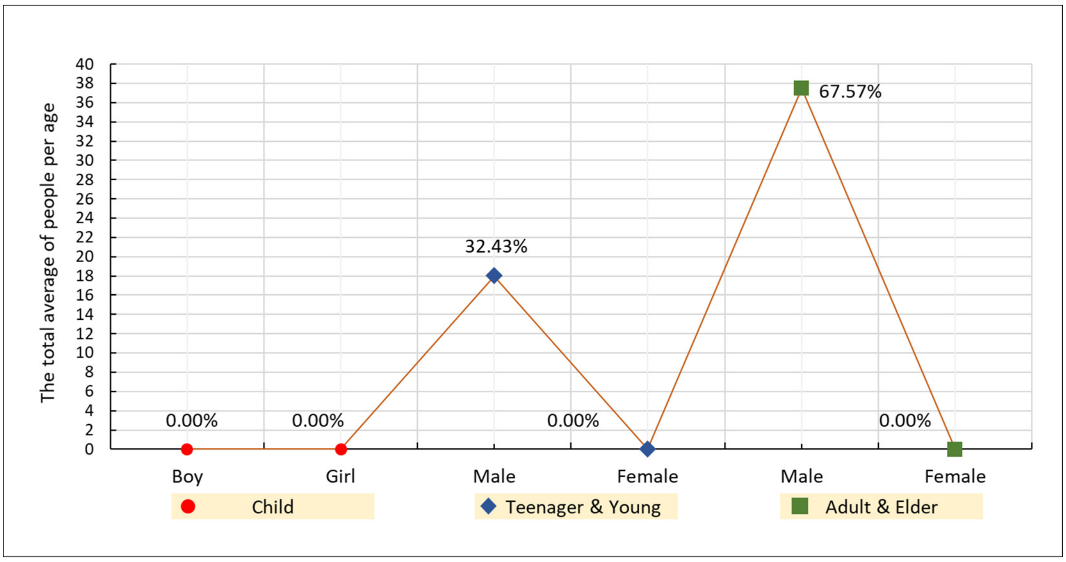


Figure 8.9. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Blue two street: case study A.

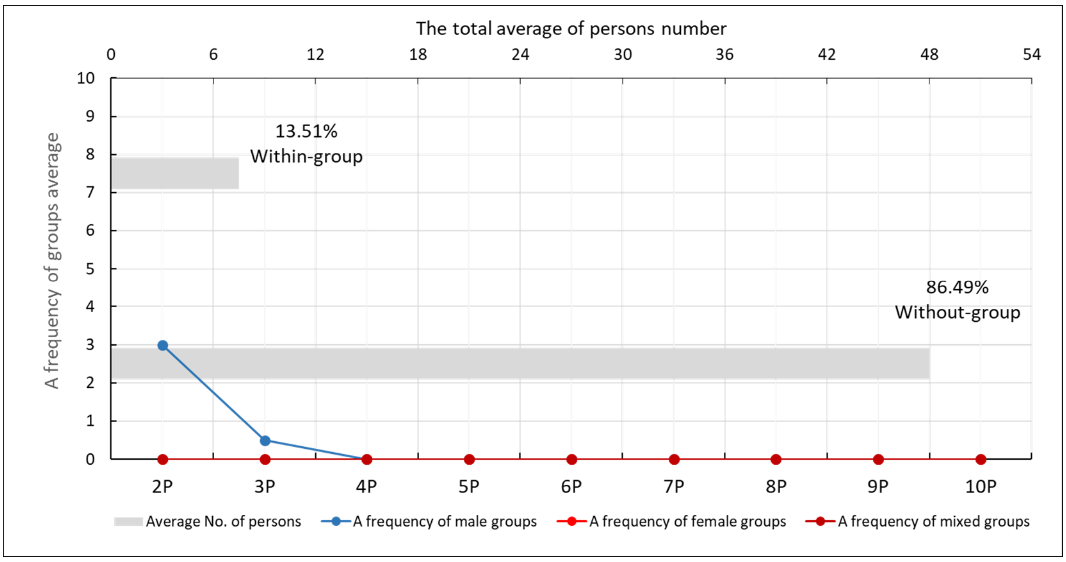


Figure 8.10. Group pattern. The number of groups which is based on the total number of persons per group and the frequency value for each group (Blue two street: case study A).

8.2.1.3 Yellow One Street: Case Study A

Pedestrian flow is calculated and labelled in Table 8.3. Bookshops and similar related services of printing and offices equipment occupy two street edges. (Figure 5.79), (Figure 6.46 and 6.53). The noon period saw a high number of entrants to the street (396), whilst 401 persons departed (Figure 8.11). The second largest amount of pedestrian influx was recorded in the afternoon period, when 224 entered and 248 exited. The morning period saw the lowest quantity of people when only 158 and 86 entered and exited respectively (Figure 8.11).

Table 8.3. The pedestrian flow of the selected street: yellow one - case study A.

Case study: A | Street: Yellow one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	34	158	86	Number of people per activity	26	28	52	2	40	14
			Exiting	20									
			Total	54									
		St2	Entering	124				24	166	153	37	104	86
			Exiting	66									
			Total	190									
							Total	50	194	205	39	144	100
							Average	25.0	97.0	102.5	19.5	72.0	50.0
Noon	15 minutes	St1	Entering	138	396	401	Number of people per activity	53	236	180	109	189	100
			Exiting	151									
			Total	289									
		St2	Entering	258				54	454	362	146	322	186
			Exiting	250									
			Total	508									
							Total	107	690	542	255	511	286
							Average	53.5	345.0	271.0	127.5	255.5	143.0
Afternoon	15 minutes	St1	Entering	68	224	248	Number of people per activity	47	75	75	47	69	53
			Exiting	54									
			Total	122									
		St2	Entering	156				40	310	277	73	257	93
			Exiting	194									
			Total	350									
							Total	87	385	352	120	326	146
							Average	43.5	192.5	176.0	60.0	163.0	73.0
							Total average	**122**	**635**	**550**	**207**	**491**	**266**

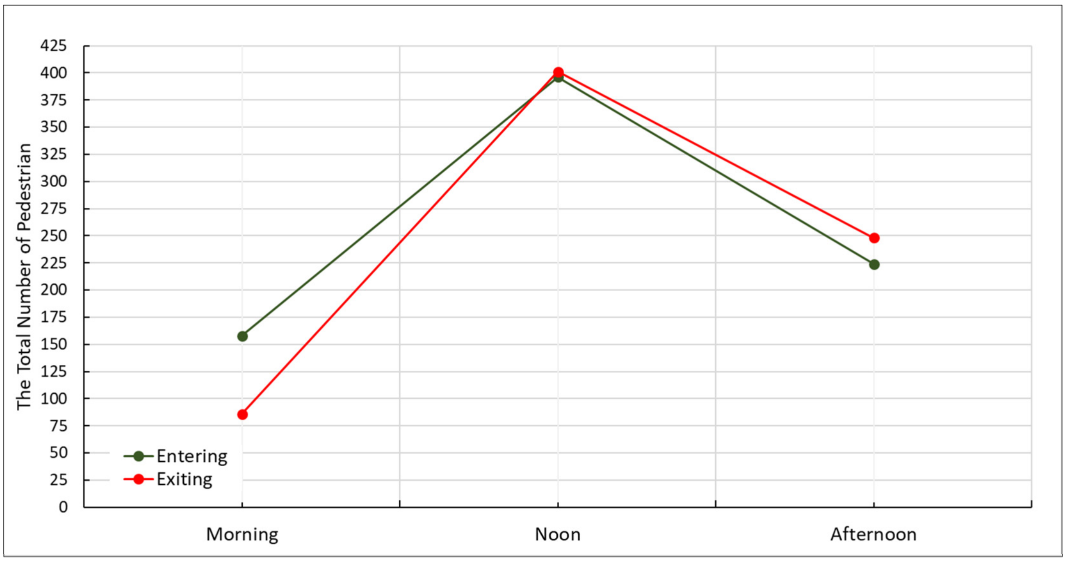


Figure 8.11. Movement pattern: entering and exiting of pedestrians through yellow one street - case study A.

Amongst the human activities of those who used the street, the majority tended to move through (635) rather than stay (122) in the street. Concerning individual versus social activities, the selected street records the few social activities at just 207, while individual activities number 550 persons. From the total average of pedestrians (757); 491 persons are listed as engaging in necessary activities, whilst 266 were involved in optional activities (Figure 8.12).

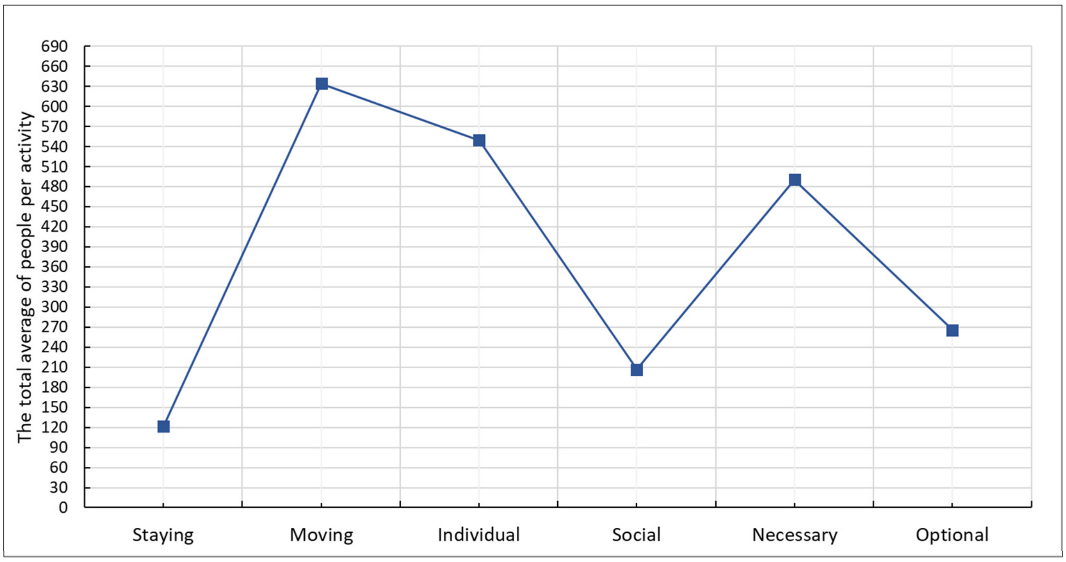


Figure 8.12. Activity pattern. The total average of people per activity in the selected street. Yellow one: case study A.

In terms of the gender of people recorded (Appendix One), men were the most prevalent at a 93.13% average; in comparison, women comprised only 6.87% (Figure 8.13). Furthermore, the age categories include all classes, but the male is more dominant for both the teenager-young and adult-elder ages (Figure 8.14). The gender pattern could highlight a question about the likelihood of different genders to share the street life and in turn, the aptitude of the street itself to invite different genders from different ages.

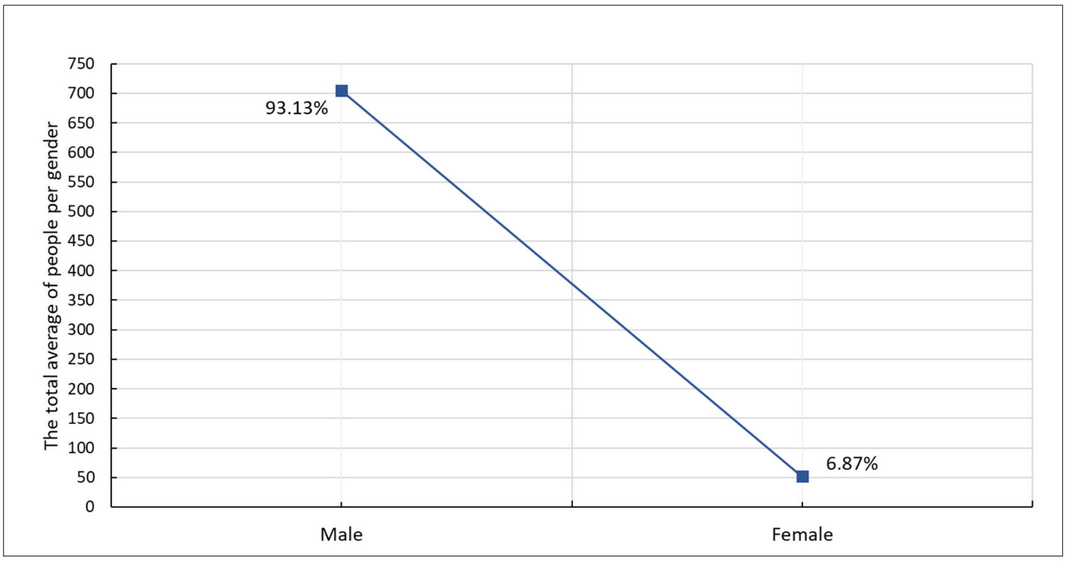


Figure 8.13. Gender pattern. The total average of pedestrian according to gender. Yellow one street: case study A.

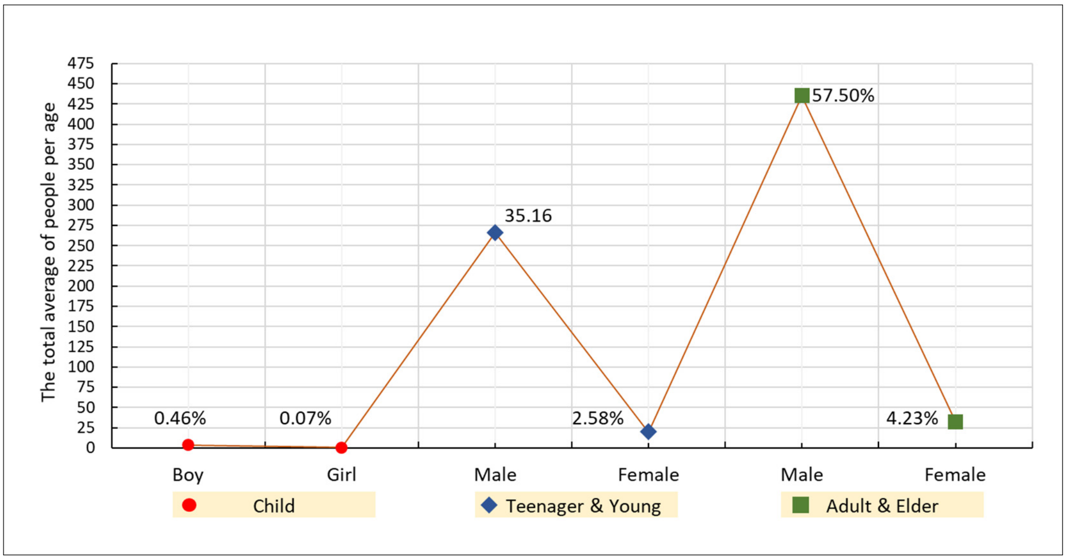


Figure 8.14. Age pattern. The total average of pedestrian based on three categories: child, teenager-young, and adult-elder people. Yellow one street: case study A.

The average presence of pedestrians in this street was based on age: only 0.46% boys and 0.07% girl represented the child category. The teenager - young category included 35.2% male and 2.58% female. Finally, the adult-elder category consisted of 57.5% males and 4.23% females (Figure 8.14). The average grouping pattern in this selected street, like the earlier samples, comprised 2P (two persons) and reaches the highest average at about 65 groups for male, six groups for female, and nine for mixed gender. While for 3P (three persons per group), there are nine 3P-males, one 3P-female, and three 3P-mixed. Finally, 4P (four persons per group) occurred amongst male only within two groups and mixed for one group (Figure 8.15).

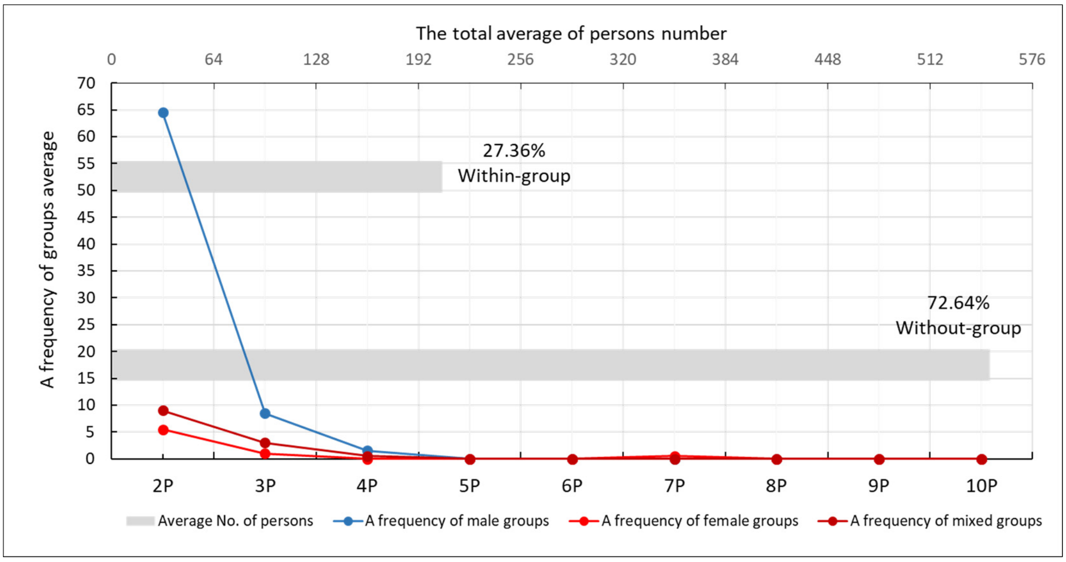


Figure 8.15. Group pattern. The number of groups in which based on the total number of persons per group and the frequency value for each group. Yellow one street: case study A.

8.2.1.4 Yellow Two Street: Case Study A

The volume of people records the highest value at noon when it sees 201 people entering, and 212 exiting, (Figure 6.46 and 6.56). This amount reduced during the morning to 131 and 105 for those who enter and exit, respectively. Also, the afternoon period recorded the lowest quantity at 113 entering versus 169 exiting (Table 8.4 and Figure 8.16).

Table 8.4. The pedestrian flow of the selected street: yellow two - case study A.

Case study: A | Street: Yellow two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	47	131	105	Number of people per activity	37	50	81	6	60	27
			Exiting	40									
			Total	87									
		St2	Entering	84				44	105	129	20	88	61
			Exiting	65									
			Total	149									
							Total	81	155	210	26	148	88
							Average	40.5	77.5	105.0	13.0	74.0	44.0
Noon	15 minutes	St1	Entering	67	201	212	Number of people per activity	40	105	113	32	92	53
			Exiting	78									
			Total	145									
		St2	Entering	134				61	207	220	48	165	103
			Exiting	134									
			Total	268									
							Total	101	312	333	80	257	156
							Average	50.5	156.0	166.5	40.0	128.5	78.0
Afternoon	15 minutes	St1	Entering	42	113	169	Number of people per activity	39	35	64	10	45	29
			Exiting	32									
			Total	74									
		St2	Entering	71				48	160	165	43	135	73
			Exiting	137									
			Total	208									
							Total	87	195	229	53	180	102
							Average	43.5	97.5	114.5	26.5	90.0	51.0
							Total average	135	331	386	80	293	173

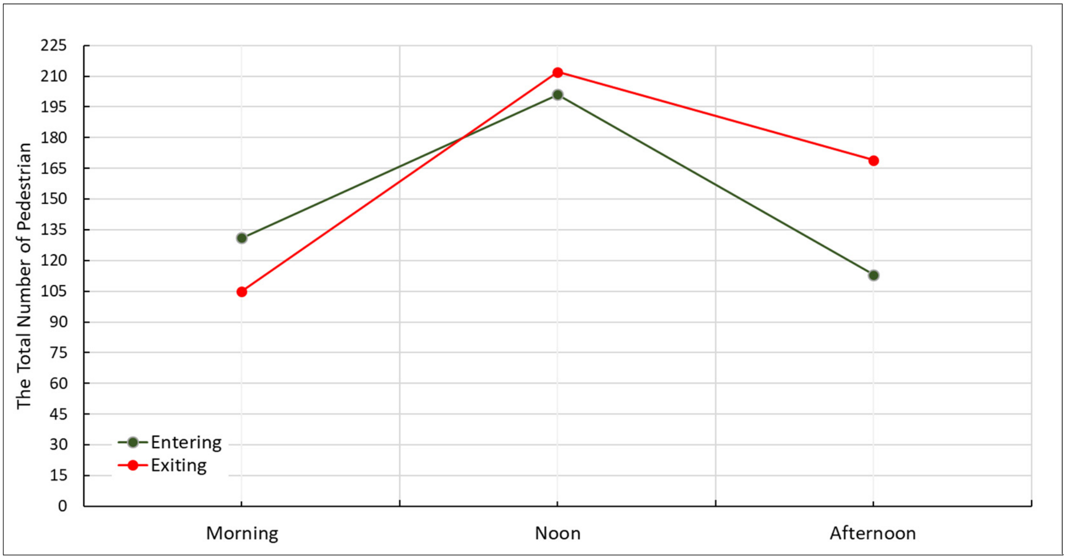


Figure 8.16. Movement pattern: pedestrians entering and exiting through the yellow two street: case study A.

Also, in this street, the entrants prefer to move through the street instead of residing in it, where the total average is 331 persons staying against 135 persons walking. There is a significant gap between individual and social activities. Social activity is considered moderate at only 80 persons (average) of the total average of people (466); meanwhile, 386 people are engaged in an individual activity. A necessary activity represents the most significant quantity at 293 compared to optional that attains only 173 of the total average of 466 (Figure 8.17).

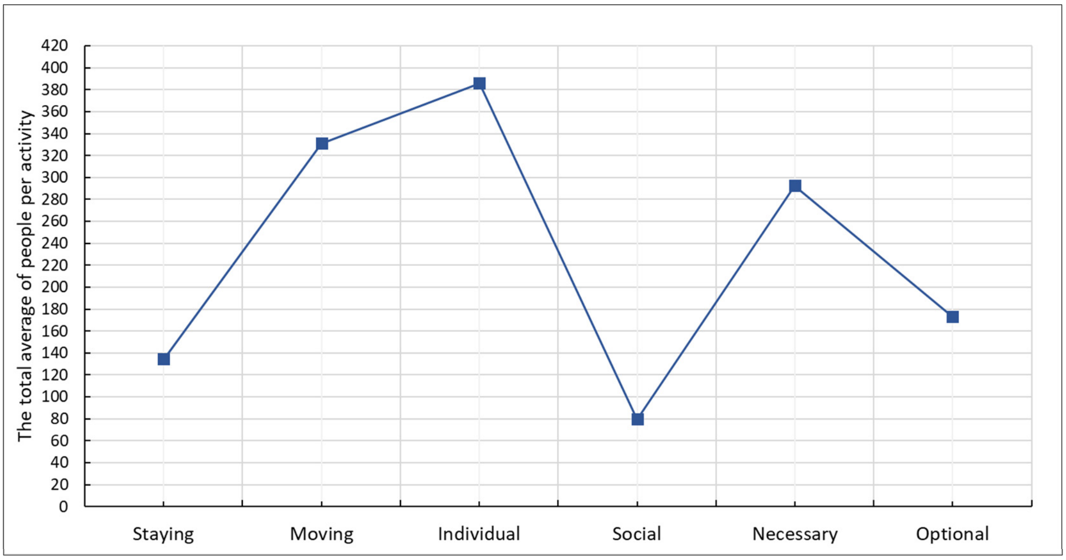


Figure 8.17. Activity pattern. The total average of people per activity in the selected street – yellow two: case study A.

From observation (Appendix One) and within 100 metres of the street, there were only 28 females from the total average of 466 pedestrians; this represents a ratio of 5.91%. In comparison, men total of 438 persons representing a percentage of 94.09% from 466 people (Figure 8.18). This, however, is an indicator of the nature of the street and how the majority (men) use it as opposed to women.

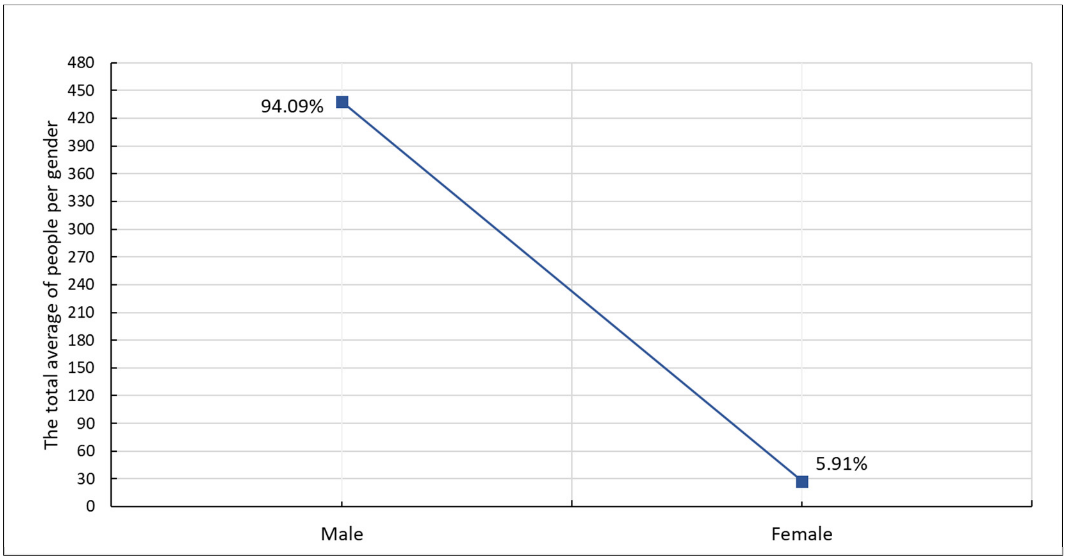


Figure 8.18. Gender pattern. The total average of the pedestrian according to the gender. Yellow two street: case study A.

The significant presence of men affect all related values; in this regard, adult-elder people attain the greatest ratio at about 56.93% (men) and 4.73% (women). In comparison, the teenager-young category numbers around 35.88% (male) and 0.32% (female). The child class is the lowest ratio in obtaining 1.29% (boys) and 0.86% (girls) (Figure 8.19).

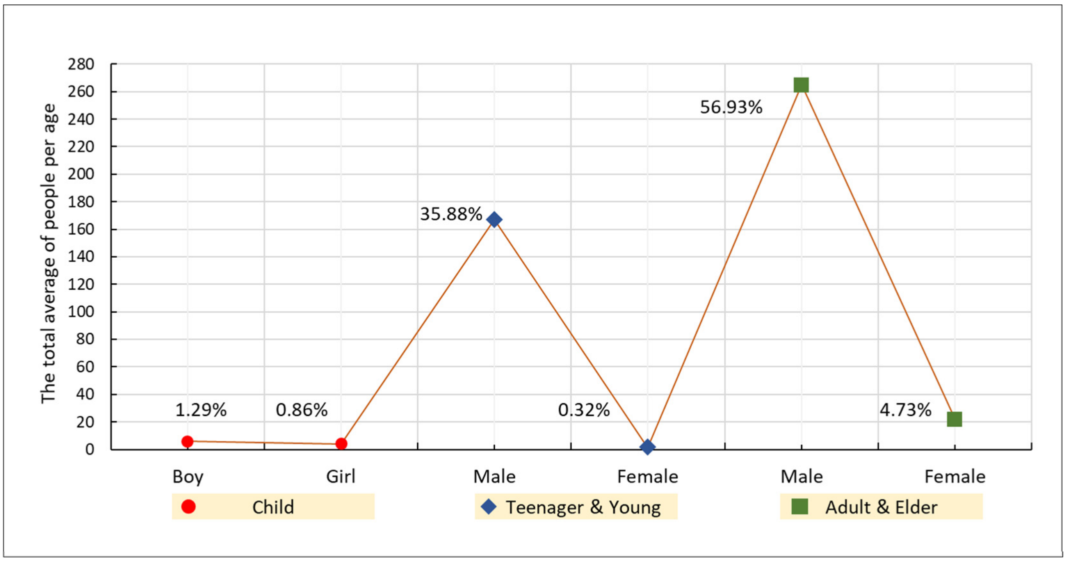


Figure 8.19. Age pattern. The total average of pedestrian based on three categories: child, teenager-young, and adult-elder people. Yellow two street; case study A.

The grouping pattern does not exceed 2P and 3P for all three types: male, female, and mixed. However, there is a difference in the frequency of each group per gender. Within male, 26 groups were recorded comprising 2P (two persons), and two groups were recorded for 3P (three persons). For females, two groups were recorded for 2P and only one for 3P. The mixed-gender includes four groups that consist of two-persons for each, and three groups for 3P (Figure 8.20).

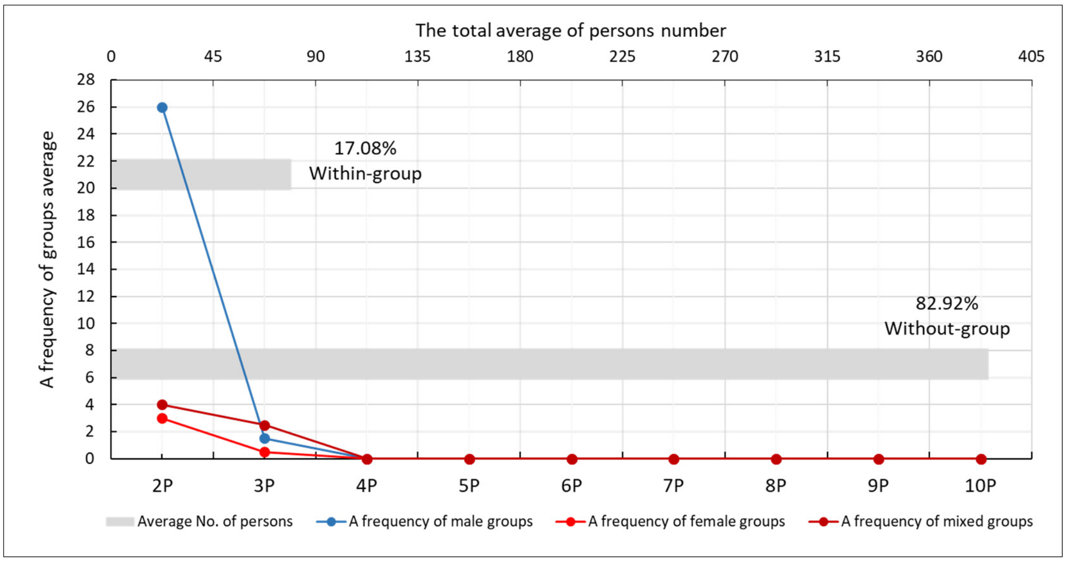


Figure 8.20. Group pattern. The number of groups is based on the total number of persons per group and the frequency value for each group. Yellow two street: case study A.

8.2.1.5 Red One Street: Case Study A

Data on pedestrian flow are documented for the one-hundred-metre length of the segment (Table 8.5). The two stations (two cameras) record a varied number of people who enter and exit for each period; morning, noon, and afternoon. The mid-period is more active compared with the morning and afternoon. Thus, the most significant quantity is for exiting at 769, whilst 635 enter during the noon period. The afternoon period has the second most considerable values at 510 exiting and 446 enterings. The pedestrian flow is moderate for the morning where their amount is 296 (entering) and 282 (exiting) (Figure 8.21).

Table 8.5. The pedestrian flow of the selected street: red one - case study A.

Case study: A | Street: Red one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	188	296	282	Number of people per activity	56	329	312	73	238	147
			Exiting	197									
			Total	385									
		St2	Entering	108				38	155	151	42	116	77
			Exiting	85									
			Total	193									
							Total	94	484	463	115	354	224
							Average	47.0	242.0	231.5	57.5	177.0	112.0
Noon	15 minutes	St1	Entering	354	635	769	Number of people per activity	63	811	638	236	644	230
			Exiting	520									
			Total	874									
		St2	Entering	281				67	463	372	158	332	198
			Exiting	249									
			Total	530									
							Total	130	1274	1010	394	976	428
							Average	65.0	637.0	505.0	197.0	488.0	214.0
Afternoon	15 minutes	St1	Entering	317	446	510	Number of people per activity	59	565	441	183	446	178
			Exiting	307									
			Total	624									
		St2	Entering	129				61	271	238	94	180	152
			Exiting	203									
			Total	332									
							Total	120	836	679	277	626	330
							Average	60.0	418.0	339.5	138.5	313.0	165.0
							Total average	172	1297	1076	393	978	491

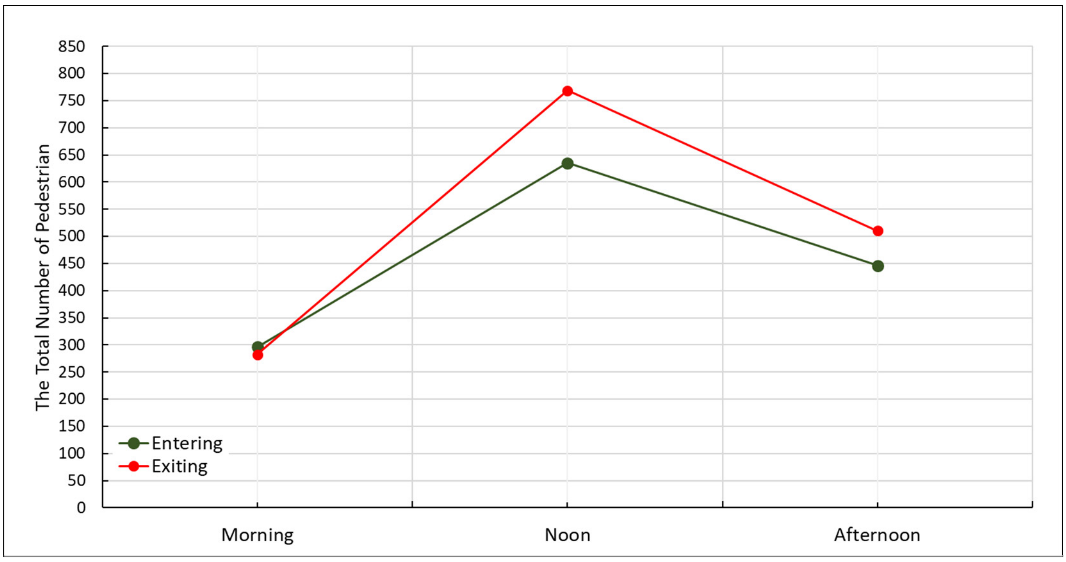


Figure 8.21. Movement pattern: entering and exiting of pedestrians through the red one street: case study A.

The level of activities in this chosen segment exhibits a significant gap between each opposing activity pair (staying/moving, individual/social, and necessary/optional). Through all three periods, there is a pattern of people passing through rather than remaining: therefore, the total average of those who prefer to move is 1297 persons versus 172 who choose to stay. At an average of 393, social activity records poor participation in interacting with the street edge; this contrasts with the average of 1076 persons who individually respond to the edge. Necessary activities govern most pedestrian movement in this street (average at 978), as opposed to optional activities which record 491 persons (Figure 8.22).

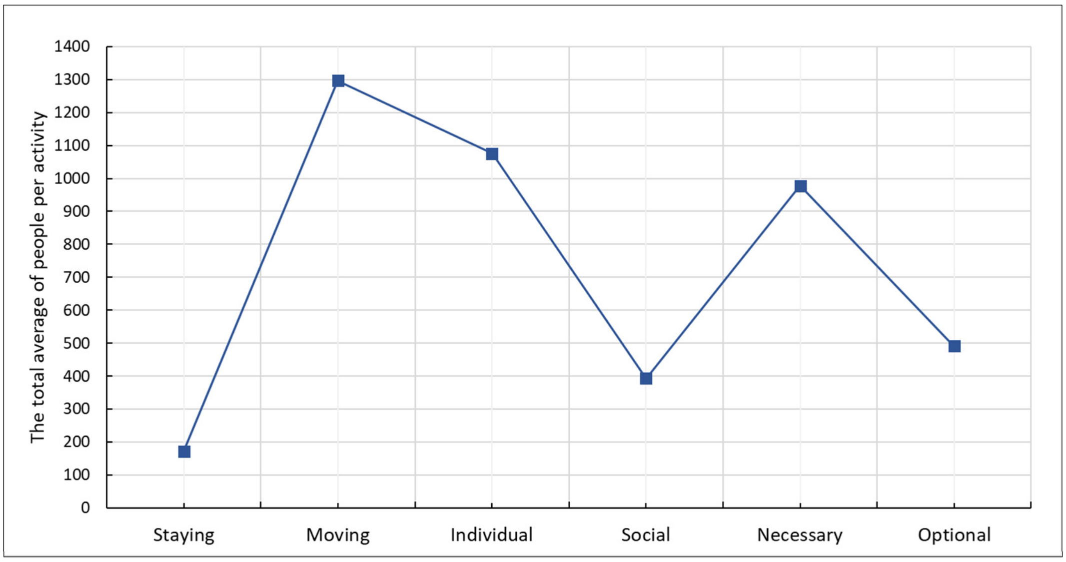


Figure 8.22. Activity pattern. The total average of people per activity in the selected street: red one - case study A.

Gender pattern refers to the highest quantity of male presence with a total average of 1369 men representing 93.19%, while the ratio of the female is around 6.81% for 100 women (Figure 8.23).

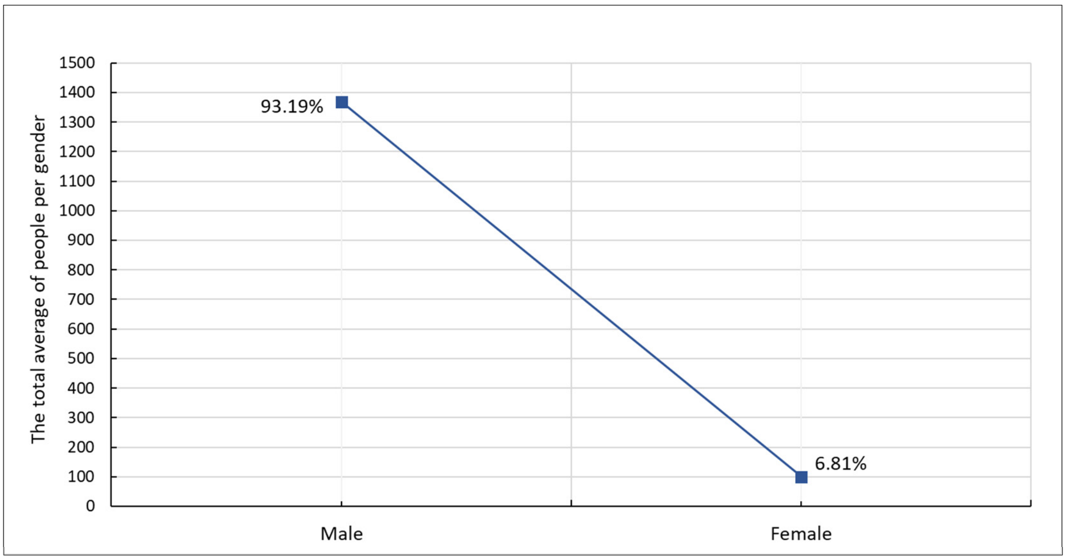


Figure 8.23. Gender pattern. The total average of the pedestrian according to the gender. Red one street - case study A.

Hence, the street's characteristics and its function might help to determine the impact of gender. The age categories illustrate a greater concentration toward the adult-elder class for both males and females despite the fact that women represent the lowest value. Adult-elder men represent the greatest percentage at 67.70%, whilst 5.96% was recorded as female. In addition, teenager-young people represent the highest ratio for males at about 24.27% versus 0.48 for women. The child category was calculated at 1.23% for boys and only 0.37% for girls (Figure 8.24). The range of ages in the street is quite limited; thus, it could be suggested that the street's edge does not meet the needs of different ages.

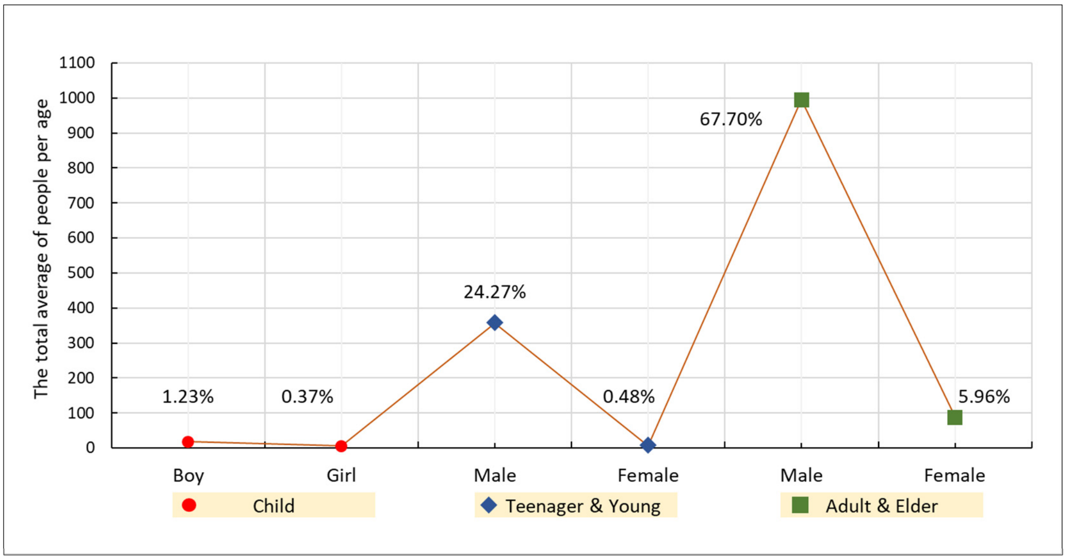


Figure 8.24. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Red one street: case study A.

The grouping pattern (Appendix One) is another indicator of the ability of the street to capture different cluster types besides diversity in the number of persons per group. The majority of groups consist of two persons, where the total average of groups comprising 2P-male is about 125 and 9.5~10 for female and 19 groups are mixed. Furthermore, for 3P (three persons), the overall average of groups are 12 for male, 0.5~1 group for female, and 6.5~7 for mixed. Groups that consist of four persons occur within the male and mixed groups. For men, there are 2.5~3 groups, and for mixed there are 1.5~2 groups. Also, 5P per group was observed for males and for only one group, and the mixed is 2.5~3. The last group includes six males, and numbers 0.5~1 as the total average. Overall the level of participation of people in the group is quite low; its ratio is about 26.75% for only 393 as the total average, while individual pedestrians comprise 73.25% totalling 1076 persons (Figure 8.25). It is worth acknowledging that itemized data of diverse human activities have been identified and documented in detail in Appendix One.

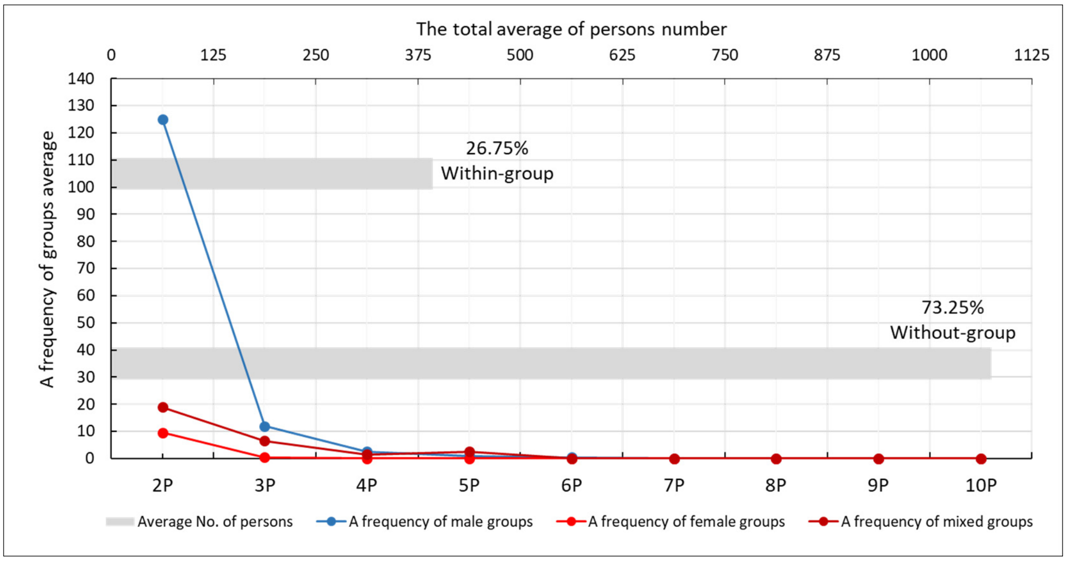


Figure 8.25. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Red one street: case study A.

8.2.1.6 Red Two Street: Case Study A

The volume entering the sample of this street total 1208 and exiting is 1160. The afternoon period saw a significant amount of people reaching 1055 for those who enter, and 1043 for those who exit. Meanwhile, the morning sees the lowest value with 856 enterings and 753 exiting (Table 8.6 and Figure 8.26). The volume of pedestrian flow in this segment reaches the maximum quantity over the three times (morning, noon, and afternoon) as compared with the all the previously described streets in case study A.

Table 8.6. The pedestrian flow of the selected street: red two - case study A.

Case study: A | Street: Red two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	578	856	753	Number of people per activity	105	786	738	153	626	265
			Exiting	313									
			Total	891									
		St2	Entering	278				126	592	612	106	439	279
			Exiting	440									
			Total	718									
							Total	231	1378	1350	259	1065	544
							Average	115.5	689.0	675.0	129.5	532.5	272.0
Noon	15 minutes	St1	Entering	601	1208	1160	Number of people per activity	142	1060	921	281	990	212
			Exiting	601									
			Total	1202									
		St2	Entering	607				198	968	991	175	803	363
			Exiting	559									
			Total	1166									
							Total	340	2028	1912	456	1793	575
							Average	170.0	1014.0	956.0	228.0	896.5	287.5
Afternoon	15 minutes	St1	Entering	252	1055	1043	Number of people per activity	176	884	806	254	684	376
			Exiting	808									
			Total	1060									
		St2	Entering	803				168	870	822	216	676	362
			Exiting	235									
			Total	1038									
							Total	344	1754	1628	470	1360	738
							Average	172.0	877.0	814.0	235.0	680.0	369.0
							Total average	458	2580	2445	593	2109	929

The opportunity for people to stay in the street is limited, and if so, they remain for a short period in order to shop or conduct a conversation with hawkers along the street edge. The peddlers shape an intermediate edge between the street space and adjacent buildings along the street.

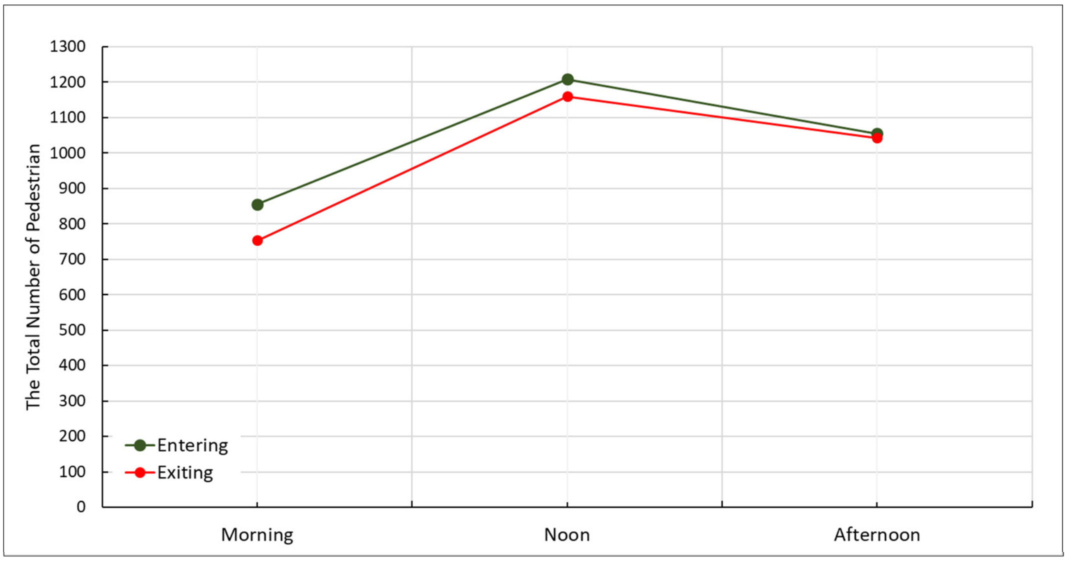


Figure 8.26. Movement pattern: The number of pedestrians entering and exiting red two street: case study A.

Staying activity includes only 854 persons (15.06%) whilst moving includes 2580 persons (84.94%). The segment shows the lowest value of social activities, as the street edge lacks what is needed to create this type of activity, whether in this selected segment or along the street. Furthermore, social activities comprise only 593 as the total average number of persons at 19.51% against individual activities that capture about 2445 persons (average) at 80.49% (Figure 8.27).

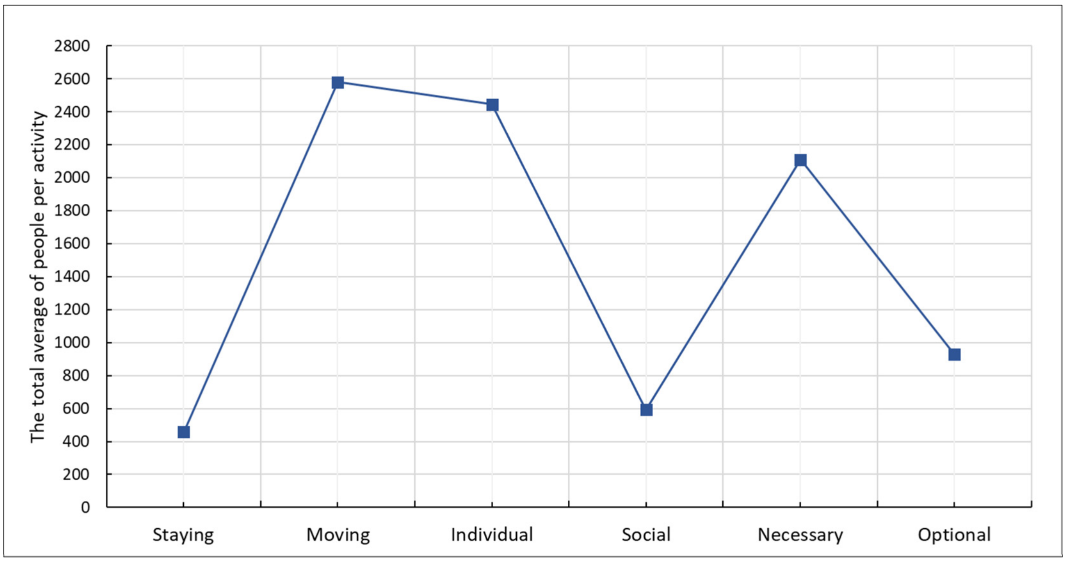


Figure 8.27. Activity pattern. The total average of people per activity in the selected street – red two: case study A.

Necessary activities are dominant and involve about 2109 persons (average), or 69.43%; while, the optional activities are 30.57% for 929 from the total proportion of pedestrians (Figure 8.27). In addition, based on the field observation (Appendix One), the selected segment records 92.48% men representing 2809 persons, whereas females comprise about 229 women from the overall average at 7.52% (Figure 8.28). Most pedestrian movement is recorded as made by men, whilst females represent 25% of the total average flow. This is another concern about the street edge and suggests that it might be weak in accommodating female needs.

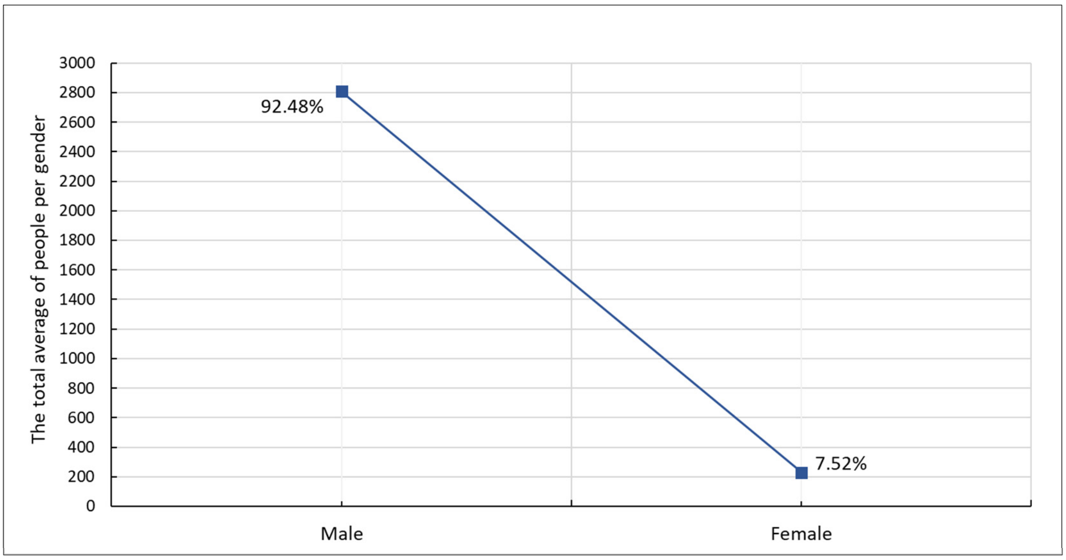


Figure 8.28. Gender pattern. The total average of pedestrians according to gender. Red two street: case study A.

The age pattern in this segment reveals the greatest concentration toward males as opposed to females. The age categories mostly consist of pedestrians classified within the adult-elder category; their percentages are about 54.22% (1647-male) and 7.00% (213-female) of the total average. Teenager-young pedestrians represent the largest second per cent at 73.38%, comprising 1136 males and 0.38% for 12 women. The last category is the child, for which the boys' ratio is about 0.87% representing just 27 boys, and 0.15% of the total average of the pedestrian account for five girls (Figure 8.29), (Appendix One). The group pattern of pedestrian movement falls between 2P (two persons) and 5P (five persons). The highest quantity is for the group that includes two people, whether male or female or mixed. Based on the total average of pedestrian presence: 187 groups represent 76.28% for 2P-male, 20.5 representing 8.38% for 2P-female, and finally, 37.5 2P mixed group representing 15.3% (Figure 8.30), (Appendix One).

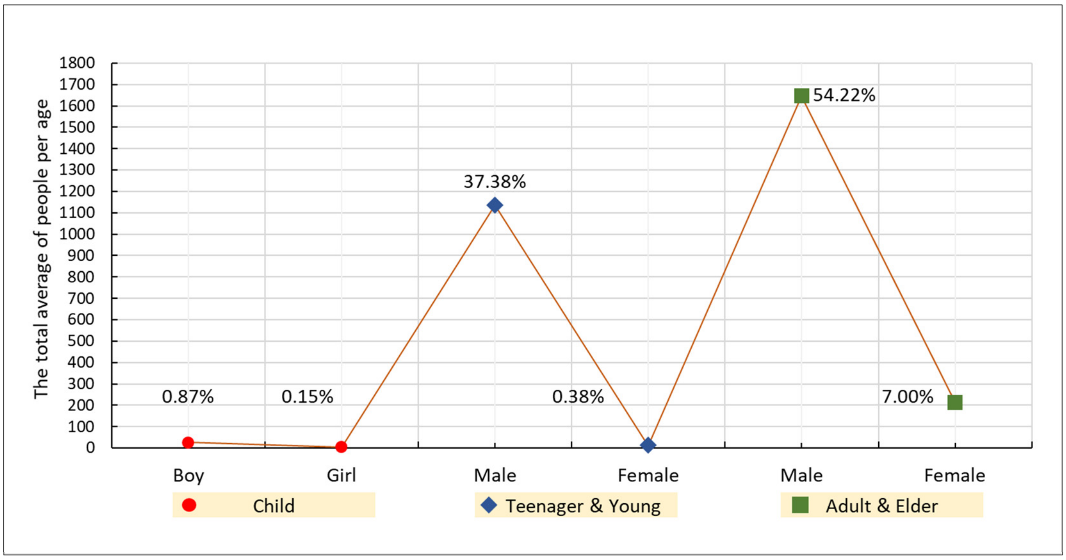


Figure 8.29. Age pattern. The total average of pedestrians based on three age categories: child, teenager-young, and adult-elder people. Red two street: case study A.

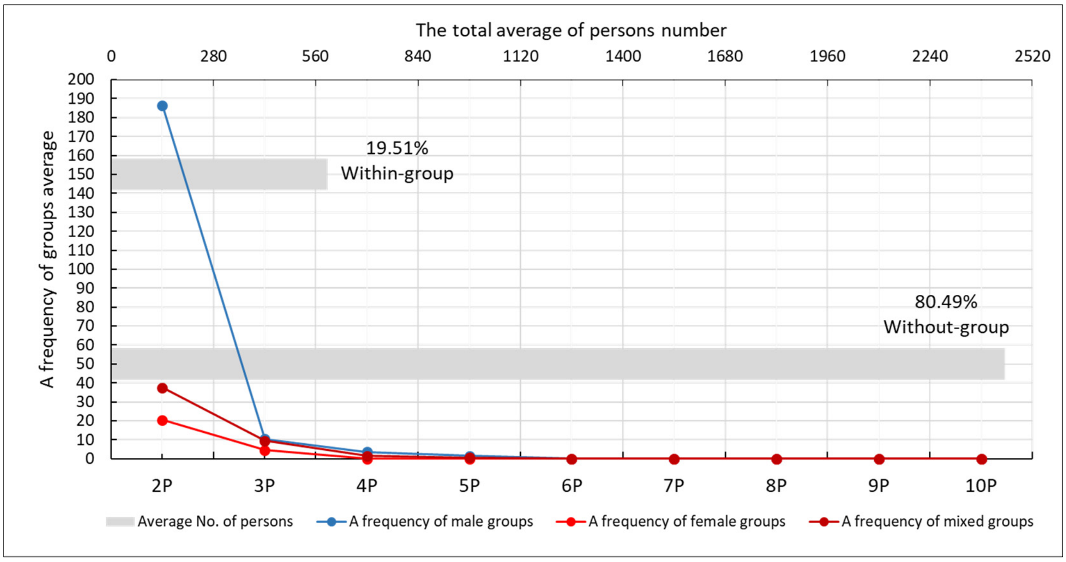


Figure 8.30. Group pattern. The number of groups in which based on the total number of persons per group and the frequency value for each group. Red two street | case study A.

8.2.2 Case Study B: Hybrid Pattern

8.2.2.1 Blue One Street: Case Study B

The amount of people who are observed in this residential street is divided into two: entering and exiting (Table 8.7). In the morning, 20 pedestrians enter and 14 exit; at noon, these numbers increase significantly, when 44 enter and 40 exit. Few people appear in the street in the afternoon, when 28 enter and 24 exit (Figure 8.31). The privacy level is very high which affects the human activity and reduces the interaction between people and the street edge. Social activities record only 35 individuals (40.59%) of the total average of persons against 51 (59.41%) individual activities.

From the overall average of pedestrians (85), 34 (40.00%) stay whilst 51 (60.00%) pass through the street. Most pedestrian movement is recorded within the necessary activities' category, at 63.53% for 54 people; in comparison, the optional activities attain only 31 persons at 36.47% (Figure 8.32). The traditional area is entirely occupied by houses; thus, the presence of strangers is limited. Furthermore, the street can be classified as privately owned and for more information, it is essential to know that counted data of assorted human actions have been catalogued in detail in Appendix One.

Table 8.7. The pedestrian flow of the selected street: blue one - case study B.

Case study: B | Street: Blue one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	7	20	14	Number of people per activity	0	13	9	4	9	4
			Exiting	6									
			Total	13									
		St2	Entering	13				0	21	6	15	16	5
			Exiting	8									
			Total	21									
							Total	0	34	15	19	25	9
							Average	0	17.0	7.5	9.5	12.5	4.5
Noon	15 minutes	St1	Entering	22	44	40	Number of people per activity	22	17	25	14	20	19
			Exiting	17									
			Total	39									
		St2	Entering	22				19	26	23	22	28	17
			Exiting	23									
			Total	45									
							Total	41	43	48	36	48	36
							Average	20.5	21.5	24	18.0	24	18.0
Afternoon	15 minutes	St1	Entering	15	28	24	Number of people per activity	15	10	17	8	14	11
			Exiting	10									
			Total	25									
		St2	Entering	13				12	15	21	6	21	6
			Exiting	14									
			Total	27									
							Total	27	25	38	14	35	17
							Average	13.5	12.5	19	7.0	17.5	8.5
							Total average	34	51	51	35	54	31

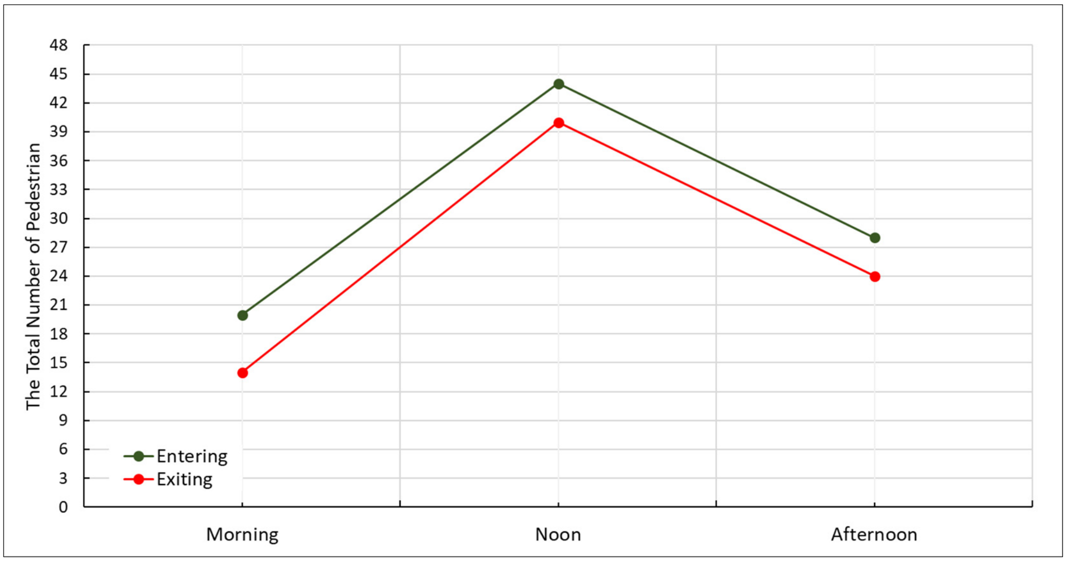


Figure 8.31. Movement pattern: pedestrians entering and exiting through blue one street: case study B.

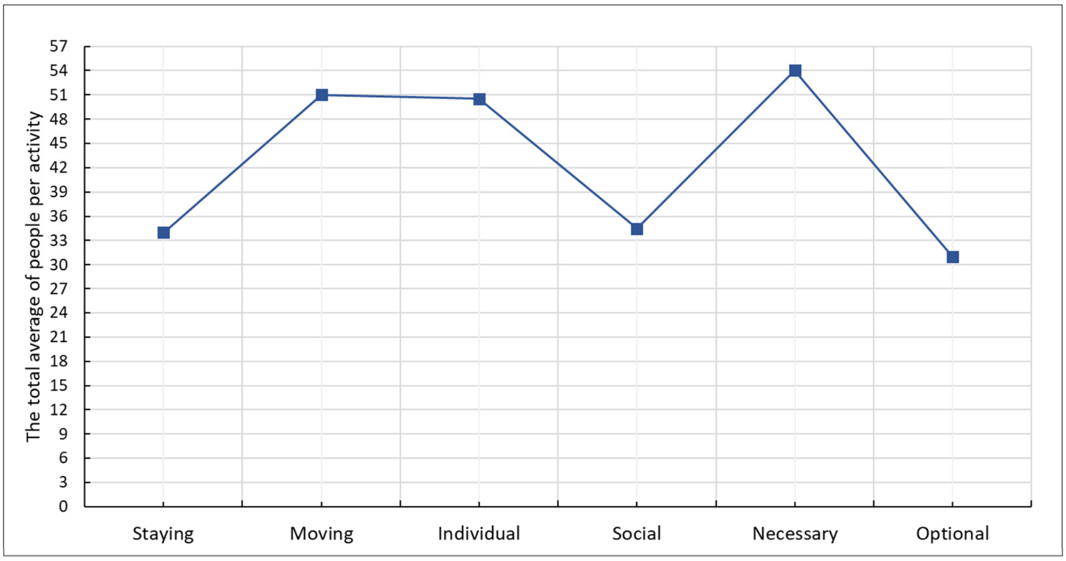


Figure 8.32. Activity pattern. The total average of people per activity in the selected street: Blue one: case study B.

Regarding the gender (Appendix One), the selected street covers a moderate ratio between females and males, namely 64.71% male and 35.29% female. This result, however, is unlike blue one sample in case study A, where the presence of women is zero (Figure 8.33).

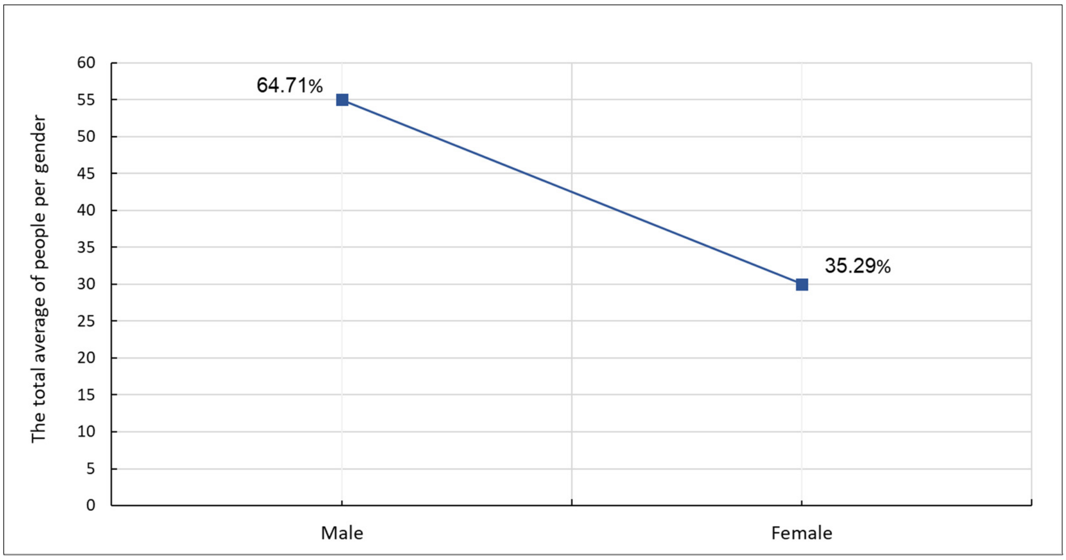


Figure 8.33. Gender pattern. The total average of pedestrians according to their gender. Blue one street: case study B.

The age pattern (Appendix One) includes the various colour categories of ages within a 100-metre length of the designated segment. Markedly, the child category rises here compared with case A - blue one. The ratio of boys is about 23.53%, and for girls, it is 19.41% of the total average of the people. The teenager-young category achieves the high percentage of males against females at 17.06% and 0.59% respectively. The final category is the adult-elder, whose proportions are recorded as 24.12% for men and 15.29% for women (Figure 8.34).

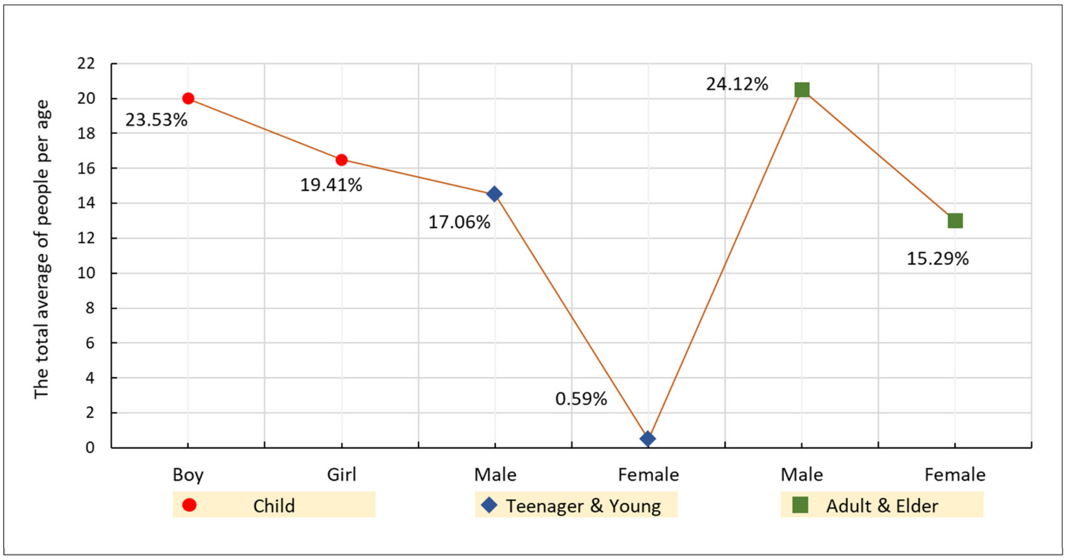


Figure 8.34. Age pattern. The total average of pedestrian based on the three categories: child, teenager-young, and adult-elder people. Blue one street: case study B.

The grouping pattern (Appendix One) shows that the total average of people organised within the group is about 34.50 namely 40.59%, while those who appeared without the group are around 50.50 at 59.41% of the overall average. 2P-group is the most common group size especially for mixed groups at 79.17% (9.5~10 groups), and 20.83% (2.5~3 groups) for group male, whereas the 2P female category is zero. The 3P-group includes only one female, while in mixed, there are 1.5~2 groups, but for male, the gender is zero. The mixed group also embraces 4P and 5P with one group for each (Figure 8.35). Like the previous streets in sample organic pattern A, the value of centrality could be responsible, to a large extent, for determine the pedestrian flux and how to respond to the adjacent edge besides other factors such as constitutedness and permeability.

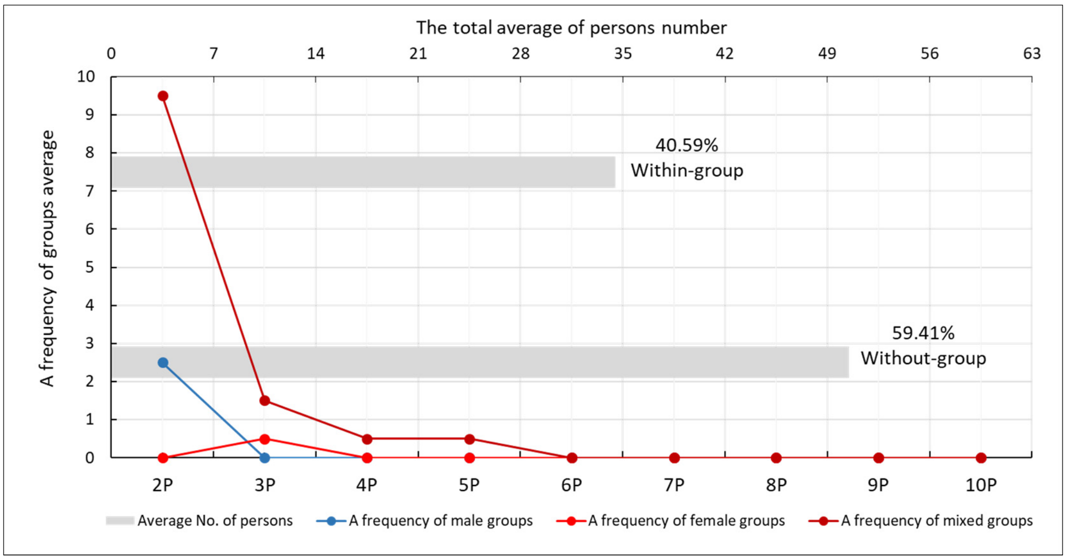


Figure 8.35. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Blue one street: case study B.

8.2.2.2 Blue Two Street: Case Study B

In this segment, (Figure 6.66 and 6.70), the volume of the pedestrians who enter is 38, 70, and 96 for the morning, noon, and afternoon periods, respectively. For the same three periods of the day, those exiting were 54, 76, and 78 persons respectively (Table 8.8 and Figure 8.36).

Table 8.8. The pedestrian flow of the selected street | blue two - case study B.

Case study: B | Street: Blue two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	19	38	54	Number of people per activity	0	46	31	15	31	15
			Exiting	27									
			Total	46									
		St2	Entering	19				0	46	31	15	31	15
			Exiting	27									
			Total	46									
							Total	0	92	62	30	62	30
							Average	0	46.0	31	15.0	31	15.0
Noon	15 minutes	St1	Entering	35	70	76	Number of people per activity	7	66	53	20	49	24
			Exiting	38									
			Total	73									
		St2	Entering	35				7	66	53	20	49	24
			Exiting	38									
			Total	73									
							Total	14	132	106	40	98	48
							Average	7	66.0	53	20.0	49	24.0
Afternoon	15 minutes	St1	Entering	48	96	78	Number of people per activity	7	80	55	32	72	15
			Exiting	39									
			Total	87									
		St2	Entering	48				7	80	55	32	72	15
			Exiting	39									
			Total	87									
							Total	14	160	110	64	144	30
							Average	7	80.0	55	32.0	72	15.0
							Total average	14	192	139	67	152	54

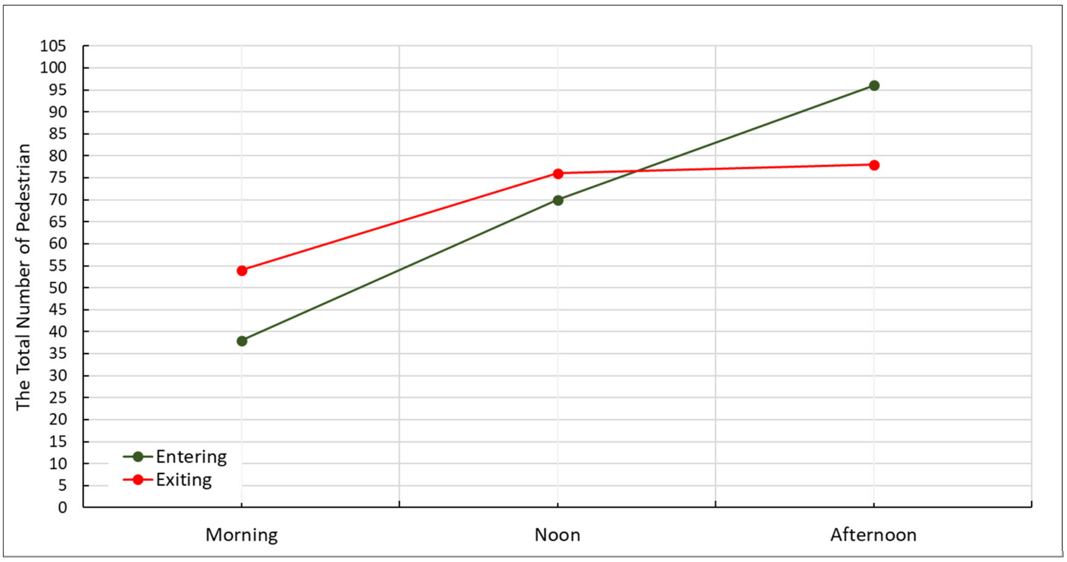


Figure 8.36. Movement pattern: pedestrians entering and exiting through blue two street: case study B.

For human activity, moving is the dominant feature with a percentage of 93.20% (14 persons) compared with staying at only 6.80% (192 persons) of the total average pedestrian flow. Social activities have the lowest value at 32.52% (67 persons), while individual activities comprise 67.48% (139 people). People in this street tend to walk for essential activities and compulsory destinations. Therefore, the necessary activities record 73.69% (152 persons), while the optional activities capture only 26.21% for 54 passersby (Figure 8.37).

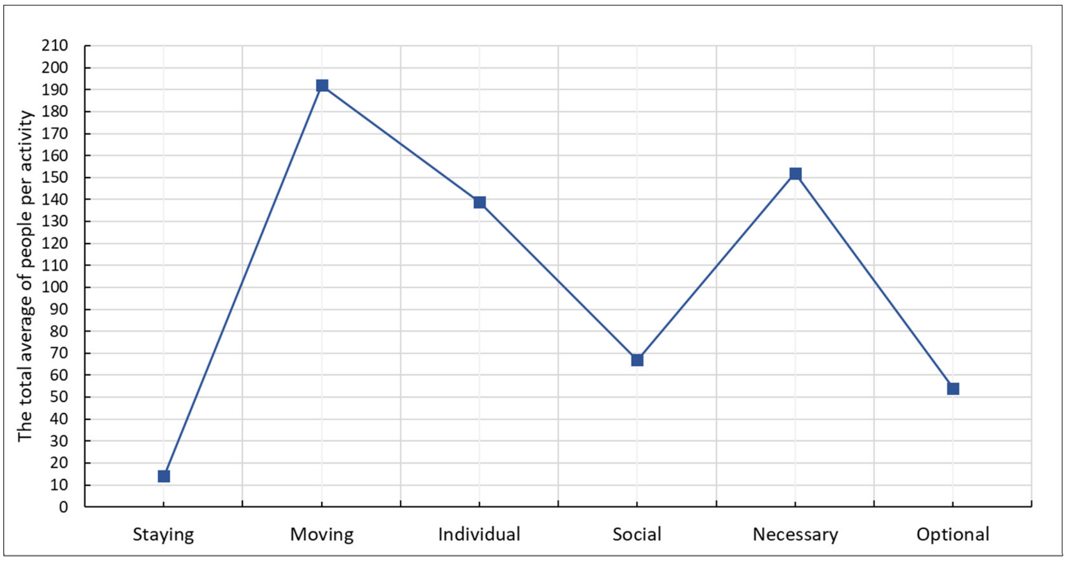


Figure 8.37. Activity pattern. The total average of people per activity in the selected street - blue two: case study B.

Counting the pedestrians moving through the segment, where listed in Appendix One, shows that males represented the highest percentage at 72.33% for 149 of the total average. Females represent about 27.67% for 57 people, whilst this quantity is zero when it comes to the blue two sample in case study A (Figure 8.38). Furthermore, the age pattern is varied in this 100-metre sample; the male child has the highest percentage at 33.50%, and the female child represents 13.59% (Figure 8.39).

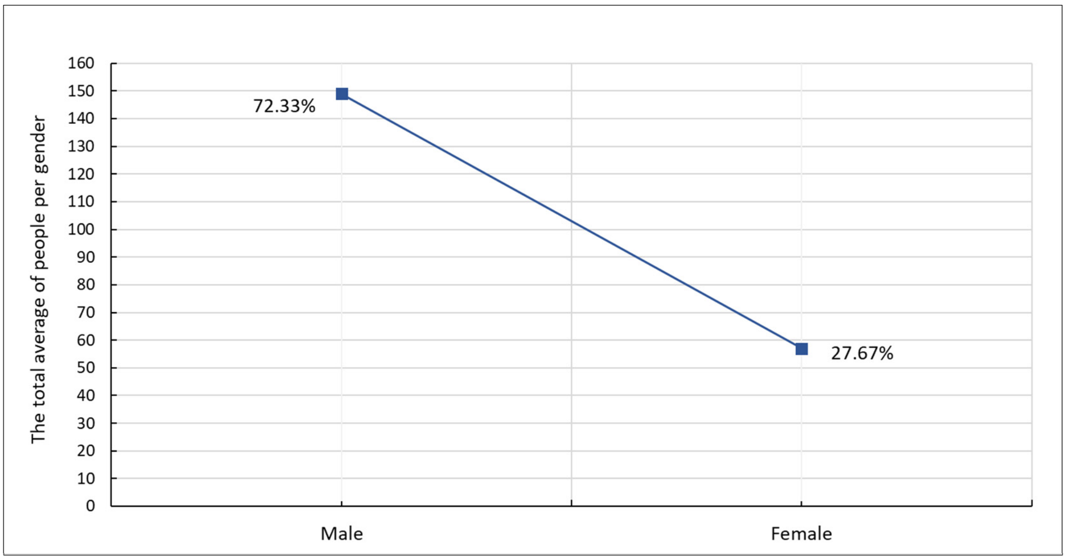


Figure 8.38. Gender pattern. The total average of pedestrians according to gender. Blue two street: case study B.

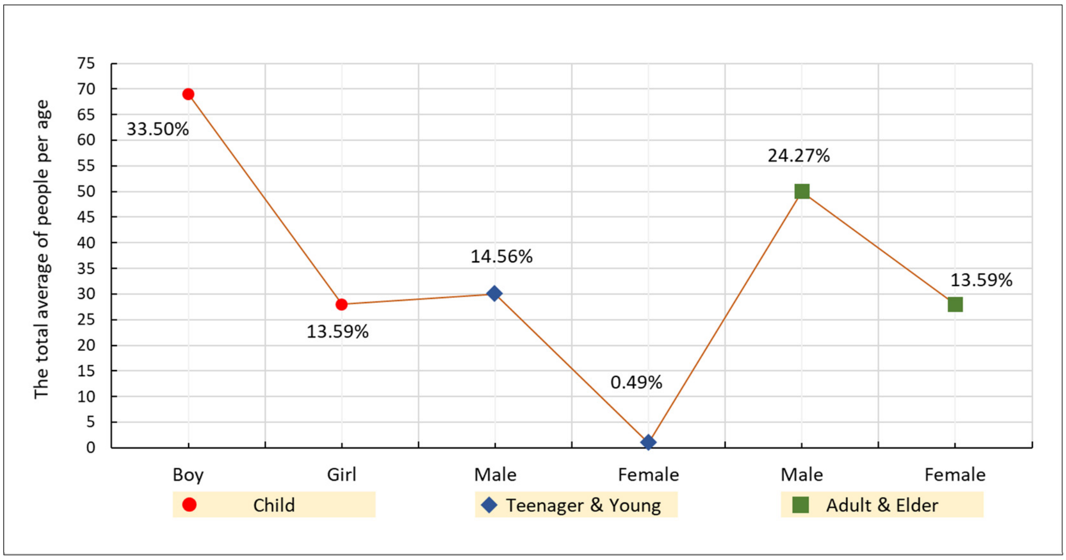


Figure 8.39. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Blue two street: case study B.

There are more males than females in the teenager-young category at 14.56% and 0.49% respectively. Moreover, male adult-elders represented 24.27%, while women were 13.59% of the total percentage of the people observed (Figure 8.39). The variety of people was similar to that found in the traditional neighbourhood's streets. People in these areas tend to benefit from the street edge when it is available. Moreover, the interrelationship between inhabitants and their street in traditional areas differs from those who lived in more modern neighbourhoods; this is potentially due to a difference in social life and regulations. From the collected data, Appendix One, the group pattern of people is captured by 2P (two persons per group) for the three categories: male, female, and mixed (Figure 8.40).

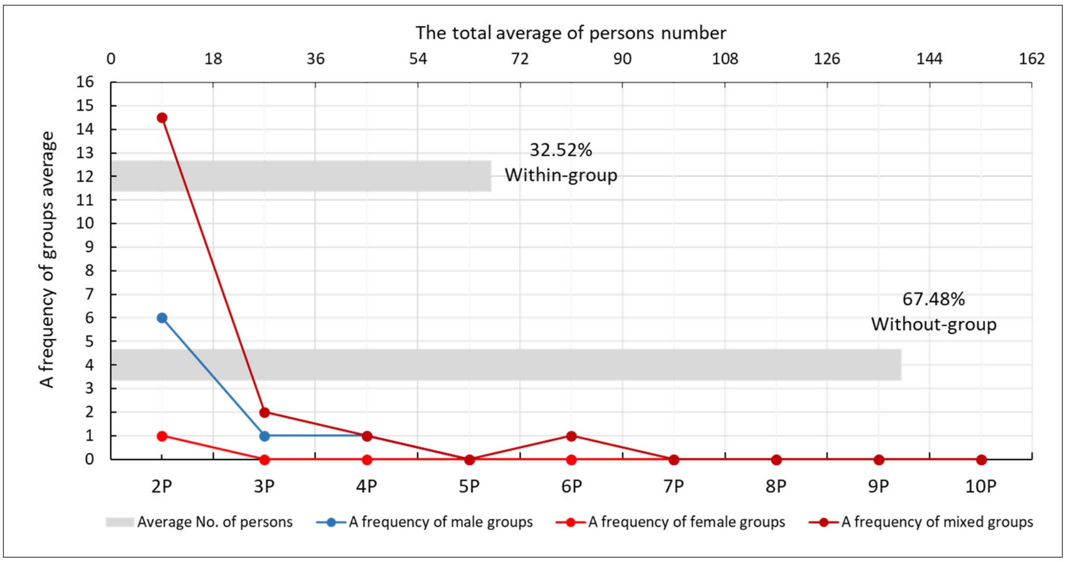


Figure 8.40. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Blue two street: case study B.

The most common was the mixed group, which included 14.5~15 groups (2P); this was followed by the male (2P) at six groups, whilst there was only one female 2P group. In comparison, only one male 3P (three persons per group) occurred whilst two mixed groups were recorded. One group comprised 4P (four persons per group) for both male and mixed. Finally, one group consisted of 6P (six persons per group), and this was observed in the mixed group (gender and age) in this designated segment (Figure 8.40).

8.2.2.3 Yellow One Street: Case Study B

The pedestrian volume was collected at three different times of the day: morning, noon, and afternoon; this gives a significant difference between people who enter and those who exit (Table 8.9). During the morning, 12 people entered, and 19 people exited. The afternoon time, 26 people entered, while 16 left. At the end of the day, the volume of pedestrian increased in that 38 people entered whilst 19 people exited (Figure 8.41). As human activities, the number of people who chose to stay was limited compared with those who moved through the street. Therefore, of the total average of those who used the street, those who stayed represented 21.54%, while those who walked represented 78.46%. For individual versus social activities, individual activities show a higher proportion at 73.08% whilst 26.92% was recorded for social activities. Necessary activities were dominant at 66.92%, which contrasted with the optional at 33.08% (Figure 8.42).

Table 8.9. The pedestrian flow of the selected street: yellow one - case study B.

Case study: B | Street: Yellow one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	8	12	19	Number of people per activity	8	7	15	0	14	1
			Exiting	7									
			Total	15									
		St2	Entering	4				3	13	12	4	12	4
			Exiting	12									
			Total	16									
							Total	11	20	27	4	26	5
							Average	5.5	10.0	13.5	2.0	13	2.5
Noon	15 minutes	St1	Entering	14	26	16	Number of people per activity	12	11	16	7	20	3
			Exiting	9									
			Total	23									
		St2	Entering	12				5	14	19	0	10	9
			Exiting	7									
			Total	19									
							Total	17	25	35	7	30	12
							Average	8.5	12.5	17.5	3.5	15	6.0
Afternoon	15 minutes	St1	Entering	19	38	19	Number of people per activity	0	25	15	10	16	9
			Exiting	6									
			Total	25									
		St2	Entering	19				0	32	18	14	15	17
			Exiting	13									
			Total	32									
							Total	0	57	33	24	31	26
							Average	0	28.5	16.5	12.0	15.5	13.0
							Total average	14	51	48	18	44	22

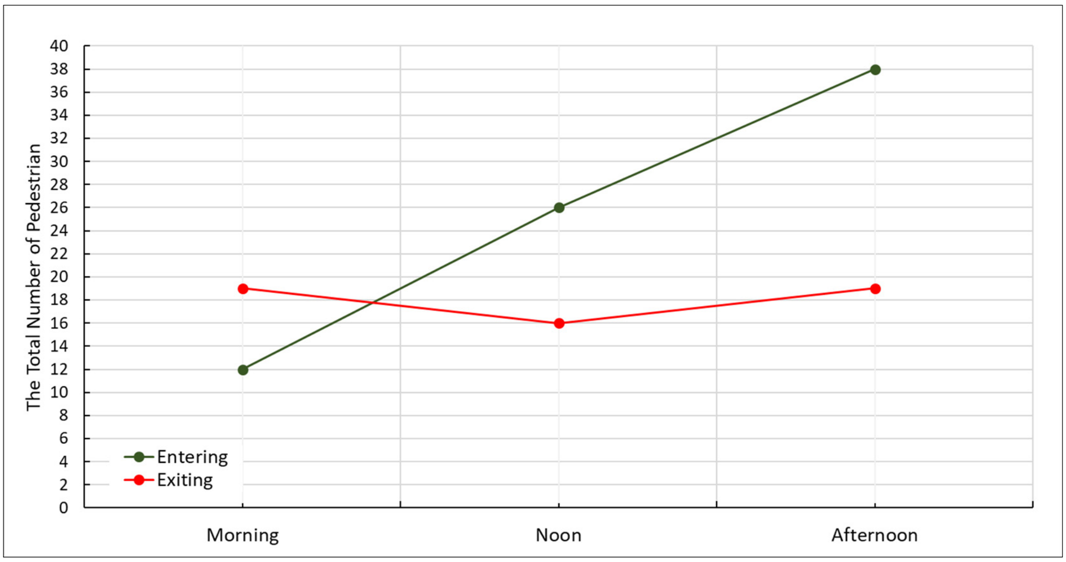


Figure 8.41. Movement pattern: pedestrians entering and exiting through yellow one street: case study B.

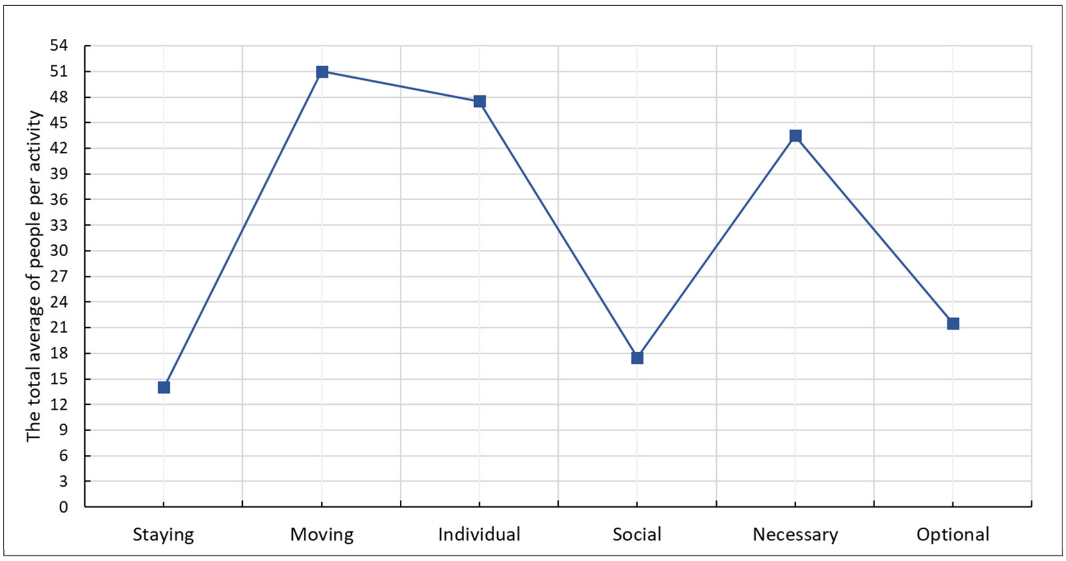


Figure 8.42. Activity pattern. The total average of people per activity in the selected street: Yellow one: case study B.

In terms of gender pattern, males represented 80% whilst female represented 20% of the total average of people who used the street (Figure 8.43), (Appendix One). The age pattern denotes that adult-elder people comprise the greatest proportion at 56.15% male compared with 16.95% female. Within the second, teenager-young people, category, the ratio is 12.31 for male and 0.77 for female. For the third (child) category, males represent the greater per cent at 11.54%, while females only account for 2.31% of the total average of street users (Figure 8.44), (Appendix One). Regarding group pattern, the greatest overall average in terms of the number of groups is 2P, regardless of gender.

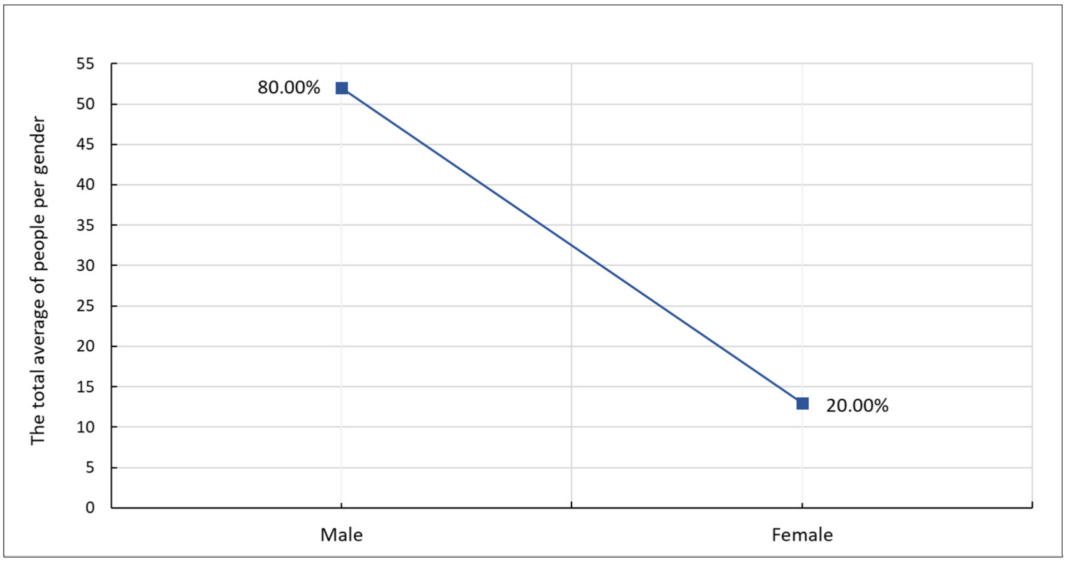


Figure 8.43. Gender pattern. The total average of pedestrians according to gender. Yellow one street: case study B.

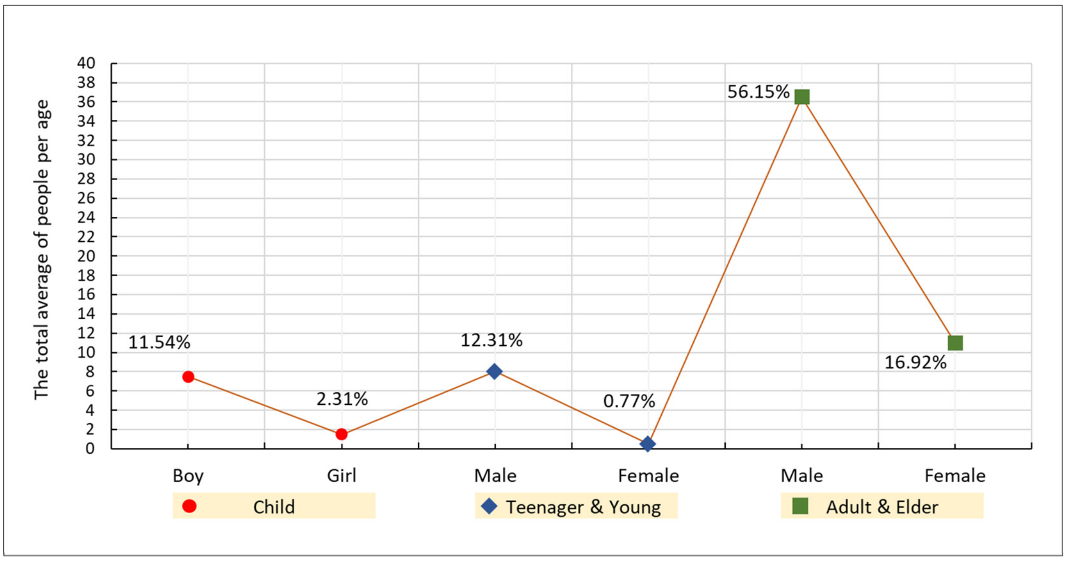


Figure 8.44. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Yellow one street: case study B.

The numerical ratio, male 2P-group comprised 61.54%, but only 38.46% represent the mixed group, while the female 2P presence is zero. For the 3P-based group in this segment, there is only one within the female category and two within the mixed. Overall, the people who join the group represent 26.92% in contrast to those without a group at 73.08% (Figure 8.45). It might be argued that the street edge could be the first factor that contributes effectively to form grouping and to gather people whether in the intended group or even a spontaneous group. The nature of activities and their variety with the density that embedded in the adjacent street, these activities need to be addressed and analysed where this is one of the aims of the current study.

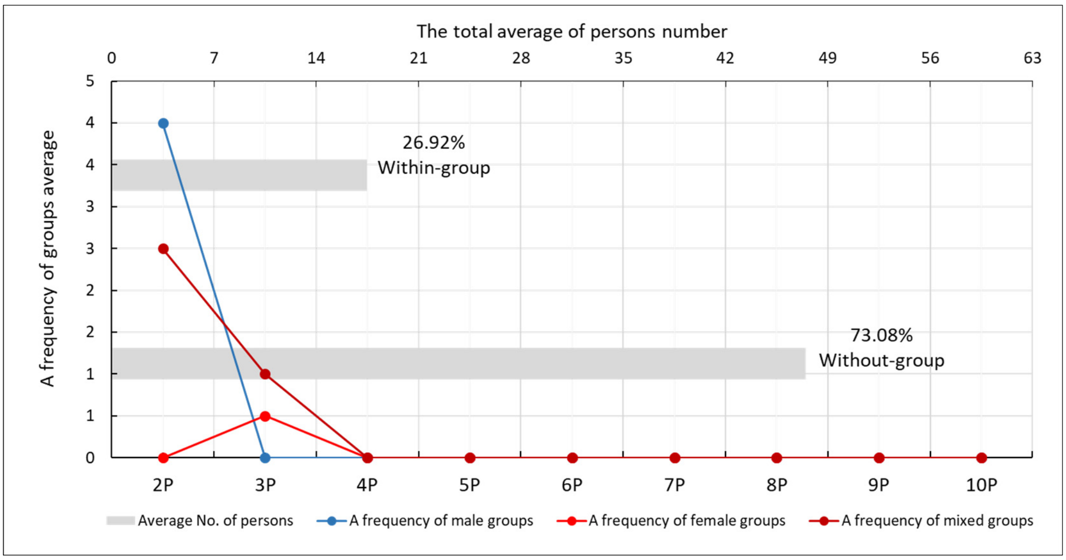


Figure 8.45. Group pattern. The number of groups in which based on the total number of persons per group and the frequency value for each group. Yellow one street | case study B.

8.2.2.4 Yellow Two Street: Case Study B

Table 8.10 lists the pedestrian flow within Yellow Two Street for case study B (Figure 6.66 and 6.76). The number of people moving through the street differs substantially between entering and exiting. The most significant period is the afternoon; in this regard, 26 people enter whilst 24 exit. Morning shows only 25 entering individuals, and 18 people leave. The flow of people at the end of the day shows 24 enterings and 10 exiting (Figure 8.46).

Table 8.10. The pedestrian flow of the selected street: yellow two - case study B.

Case study: B | Street: Yellow two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	10	25	18	Number of people per activity	1	17	12	6	10	8
			Exiting	8									
			Total	18									
		St2	Entering	15				3	22	21	4	13	12
			Exiting	10									
			Total	25									
							Total	4	39	33	10	23	20
							Average	2	19.5	16.5	5.0	11.5	10.0
Noon	15 minutes	St1	Entering	6	26	24	Number of people per activity	4	8	10	2	7	5
			Exiting	6									
			Total	12									
		St2	Entering	20				3	35	26	12	24	14
			Exiting	18									
			Total	38									
							Total	7	43	36	14	31	19
							Average	3.5	21.5	18	7.0	15.5	9.5
Afternoon	15 minutes	St1	Entering	8	24	10	Number of people per activity	2	10	12	0	7	5
			Exiting	4									
			Total	12									
		St2	Entering	16				5	17	20	2	12	10
			Exiting	6									
			Total	22									
							Total	7	27	32	2	19	15
							Average	3.5	13.5	16	1.0	9.5	7.5
							Total average	9	55	51	13	37	27

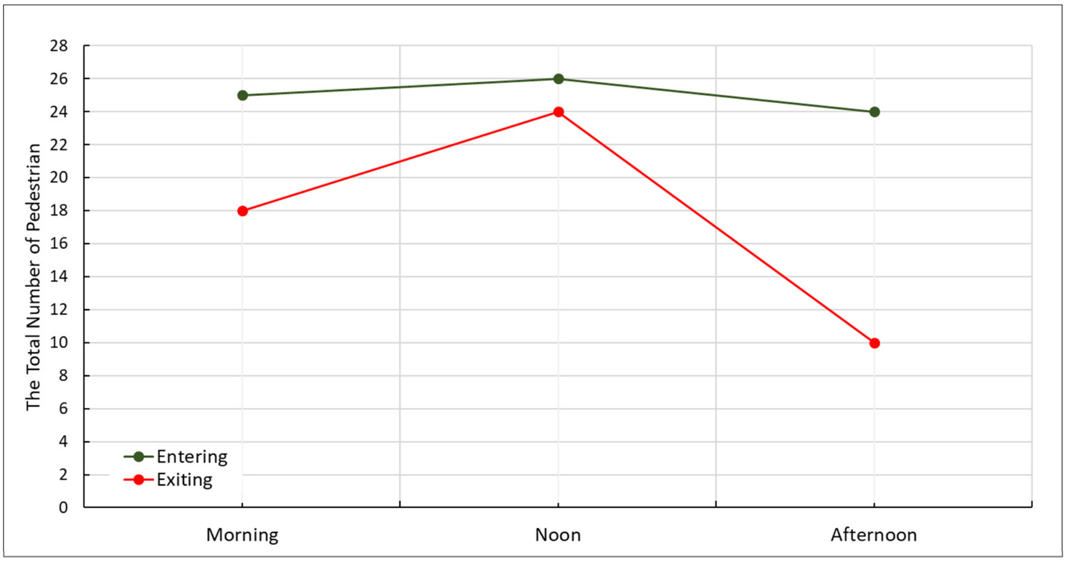


Figure 8.46. Movement pattern: pedestrians entering and exiting through yellow two street: case study B.

Regarding the type of activities observed along this segment, people who passed the street represent 85.83% of the total average, while those staying represent 14.17%. The social activities are limited to just local inhabitants; otherwise, people go through the street. Therefore, individual activities comprise about 79.53% versus 20.47% for social activities. People in this street tend more to move for necessary purposes (at 57.48%), while optional activities represent 42.52% of the total average of pedestrians who use the street (Figure 8.47).

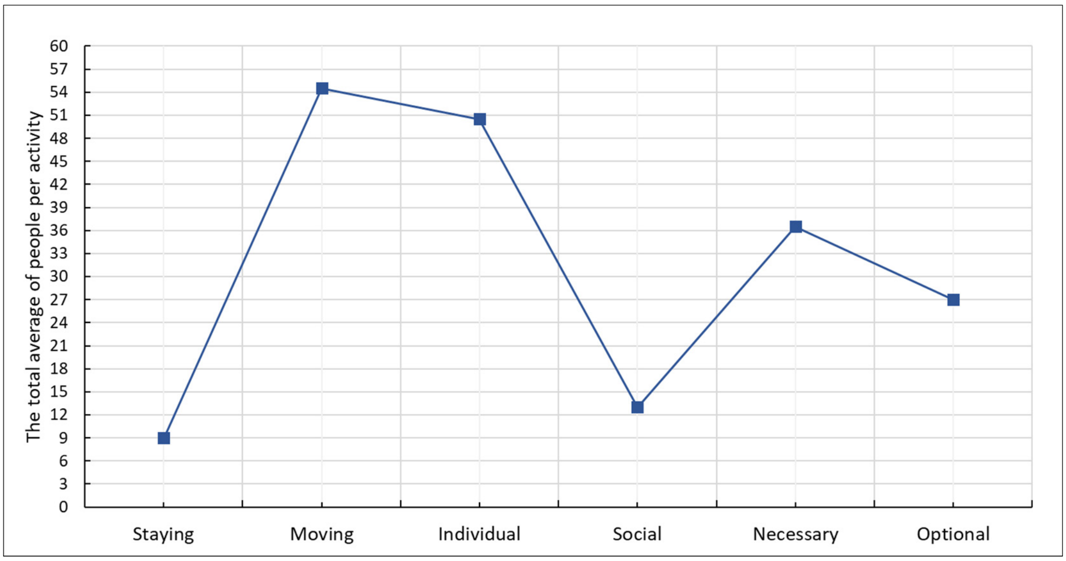


Figure 8.47. Activity pattern. The total average of people per activity in the selected street: yellow two - case study B.

From the field observation, Appendix One, the prevailing gender is male (at 70.87%) with a smaller female presence (at 29.13%); thus, men represent the largest proportional share of the total average of pedestrians (Figure 8.48). Consequently, male children comprise 21.26%

whilst female children make up 17.32%. The teenager-young category accounts for 10.24% of the males and 1.57% for the females. Meanwhile, of the adult-elder people observed, males represented 39.37% whilst women accounted for 10.24% (Figure 8.49).

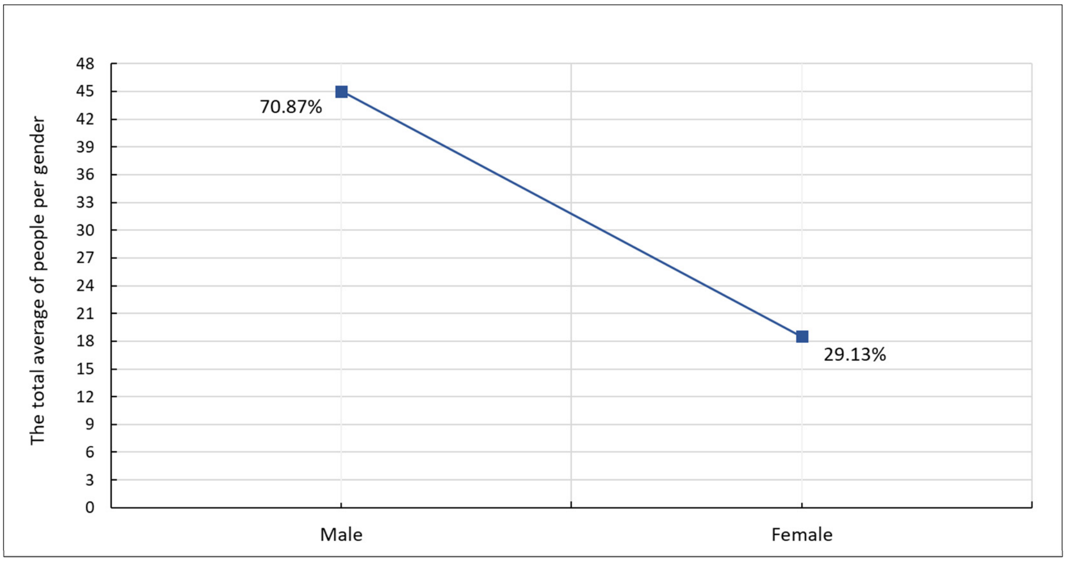


Figure 8.48. Gender pattern. The total average of pedestrians according to gender. Yellow two street: case study B.

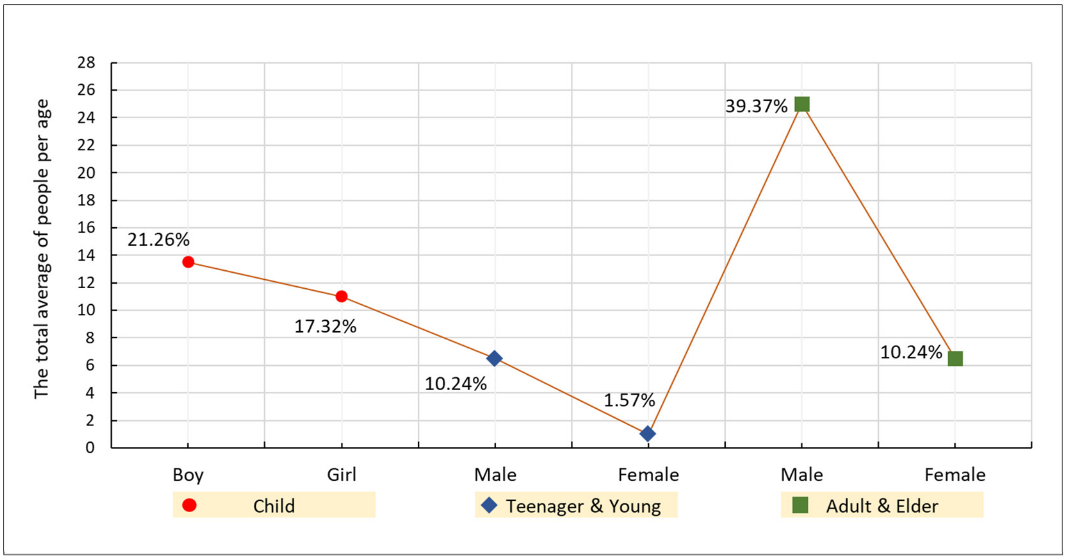


Figure 8.49. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Yellow two street case study B.

From the total average of people, 20.47% joined a group, while 79.53% were independent. Furthermore, only the 2P-group was observed in this segment, where the mixed group included five groups, females comprised only 0.5~one group, and the males accounted for just one group (Figure 8.50). Hence, the main quantitative characteristics of yellow two street are represented in Figures 8.48, 8.55 and 8.50.

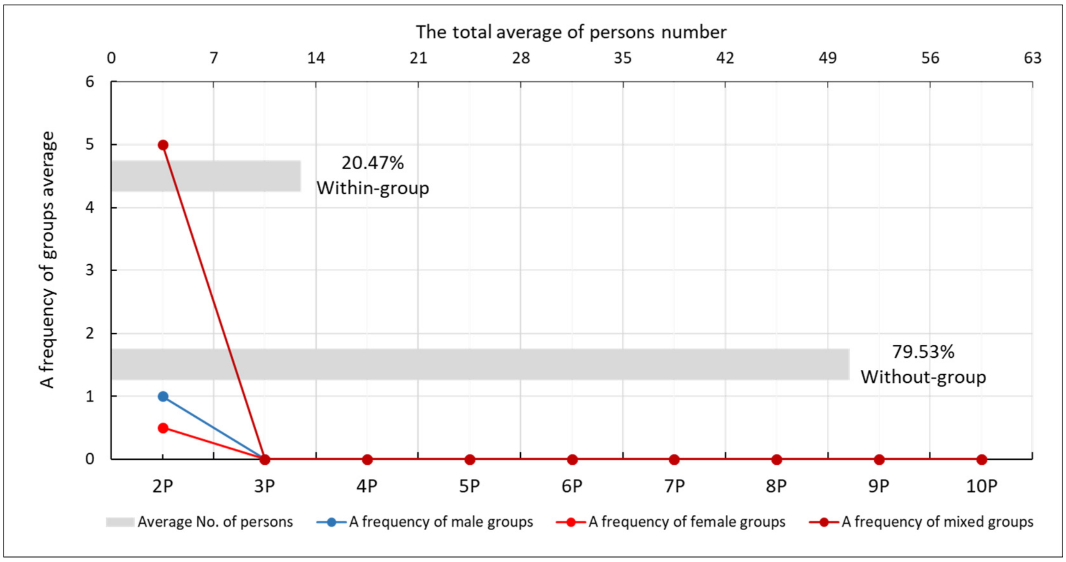


Figure 8.50. Group pattern. The number of groups is based on the total number of persons per group and the frequency value for each group. Yellow two street: case study B.

8.2.2.5 Red One Street: Case Study B

The same techniques were applied before to observe the street movements for Red One Street for case study B. Table 8.11 provides the pedestrian flow and related data.

Table 8.11. The pedestrian flow of the selected street: red one - case study B.

Case study: B | Street: Red one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	36	92	112	Number of people per activity	22	87	81	28	82	27
			Exiting	73									
			Total	109									
		St2	Entering	56				19	76	75	20	65	30
			Exiting	39									
			Total	95									
							Total	41	163	156	48	147	57
							Average	20.5	81.5	78	24.0	73.5	28.5
Noon	15 minutes	St1	Entering	52	80	101	Number of people per activity	39	64	59	44	82	21
			Exiting	51									
			Total	103									
		St2	Entering	28				42	36	42	36	63	15
			Exiting	50									
			Total	78									
							Total	81	100	101	80	145	36
							Average	40.5	50.0	50.5	40.0	72.5	18.0
Afternoon	15 minutes	St1	Entering	63	85	71	Number of people per activity	25	72	71	26	73	24
			Exiting	34									
			Total	97									
		St2	Entering	22				22	37	34	25	39	20
			Exiting	37									
			Total	59									
							Total	47	109	105	51	112	44
							Average	23.5	54.5	52.5	25.5	56	22.0
							Total average	85	186	181	90	202	69

For the observation, the pedestrian movement was classified under entry and exit for three different periods of the day. The greatest number of people enter (92 persons) and exit (112 persons) in the morning. In comparison, the afternoon period also witnesses a significant number when 80 people enter and 101 exit from the selected segment. The movement decreased to only 85 entrants and 71 departures during the afternoon period (Figure 8.51).

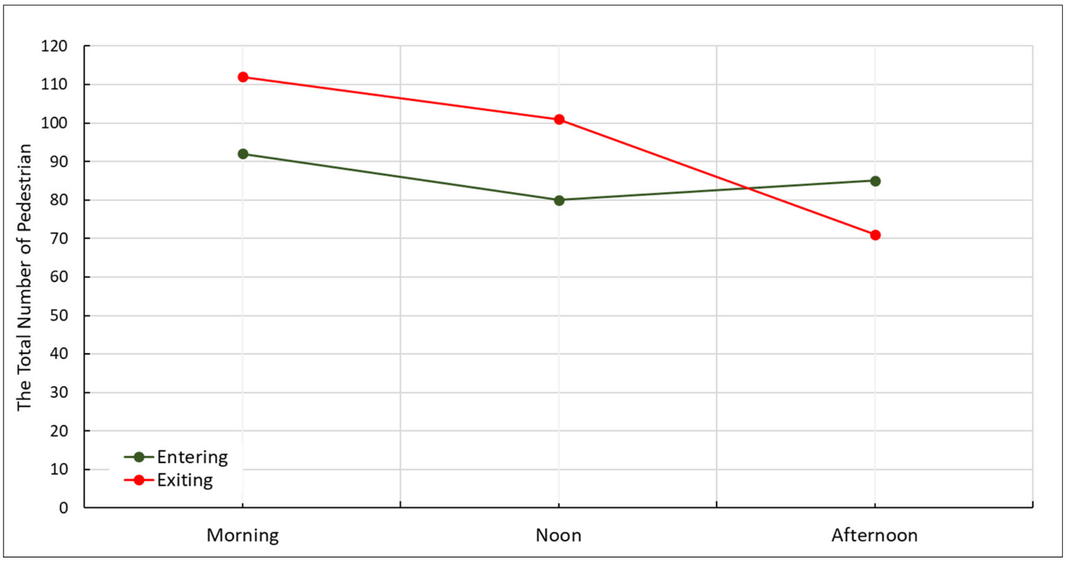


Figure 8.51. Movement pattern: pedestrians entering and exiting through the red one street: case study B.

Trendline of activity in this street refers to three activities: moving, individual and necessary; these all are the most prevalent and are followed by their opposites: staying, social and optional. Hence, people who walk represent 68.76% against those who prefer to stay, who represent 31.24% of the total average. The social activity comprises only 33.09%, while individual activity comprises about 66.91% of the overall rate. The majority of people observed in this segment undertake necessary activities at 74.68%, whereas optional activities represent 25.32% of the total average of users in this segment (Figure 8.52).

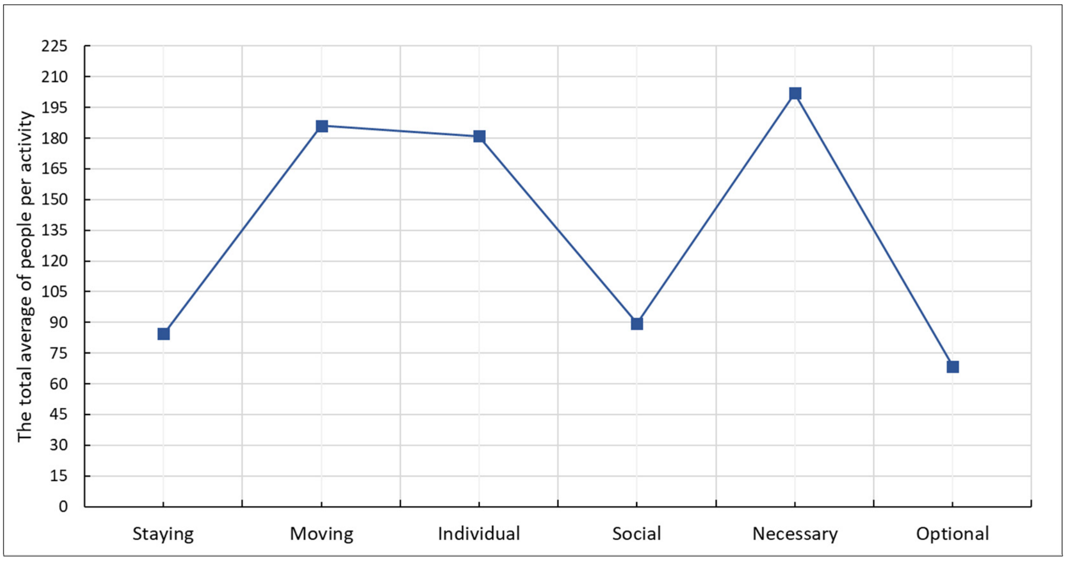


Figure 8.52. Activity pattern. The total average of people per activity in the selected street: red one - case study B.

An increase in the number of females in this segment is marked compared with the previously sampled streets, whether in case studies A or B (Appendix One). Females represent 37.15% for 101 women whilst males represent 62.85% for 170 men from the overall average (Figure 8.53).

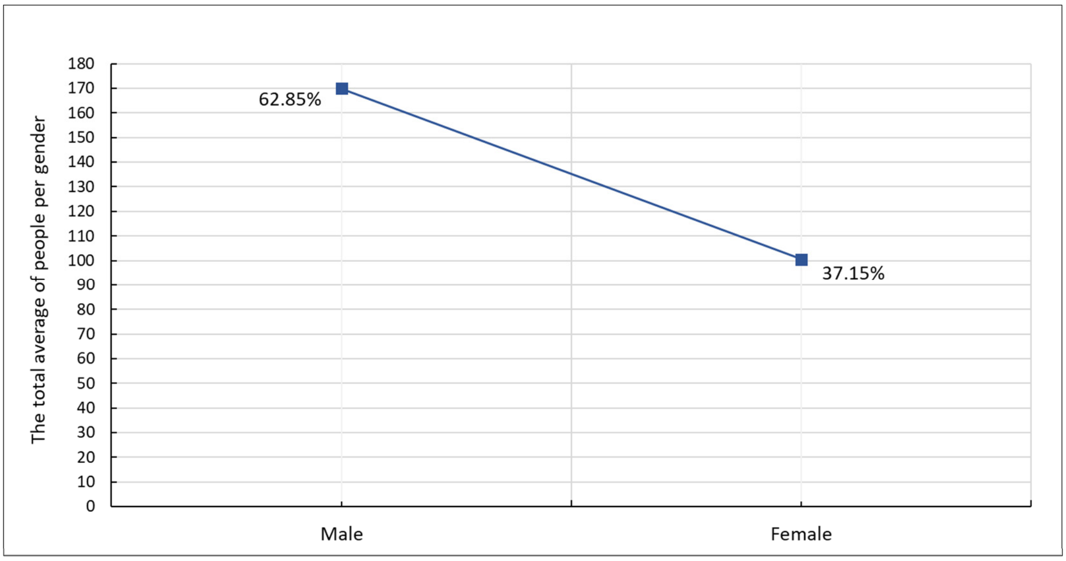


Figure 8.53. Gender pattern. The total average of the pedestrians according to gender. Red one street: case study B.

The three age classes are all conspicuous in this sample (Appendix One). Thus, the child category covers 5.36% (male) and 5.18% (female) as both are close to each other. The teenage-young category shows a higher percentage of males at 14.42% versus female at 4.99% of the total average. In terms of the last category, the adult-elder consists of 43.07% males and 26.99 females (Figure 8.54). The level of appearance of the different ages in a certain street could be controlled by the street edge itself and how people interact.

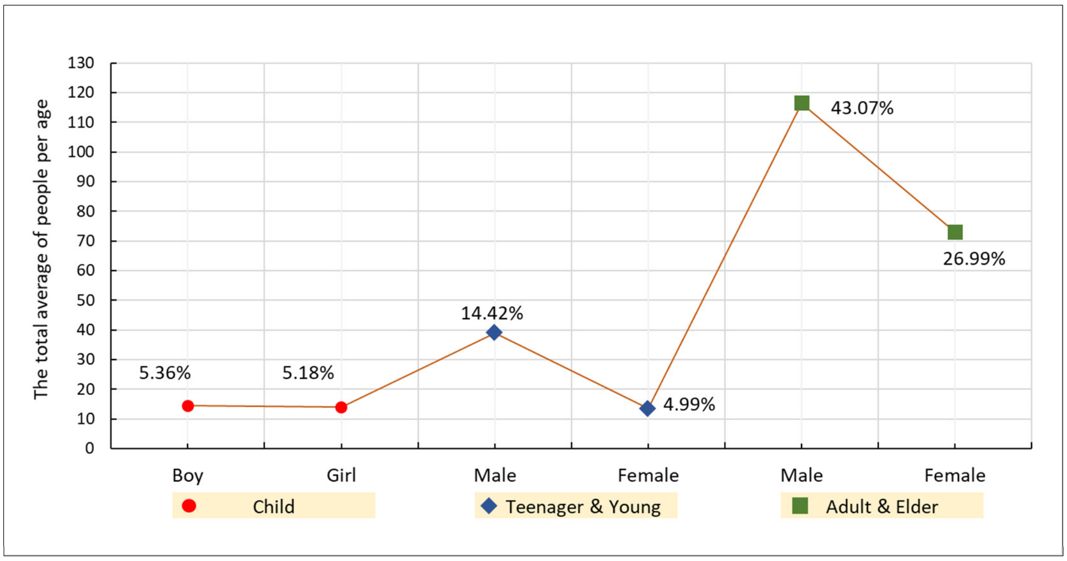


Figure 8.54. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Red one street: case study B.

A group pattern between people shows that a 2P-based group was most prevalent amongst the three classes: male, female, and mixed group (Appendix One). From the overall average of people within this part of the street, the 2P-mixed group comprises the high per cent at 37.88%, males comprised 31.82%, and female made up 30.30%. Both mixed and male groups have the same percentages at 38.46% for the 3P-based group, while female comprises only 23.08%. Again, both male and mixed groups also share the same ratio for 4P-based groups, which comprise 50.00% each (Figure 8.55).

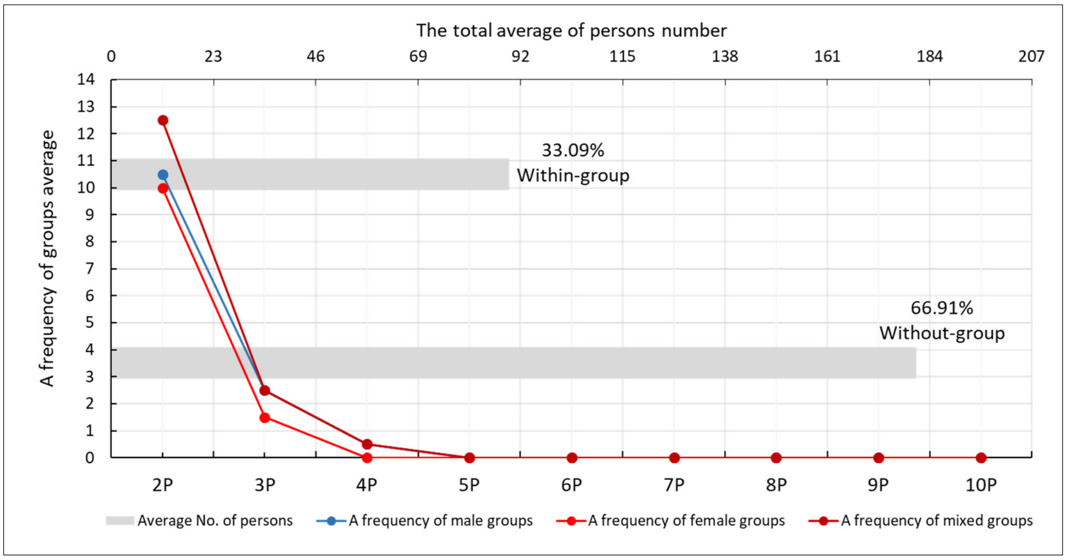


Figure 8.55. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Red one street: case study B.

8.2.2.6 Red Two Street: Case Study B

In this segment (Figure 6.66 and 6.82), the greatest numbers of pedestrians are observed both entering and exiting during noon. In this period, 95 people who came street and 74 persons left. In the morning time 70 were recorded as entering, whilst 48 persons were captured as exiting. At the end of the day, 66 people enter the segment and 46 depart (Table 8.12 and Figure 8.56). In terms of human activities recorded in this segment, the proportion of people who stayed was about 33.08%, while 66.92% moved through the street. Also, 23.31% engaged in social activities, whilst 76.69% engaged in individual activities. Most people observed in this segment used the street for necessary needs and destinations, as there are different services. Residential use is located on the upper storeys of adjacent buildings, and the street level floors serve diverse purposes and activities. Accordingly, 62.66% engaged in necessary activities as opposed to optional ones that hold only 37.34% of the total average of the street users (Figure 8.57).

Table 8.12. The pedestrian flow of the selected street: red two - case study B.

Case study: B | Street: Red two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	43	70	48	Number of people per activity	30	52	70	12	51	31
			Exiting	39									
			Total	82									
		St2	Entering	27				14	22	31	5	25	11
			Exiting	9									
			Total	36									
							Total	44	74	101	17	76	42
							Average	22	37.0	50.5	8.5	38	21.0
Noon	15 minutes	St1	Entering	68	95	74	Number of people per activity	29	80	72	37	57	52
			Exiting	41									
			Total	109									
		St2	Entering	27				28	32	48	12	46	14
			Exiting	33									
			Total	60									
							Total	57	112	120	49	103	66
							Average	28.5	56.0	60	24.5	51.5	33.0
Afternoon	15 minutes	St1	Entering	55	66	46	Number of people per activity	22	72	69	25	55	39
			Exiting	39									
			Total	94									
		St2	Entering	11				9	9	16	2	16	2
			Exiting	7									
			Total	18									
							Total	31	81	85	27	71	41
							Average	15.5	40.5	42.5	13.5	35.5	20.5
							Total average	66	134	153	47	125	75

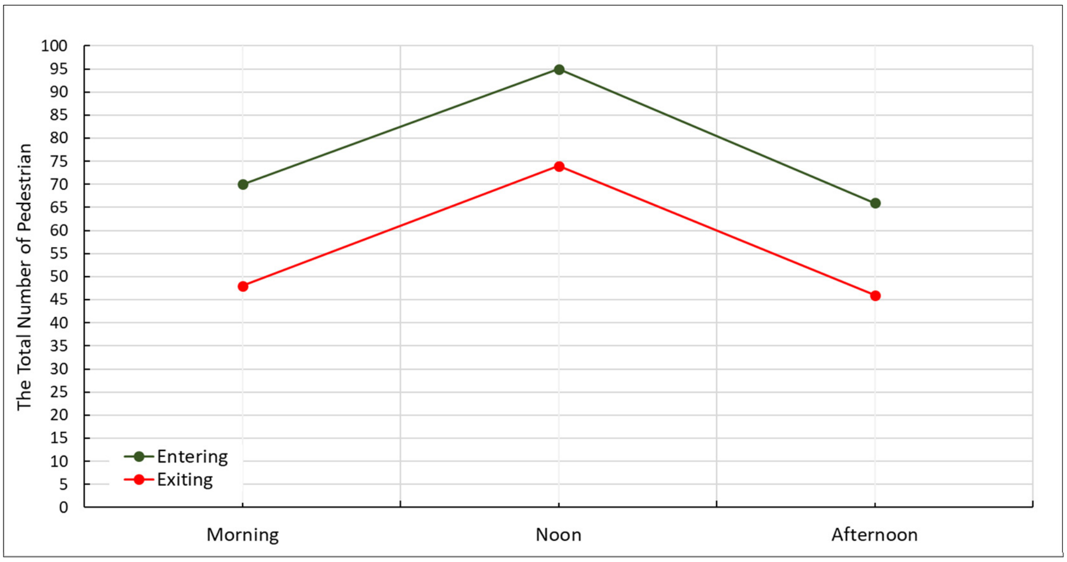


Figure 8.56. Movement pattern: pedestrians entering and exiting red two street: case study B.

The level of presence records the highest percentage for men, as there is also a significant gap between males (88.97%) and females (11.03%) in this sample. However, this situation might be analogous in all cases described so far. In the current segment, the number of males is high whereas the number of females is far lower in the total average of users. (Figure 8.58). For the age pattern, Appendix One, the most significant per cent is for males (adult-elder) at 56.64% with a low ratio for females at only 5.76% of the total average. Also, within the teenager-young category, males comprise the greatest per cent at 23.56% whilst females make up

0.50%. For the child age category, males represent 8.77%, while girls are only 4.76% of the overall average of people who are observed (Figure 8.59).

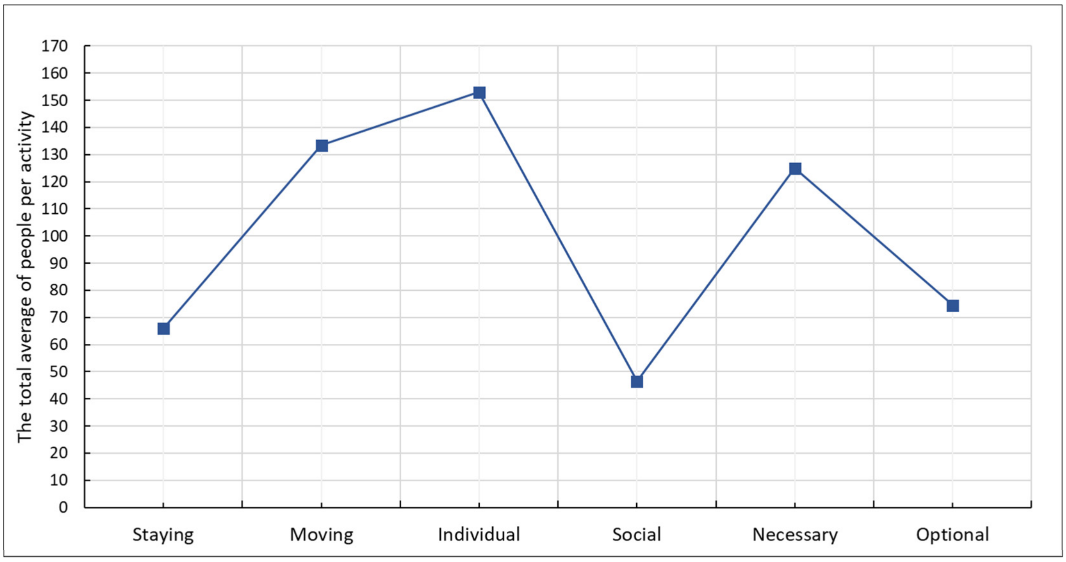


Figure 8.57. Activity pattern. The total average of people per activity in the selected street: red two - case study B.

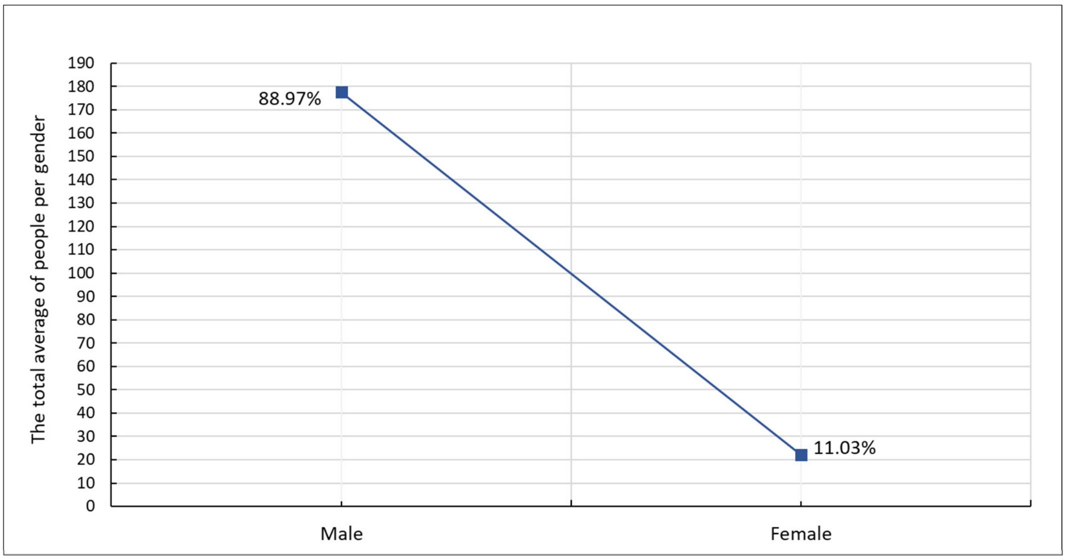


Figure 8.58. Gender pattern. The total average of pedestrians according to gender. Red two street: case study B.

In terms of groups, Appendix One, no female groups were observed in the red two street segment. The result for other groups reveals that male groups represent the greatest number of 2P-based groups (58.62%), whereas the mixed group comprises 41.38% of the overall average. The male 3P-based group cover 66.67% (only two groups), while the mixed group numbers only one and represent 33.33% of the overall average. In terms of the 4P-based group, there is 0.5~one group for both male and mixed groups. For males, there is one group that consists of five persons (5P-based group) (Figure 8.60).

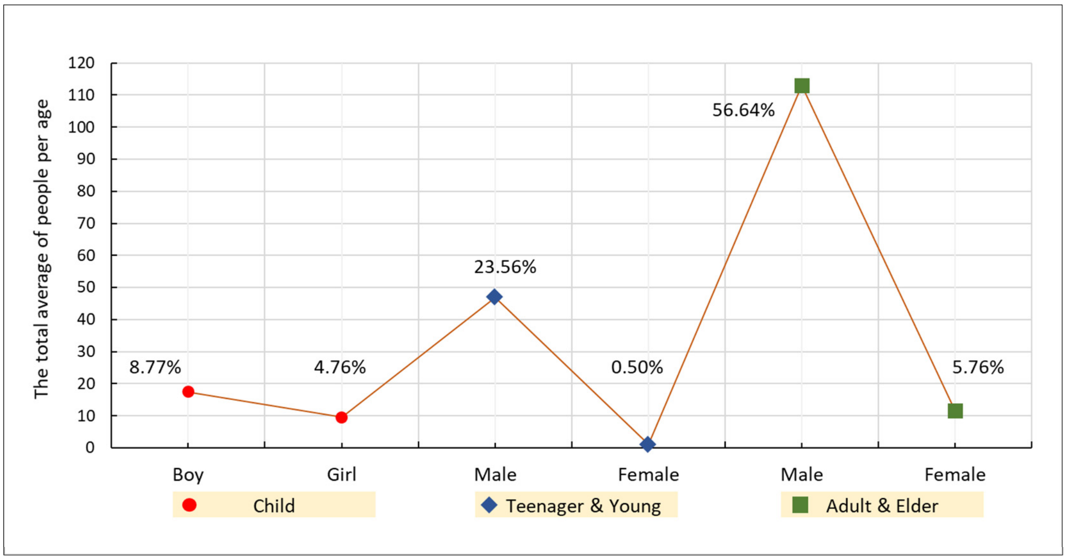


Figure 8.59. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Red two street: case study B.

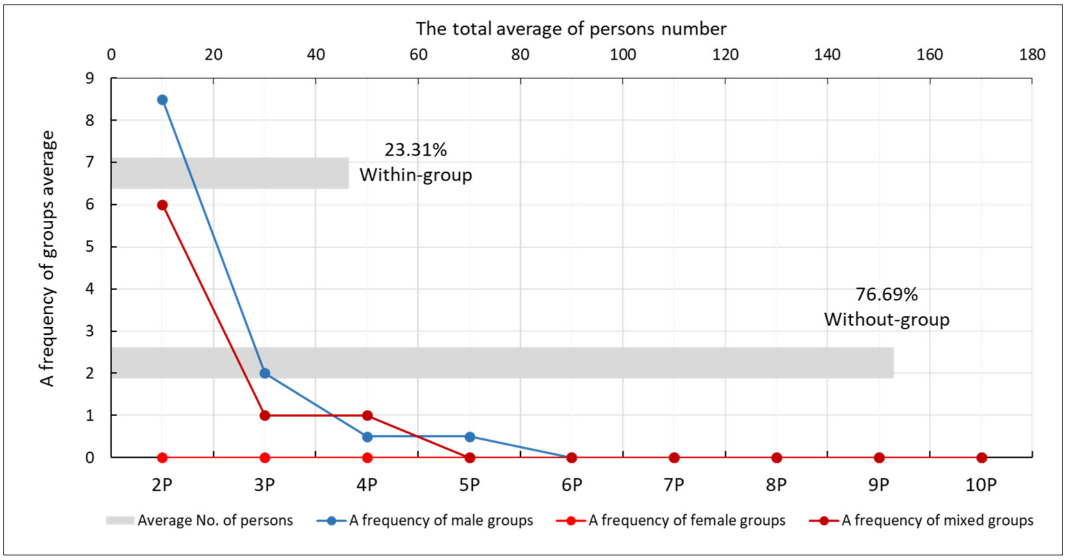


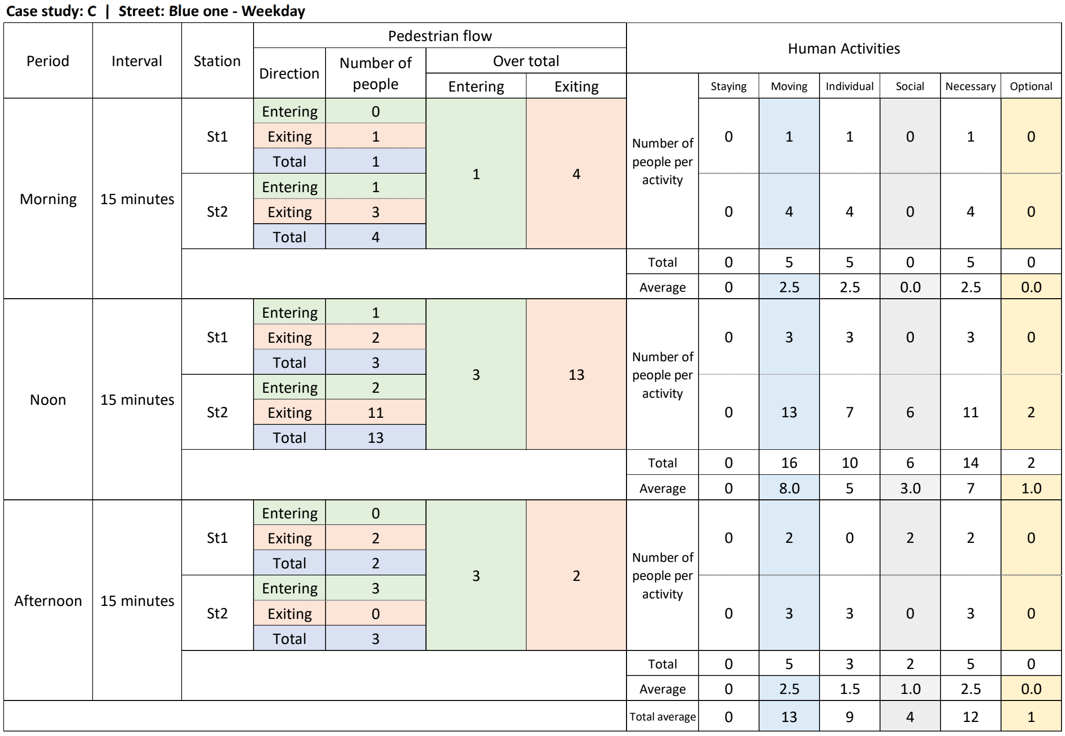
Figure 8.60. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Red two street: case study B.

8.2.3 Case Study C: Paralleled Pattern

8.2.3.1 Blue One Street: Case Study C

In this segment (Figure 6.86 and 6.87), the movement of people was moderate, and, to a large extent, this movement was limited to those who lived in the same street. The observation data are listed in Table 8.13. An examination of pedestrian flow was conducted through three periods of the day: morning, noon, and afternoon. The morning interval records only one person entering the street, and four people leaving. Through noontime, three and 13 people are recorded as entering and exiting respectively. Finally, the afternoon witnesses very few walkers, only three persons entering and two exiting (Figure 8.61). Like the previous streets, the midday period seems more active in terms of people's movement and that in turn affects the street life. The number of people who used the blue street was closer to other blue streets in the earlier samples, A and B.

Table 8.13. The pedestrian flow of the selected street: blue one - case study C.



Case study: C | Street: Blue one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	0	1	4	Number of people per activity	0	1	1	0	1	0
			Exiting	1									
			Total	1									
		St2	Entering	1				0	4	4	0	4	0
			Exiting	3									
			Total	4									
							Total	0	5	5	0	5	0
							Average	0	2.5	2.5	0.0	2.5	0.0
Noon	15 minutes	St1	Entering	1	3	13	Number of people per activity	0	3	3	0	3	0
			Exiting	2									
			Total	3									
		St2	Entering	2				0	13	7	6	11	2
			Exiting	11									
			Total	13									
							Total	0	16	10	6	14	2
							Average	0	8.0	5	3.0	7	1.0
Afternoon	15 minutes	St1	Entering	0	3	2	Number of people per activity	0	2	0	2	2	0
			Exiting	2									
			Total	2									
		St2	Entering	3				0	3	3	0	3	0
			Exiting	0									
			Total	3									
							Total	0	5	3	2	5	0
							Average	0	2.5	1.5	1.0	2.5	0.0
							Total average	0	13	9	4	12	1

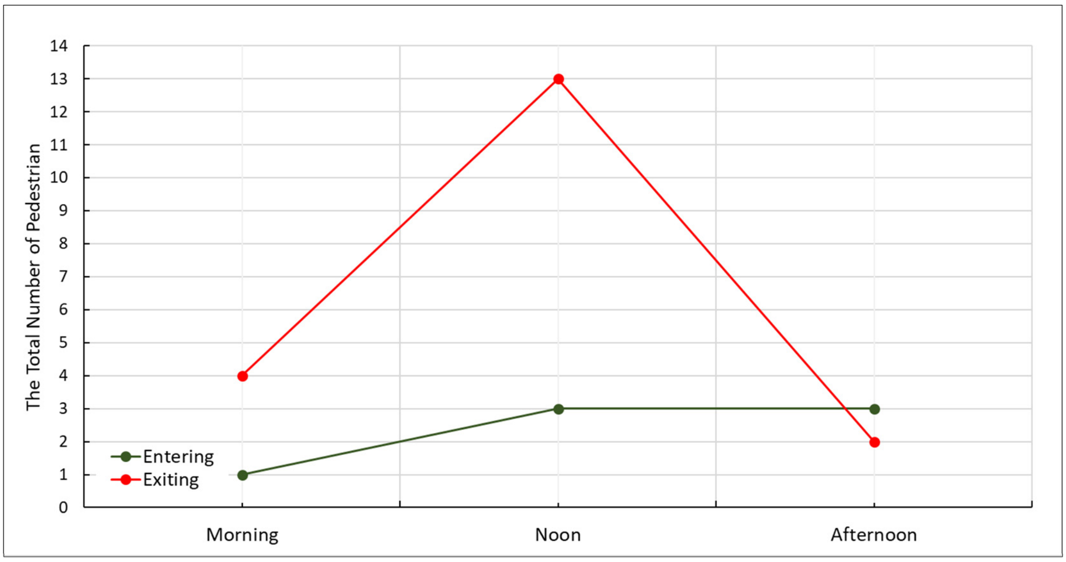


Figure 8.61. Movement pattern: pedestrians entering and exiting through blue one street: case study C.

A reduction in human activities is the main character of this street sample. The level of privacy prevents other people from benefiting from the street edge. Therefore, the staying index records zero as opposed to those who move. Social activities encompass only four people who conducted short conversations, while individual activities are recorded for those who used the street for walking through. Necessary activities are dominant, whereas only one person undertook an optional activity (Figure 8.62).

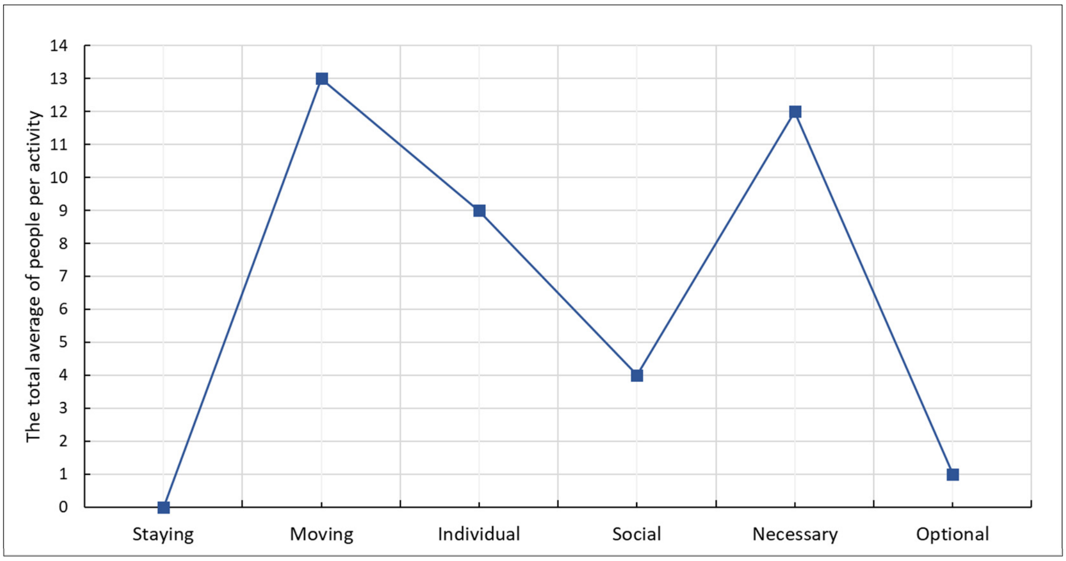


Figure 8.62. Activity pattern. The total average of people per activity in the selected street: blue one - case study C.

During the observation period (Appendix One), females, at 34.62%, comprise the lowest value of the total average of presences. Males comprise the largest per cent at 65.38% of the overall proportion of people who used the street (Figure 8.63).

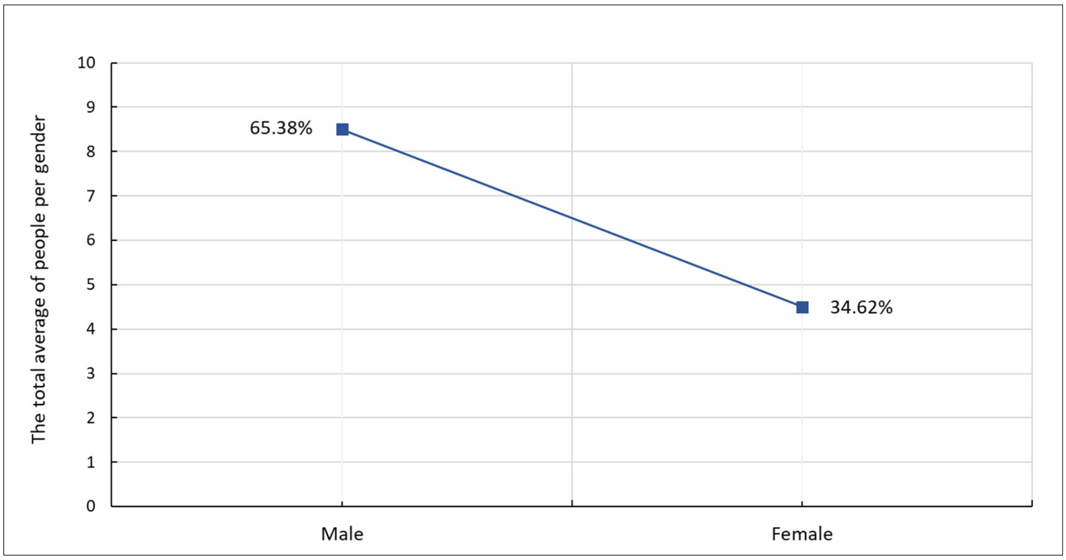


Figure 8.63. Gender pattern. The total average of the pedestrian according to the gender. Blue one street - case study C.

Even though the total average of people who used the street was slight, an age pattern that manifests covering all categories. Starting with the child class, 15.38% were observed representing only two male, and 0.5~one female at 3.85% of the total average. Teenager-young included three males, whose share was 23.08% whilst two females represented 15.38% of the overall average. From the last category, adult-elder, four males comprising 26.92% and two females at 15.38% were recorded (Figure 8.64).

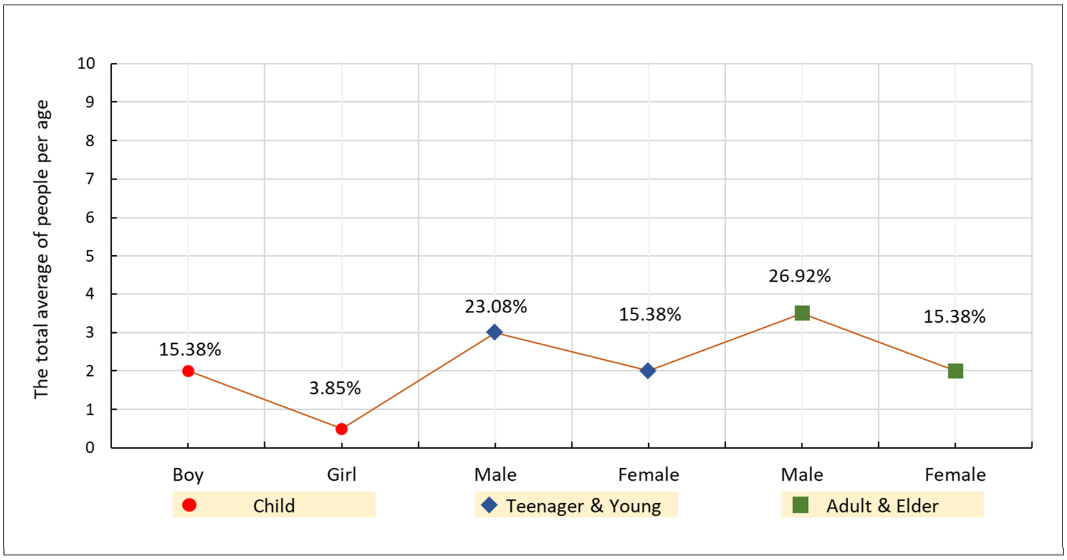


Figure 8.64. Age pattern. The total average of pedestrian based on three categories: child, teenager-young, and adult-elder people. Blue one street: case study C.

Due to the low level of participants in this segment, all extracted indicators are affected correspondingly. Thus, 30.77% represent people within a group, while 69.23% denote those out of a group. The 2P-based group includes only two categories: female and mixed group, where both represent just one group amongst the total average of the people (Figure 8.65). Once more, the street edge, to a large extent, can also potentially shape people into a group while they are present in the street or as a destination for pre-grouped people. Street centrality in terms of betweenness shows a significant response to the number of people who use the street space, where the high centrality value (Red and sometimes Yellow street) indicates the high quantity of pedestrians and vice versa.

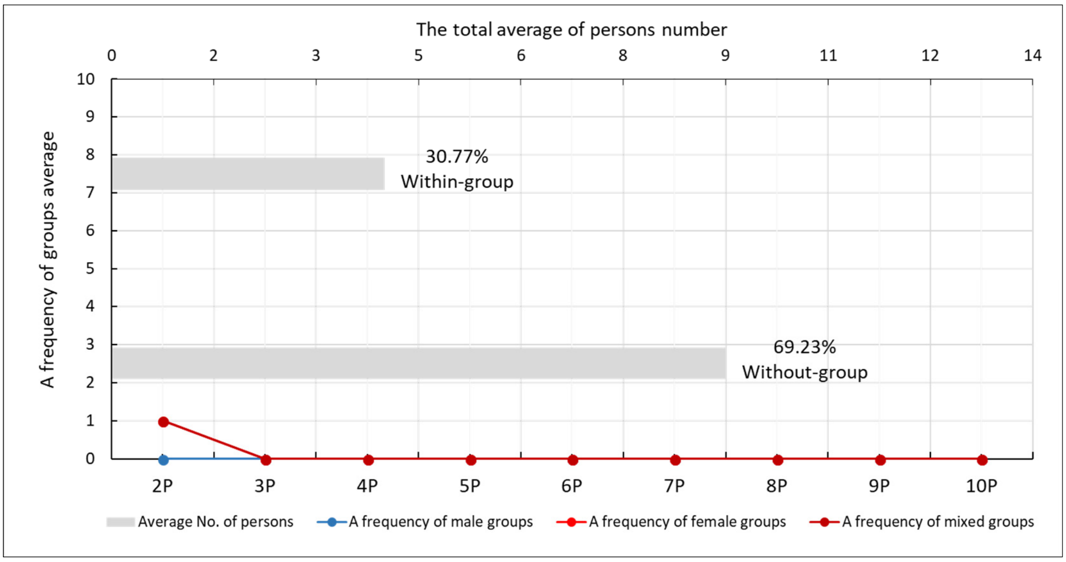


Figure 8.65. Group pattern. The number of groups which is based on the total number of persons per group and the frequency value for each group. Blue one street: case study C.

8.2.3.2 Blue Two Street: Case Study C

The movement of people provides a poor indication about street life in this segment (Table 8.14).

Table 8.14. The pedestrian flow of the selected street: blue two - case study C.

Case study: C | Street: Blue two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	2	5	2	Number of people per activity	0	4	4	0	3	1
			Exiting	2									
			Total	4									
		St2	Entering	3				0	3	1	2	3	0
			Exiting	0									
			Total	3									
							Total	0	7	5	2	6	1
							Average	0	3.5	2.5	1.0	3	0.5
Noon	15 minutes	St1	Entering	2	4	2	Number of people per activity	1	2	3	0	3	0
			Exiting	1									
			Total	3									
		St2	Entering	2				2	1	3	0	3	0
			Exiting	1									
			Total	3									
							Total	3	3	6	0	6	0
							Average	1.5	1.5	3	0.0	3	0.0
Afternoon	15 minutes	St1	Entering	2	4	2	Number of people per activity	0	2	2	0	2	0
			Exiting	0									
			Total	2									
		St2	Entering	2				0	4	2	2	2	2
			Exiting	2									
			Total	4									
							Total	0	6	4	2	4	2
							Average	0	3.0	2	1.0	2	1.0
							Total average	2	8	8	2	8	2

Through the three periods of time per certain day, the number of pedestrians was less than six people per period. Across three times: morning, noon and afternoon, two persons were observed who exited. Those entering consisted of five people for the morning and four people for both noon and afternoon (Figure 8.66).

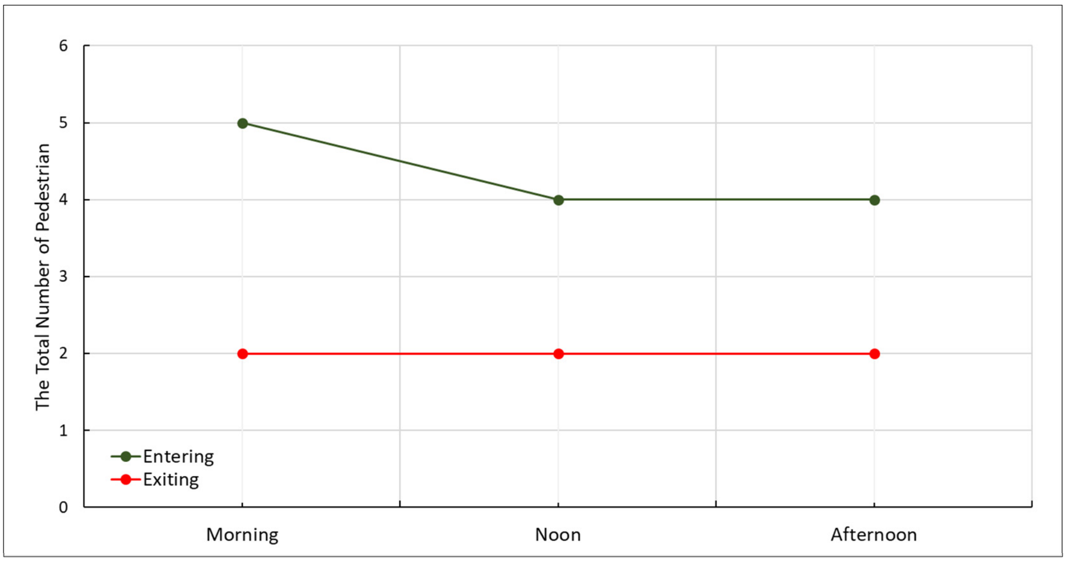


Figure 8.66. Movement pattern: entering and exiting of pedestrians through the blue two street: case study C.

The activity pattern is also slight, as the street observation captures only 1.5~two persons who stay, and eight people who leave. Social activities capture only two persons versus 7.5~8 people who used the street individually. Only 1.5~2 people engage in optional activities, as opposed to eight who use the street for necessary purposes (Figure 8.67).

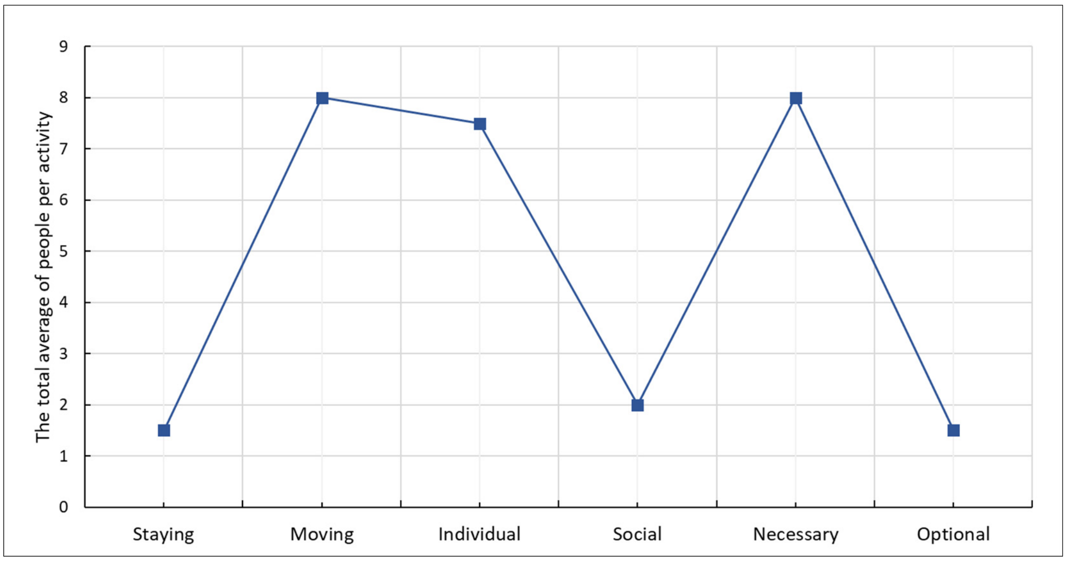


Figure 8.67. Activity pattern. The total average of people per activity in the selected street: blue two - case study C.

The gender pattern in this selected sample shows that females represent the highest percentage at 57.89%, while men represent 42.11% of the overall average of pedestrians using the street (Figure 8.68). It is worth mentioning that the related data of different activities have been addressed and documented in detail in Appendix One.

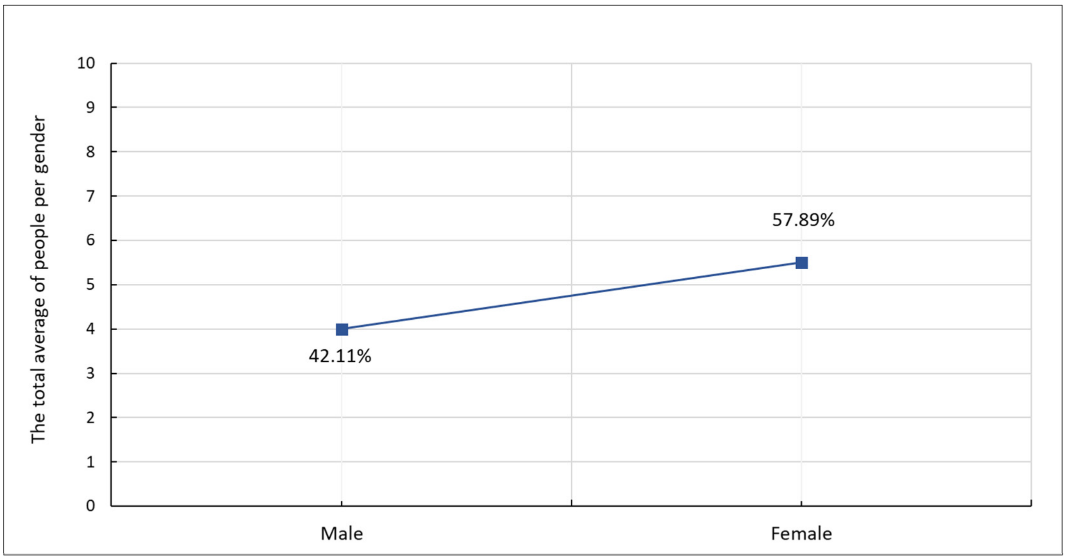


Figure 8.68. Gender pattern. The total average of pedestrians according to gender. Blue two street: case study C.

According to the age pattern, the child category comprises 15.79% of the total average for both male and female; this represents only two children for each. For teenager-young people, only one person was observed, representing 10.53% for both male and female. The adult-elder category includes two individuals for male and three females from the total average (Figure 8.69). From the total average, only one group consisted of two persons who belonged to the mixed group (Figure 8.70).

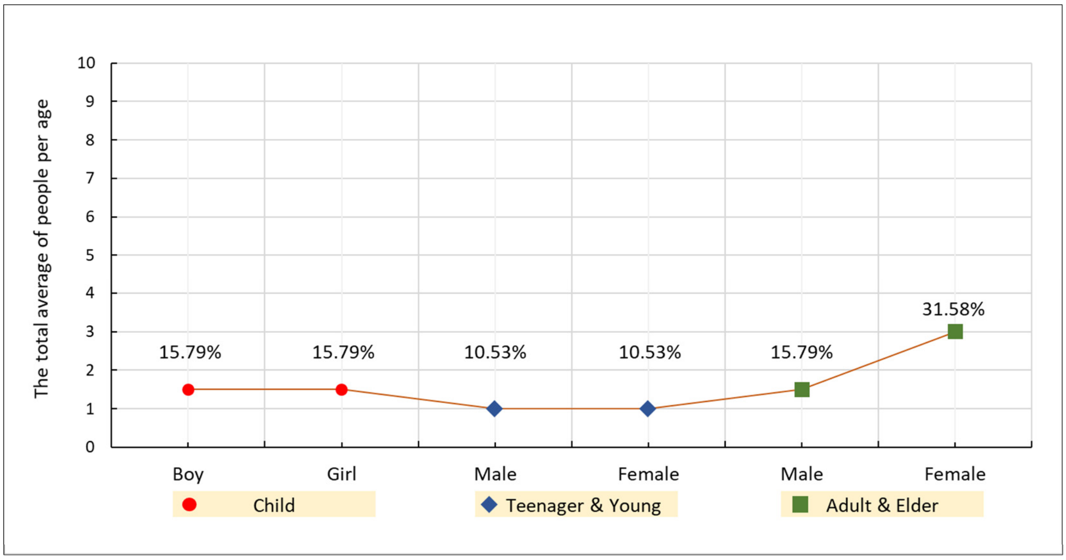


Figure 8.69. Age pattern. The total average of pedestrian based on three categories: child, teenager-young, and adult-elder people. Blue two street: case study C.

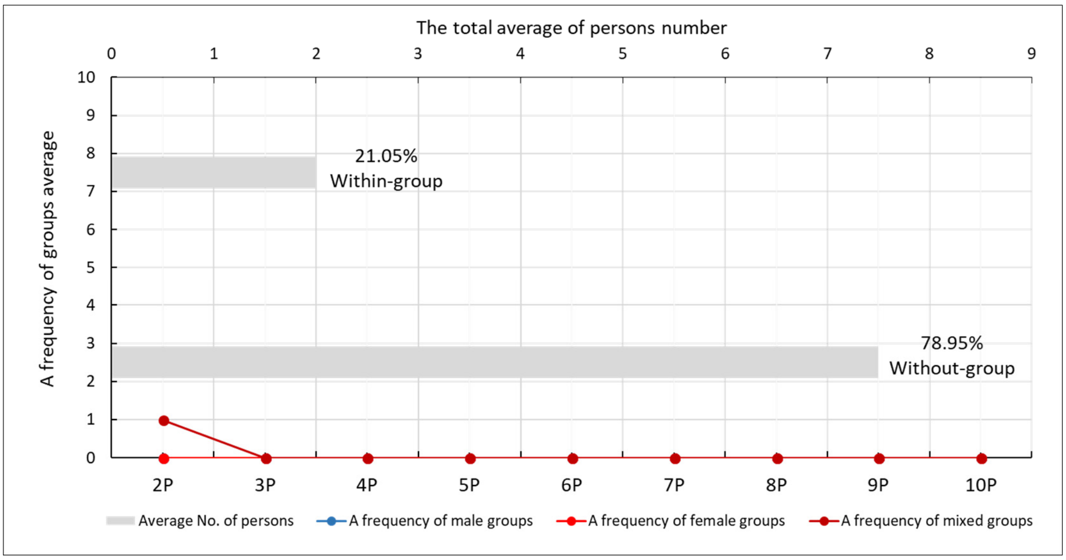


Figure 8.70. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Blue two street: case study C.

8.2.3.3 Yellow One Street: Case Study C

From the selected street, people movement, during the observation, is lower in terms of pedestrian quantity and their interactions with the street edge (Table 8.15). It is worth considering that related information of activities has been attested in detail in Appendix One.

The morning period refers to four persons who exit and zero who entering. The number of people increased slightly, but this sample still saw the lowest, where four persons entered, and seven individuals exited for the noon period. During the afternoon, the number of people who entered was four, while five persons exited from the selected street (Figure 8.71).

Table 8.15. The pedestrian flow of the selected street: yellow one - case study C.

Case study: C | Street: Yellow one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	0	0	4	Number of people per activity	0	4	1	3	4	0
			Exiting	4									
			Total	4									
		St2	Entering	0				0	0	0	0	0	0
			Exiting	0									
			Total	0									
							Total	0	4	1	3	4	0
							Average	0	2.0	0.5	1.5	2	0.0
Noon	15 minutes	St1	Entering	3	4	7	Number of people per activity	0	7	7	0	6	1
			Exiting	4									
			Total	7									
		St2	Entering	1				0	4	4	0	4	0
			Exiting	3									
			Total	4									
							Total	0	11	11	0	10	1
							Average	0	5.5	5.5	0.0	5	0.5
Afternoon	15 minutes	St1	Entering	4	4	5	Number of people per activity	2	5	7	0	6	1
			Exiting	3									
			Total	7									
		St2	Entering	0				1	1	2	0	2	0
			Exiting	2									
			Total	2									
							Total	3	6	9	0	8	1
							Average	1.5	3.0	4.5	0.0	4	0.5
							Total average	2	11	11	2	11	1

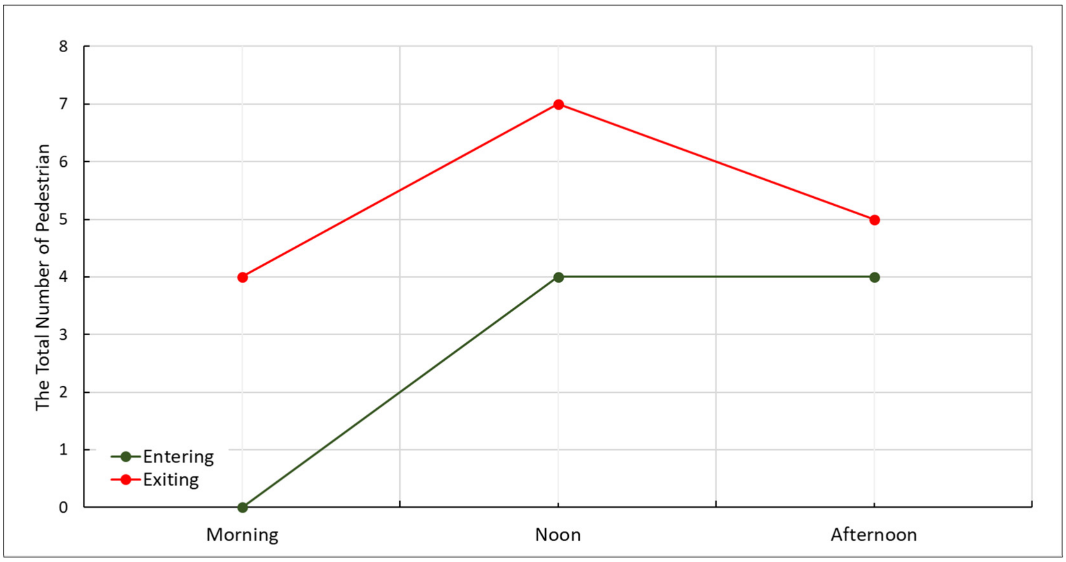


Figure 8.71. Movement pattern: pedestrians entering and exiting through yellow one street: case study C.

When considering the level of activities seen in this segment and due to the low number of people observed, these activities are insufficient. Thus, 1.5~2 people (stayed) whilst 10.5~11 people (moved). Also, social activities include only 1.5~2 persons, while individual activities comprise 10.5~11 people. Most observed people (11) in this segment engaged with necessary activities versus only one person who engaged with optional activities (Figure 8.72).

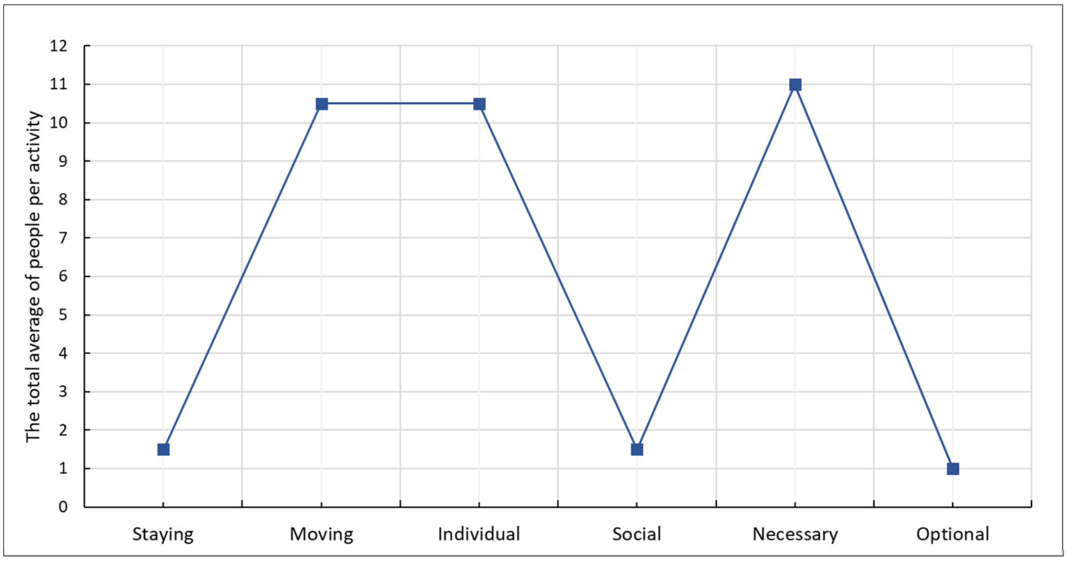


Figure 8.72. Activity pattern. The total average of people per activity in the selected street: yellow one - case study C.

From this moderate quantity of people, Appendix One, males comprise about 66.67%, whilst females represent only 33.33% of the total average of pedestrians observed in this selected street (Figure 8.73).

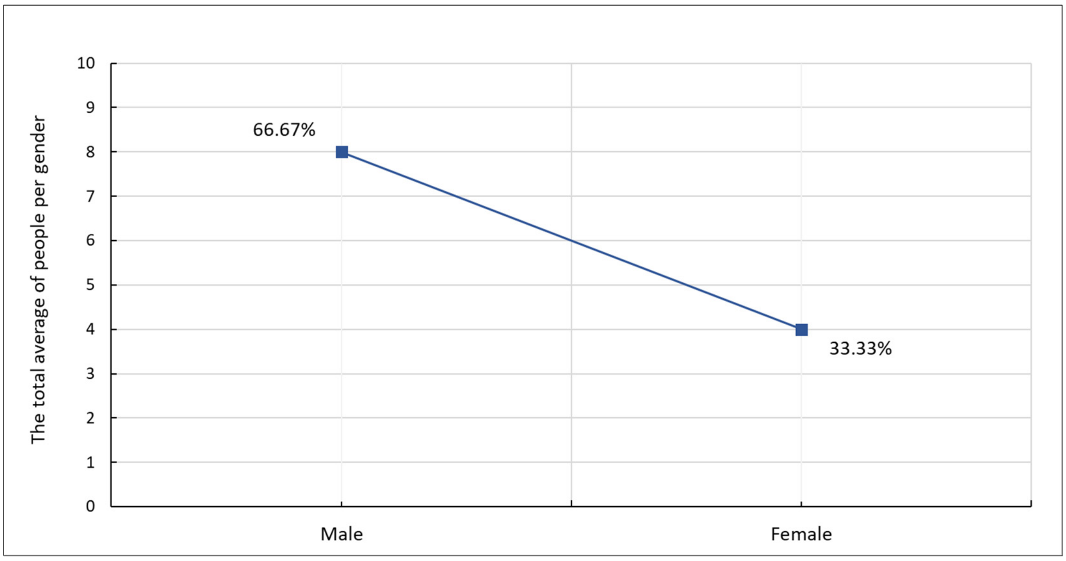


Figure 8.73. Gender pattern. The total average of pedestrians according to gender. Yellow one street - case study C.

The age pattern consisted of the same three classified categories as the previous samples: child, teenage-young, and adult-elder (Appendix One). Based on the total average, the child class includes 1.5~2 males and 0.5~1 females. In teenager-young category, 2.5~3 males versus two females comprise the overall average (Figure 8.74).

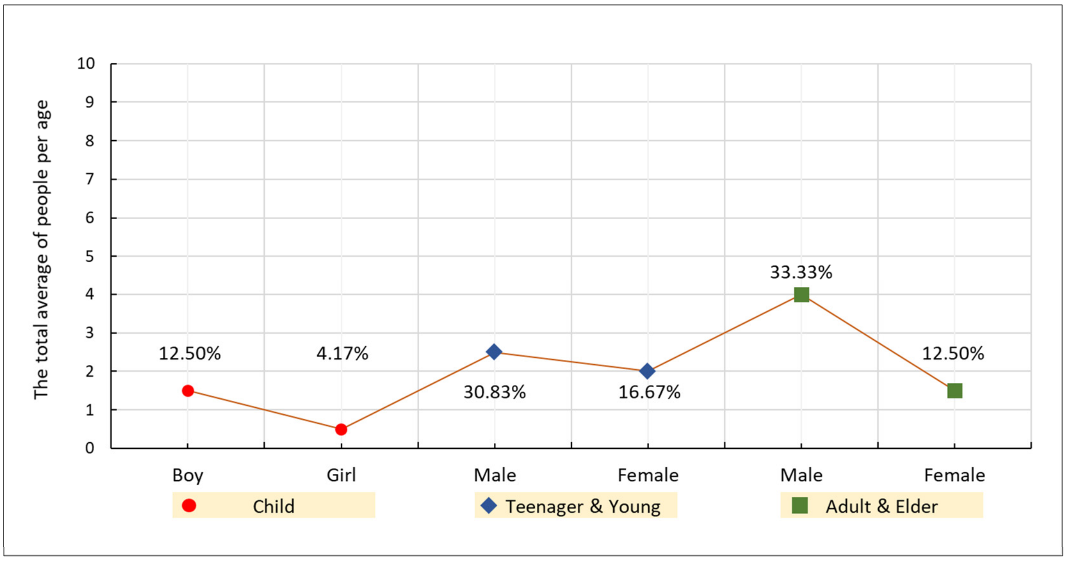


Figure 8.74. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Yellow one street - case study C.

In the last category, Appendix One, adult-elder males comprised four persons, while women represented 1.5~two females (Figure 8.74). The group pattern, in this chosen sample, shows only one group that consists of two persons, who belong to the female category. In comparison, male-based and mixed-based groups were not observed during the field study in this sample (Figure 8.75).

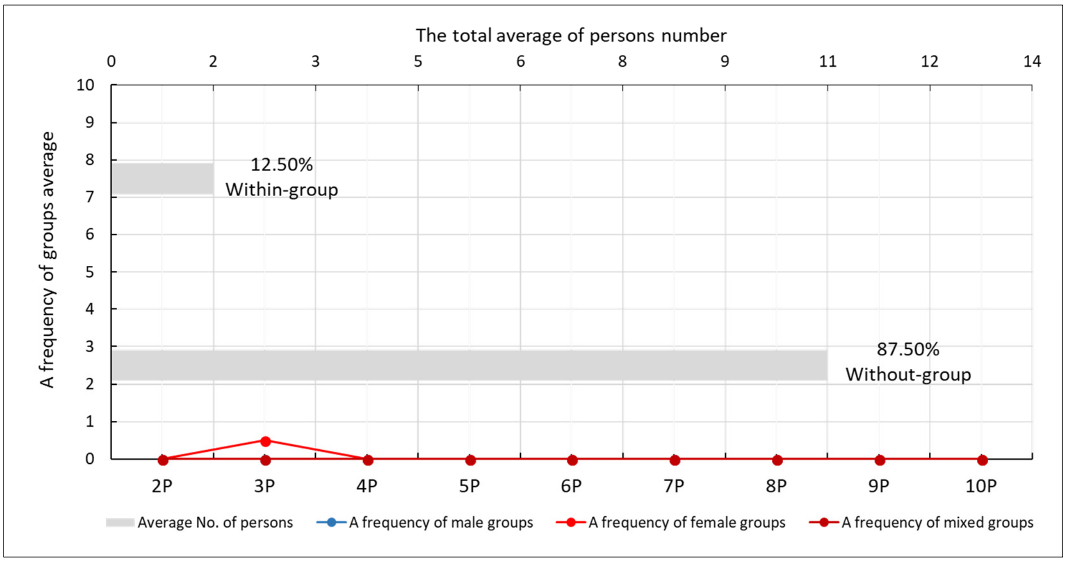


Figure 8.75. Group pattern. The number of groups which is based on the total number of persons per group and the frequency value for each group. Yellow one street - case study C.

8.2.3.4 Yellow Two Street: Case Study C

From the field study, Figure 6.86 and 6.96, all related information for the three periods of the day were collected and documented in Table 8.16. This street is not far from the previous sample, both in terms of its location and its level of street life. The afternoon records the most significant amount of people for both entering and exiting when this period records 24 persons and 26 individuals respectively. Concerning the morning, no people entered, and only one person exited the street. Both entering and exiting had the same amount of people, namely two (Figure 8.76).

Table 8.16. The pedestrian flow of the selected street: yellow two - case study C.

Case study: C | Street: Yellow two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	0	0	1	Number of people per activity	0	1	1	0	1	0
			Exiting	1									
			Total	1									
		St2	Entering	0				0	0	0	0	0	0
			Exiting	0									
			Total	0									
							Total	0	1	1	0	1	0
							Average	0	0.5	0.5	0.0	0.5	0.0
Noon	15 minutes	St1	Entering	17	24	26	Number of people per activity	2	20	20	2	22	0
			Exiting	5									
			Total	22									
		St2	Entering	7				5	23	20	8	15	13
			Exiting	21									
			Total	28									
							Total	7	43	40	10	37	13
							Average	3.5	21.5	20	5.0	18.5	6.5
Afternoon	15 minutes	St1	Entering	2	2	2	Number of people per activity	2	1	3	0	3	0
			Exiting	1									
			Total	3									
		St2	Entering	0				1	0	1	0	1	0
			Exiting	1									
			Total	1									
							Total	3	1	4	0	4	0
							Average	1.5	0.5	2	0.0	2	0.0
							Total average	5	23	23	5	21	7

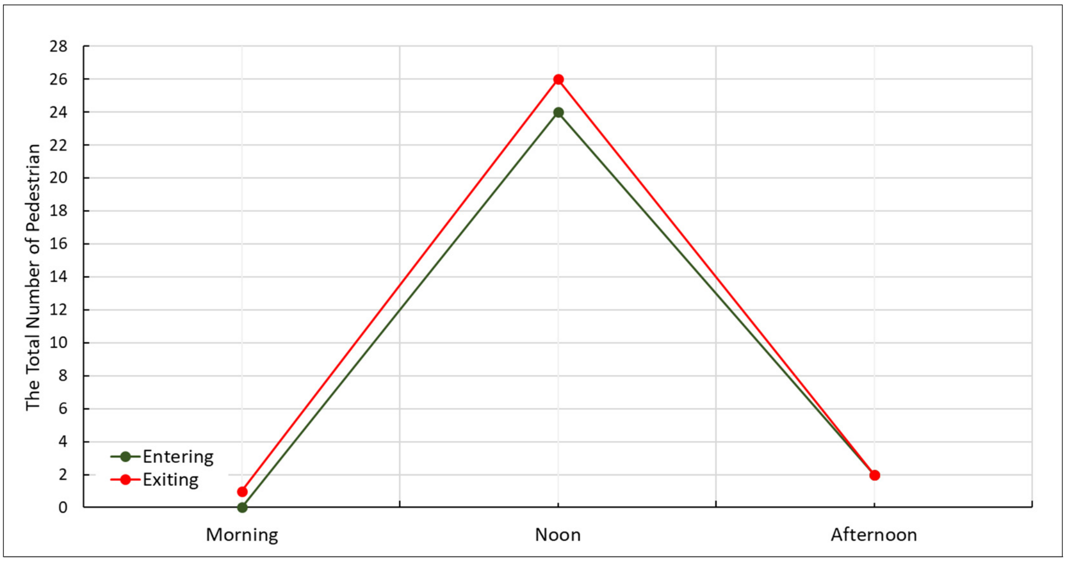


Figure 8.76. Movement pattern: pedestrians entering and exiting through yellow two street; case study C.

The numerical values of the total average activities show that people who are staying are five, while those who move total 22.5~23 people. Social activities were also observed amongst fewer people at only five people against the 22.5~23 who engaged in individual activity. The selected street was most used for necessary reasons at 21 persons; his contrasted with the 6.5~7 who engaged in optional activities (Figure 8.77).

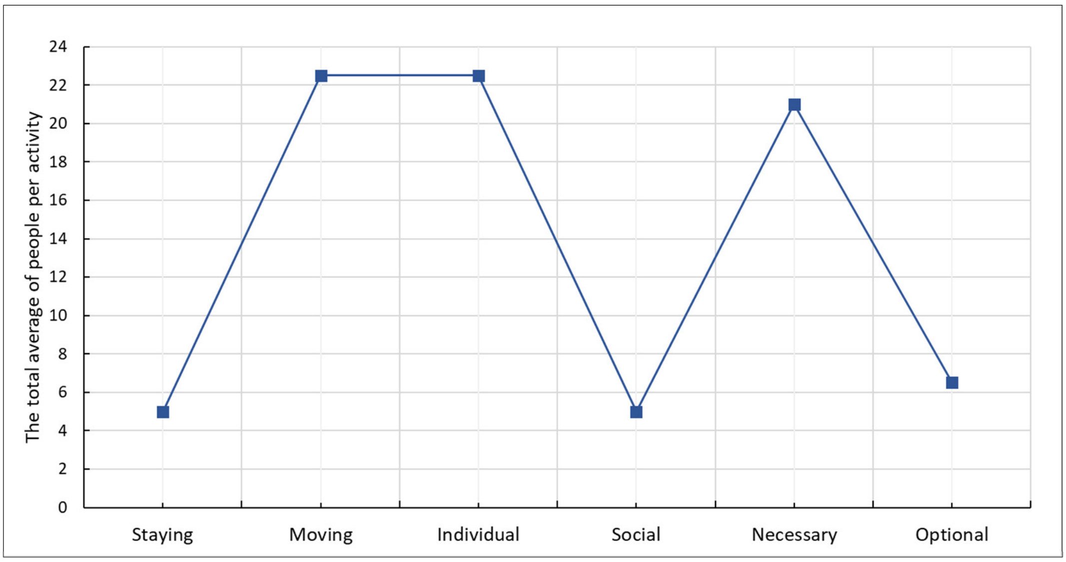


Figure 8.77. Activity pattern. The total average of people per activity in the selected street – yellow two: case study C.

The gender pattern in this segment comprises about 41.82% for males, and 58.18% for females from the total average of people who used the street (Appendix One). Numerically, this represents 11.5~12 men and only 16 women from the overall average (Figure 8.78). However, this specific street is not that different from the earlier streets in terms of the proportional presence of women to men, particularly in case study C.

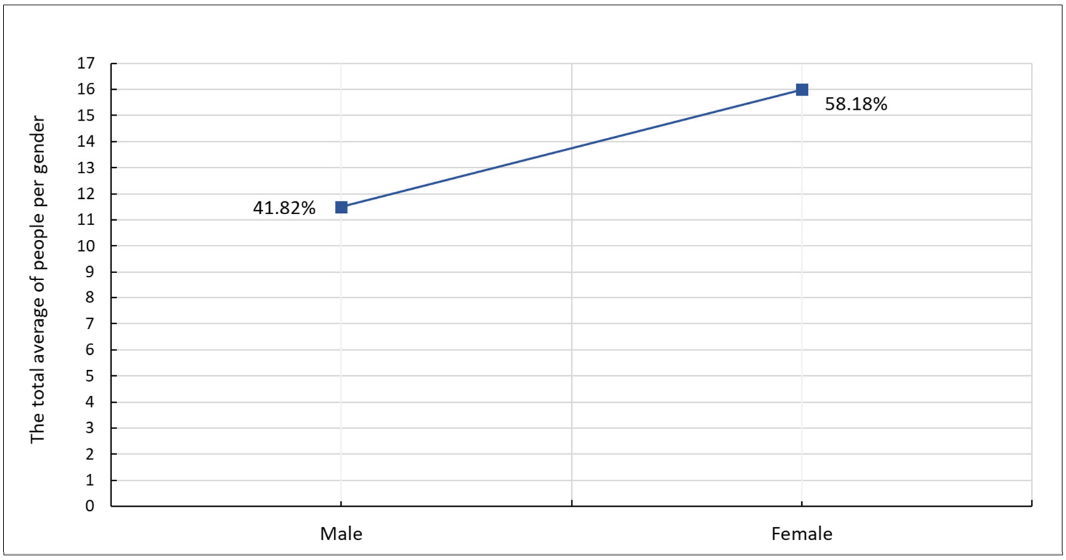


Figure 8.78. Gender pattern. The total average of pedestrians according to gender. Yellow two street: case study C.

The age pattern covers all classes: child, teenager-young, and adult-elder people. The child category consists of 5.45% male and 30.91% female, which is potentially influenced by the presence of a primary school at the end of the selected street. Moreover, teenager-young includes 14.55% male, and 1.82% female. Concerning adult-elder people, males represent 21.82% whilst females represent 25.45% of the total average of pedestrians observed in the chosen segment (Figure 8.79). Regarding the group pattern, this does not exceed the 2P-based group, where one female and two mixed groups were observed (Figure 8.80) (Appendix One).

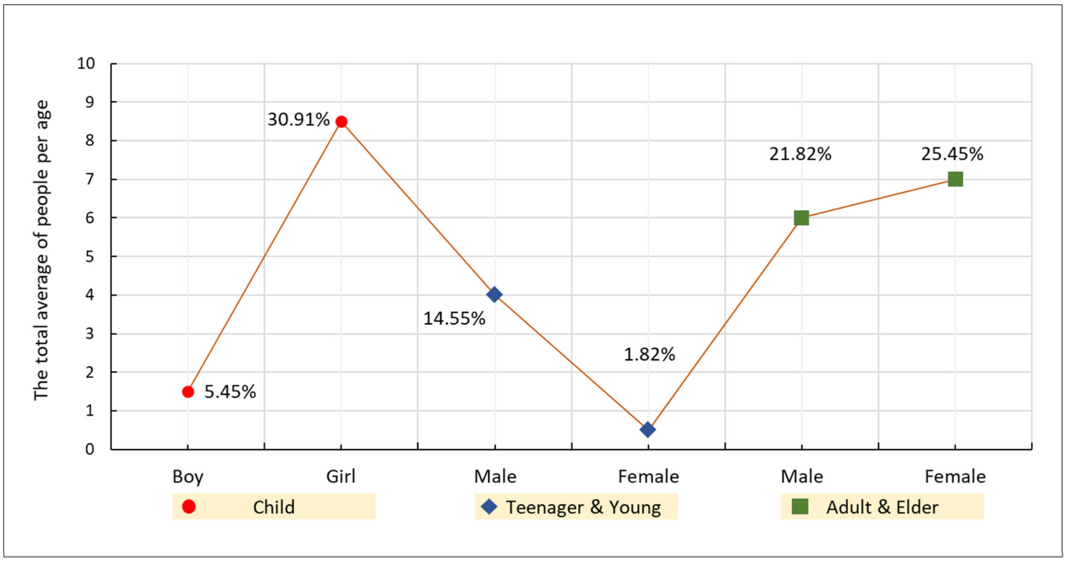


Figure 8.79. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Yellow two street: case study C.

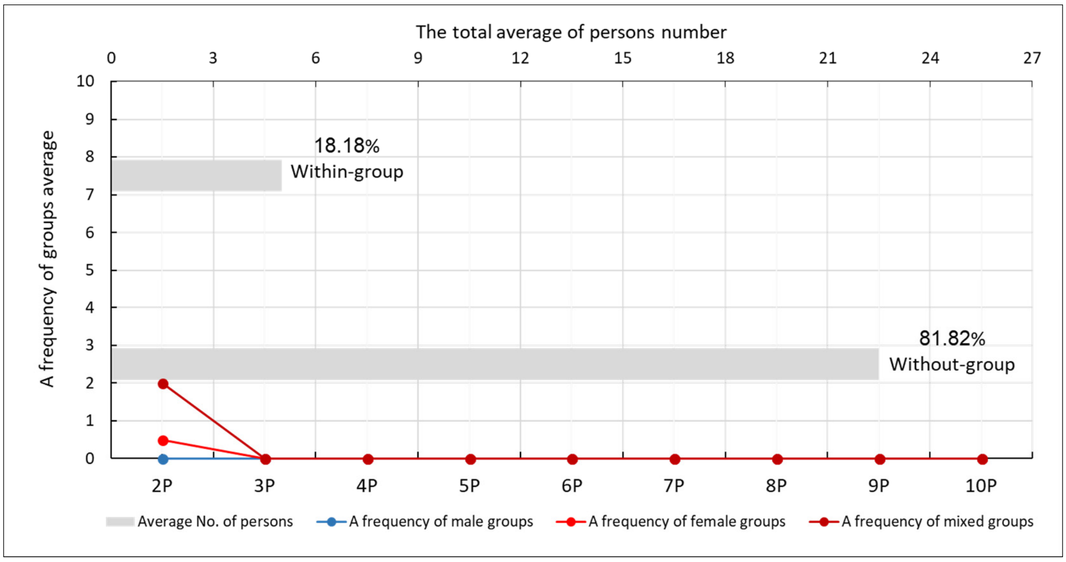


Figure 8.80. Group pattern. The number of groaups in which based on the total number of persons per group and the frequency value for each group. Yellow two street: case study C.

8.2.3.5 Red One Street: Case Study C

Counting pedestrian flow in this selected chunk through three different times of the day (morning, noon, and afternoon) illustrated that mid-day had a more significant amount of people entering and exiting (Figure 6.86 and 6.99). The quantity of people entering the street was 166 persons, while those who leave numbered 92. The morning period saw only 18 people coming and 22 departing, whilst in the afternoon, the number of pedestrians reduced to only 22 persons entering and 33 people leaving (Table 8.17 and Figure 8.81).

Table 8.17. The pedestrian flow of the selected street: red one - case study C.

Case study: C | Street: Red one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	8	18	22	Number of people per activity	8	14	18	4	21	1
			Exiting	14									
			Total	22									
		St2	Entering	10				6	12	14	4	14	4
			Exiting	8									
			Total	18									
							Total	14	26	32	8	35	5
							Average	7	13.0	16	4.0	17.5	2.5
Noon	15 minutes	St1	Entering	145	166	92	Number of people per activity	16	151	144	23	135	32
			Exiting	22									
			Total	167									
		St2	Entering	21				15	76	75	16	80	11
			Exiting	70									
			Total	91									
							Total	31	227	219	39	215	43
							Average	15.5	113.5	109.5	19.5	107.5	21.5
Afternoon	15 minutes	St1	Entering	10	22	33	Number of people per activity	3	27	28	2	17	13
			Exiting	20									
			Total	30									
		St2	Entering	12				7	18	20	5	18	7
			Exiting	13									
			Total	25									
							Total	10	45	48	7	35	20
							Average	5	22.5	24	3.5	17.5	10.0
							Total average	28	149	150	27	143	34

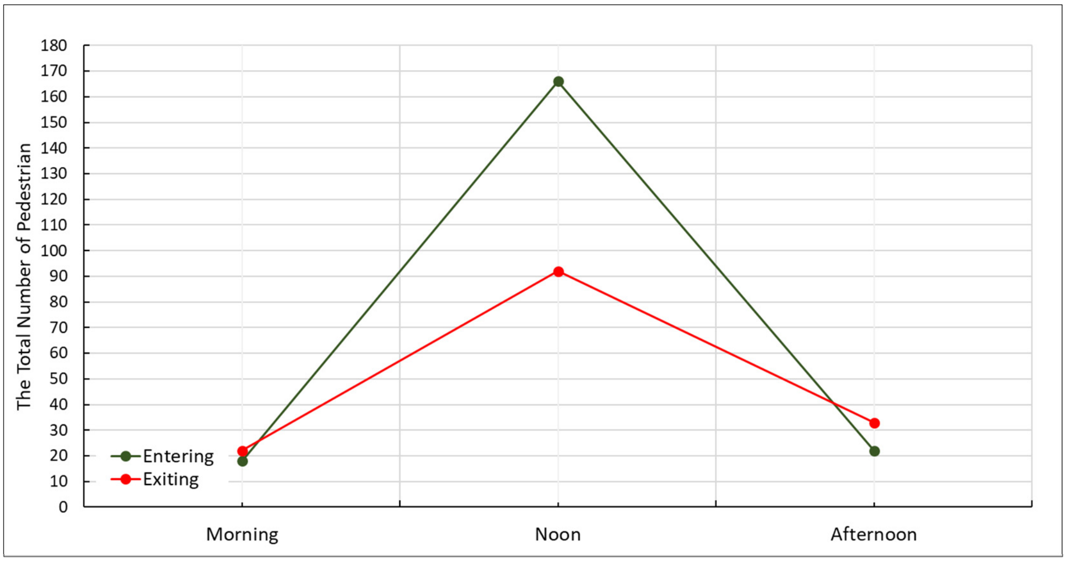


Figure 8.81. Movement pattern: pedestrians entering and exiting through red one street: case study C.

Human activity in this segment denotes that the three activities, moving, individual, and necessary, were dominant over their opposite activities. Therefore, people who stayed represent only 15.58% whilst 84.42% moved. Social activity only accounted for 15.30%, while individual activity includes 84.70% of the overall average. People in this engage in necessary activities, which encompassed 80.74% of the observed sampled population, while 19.26% represented those engaging in optional activities (Figure 8.82).

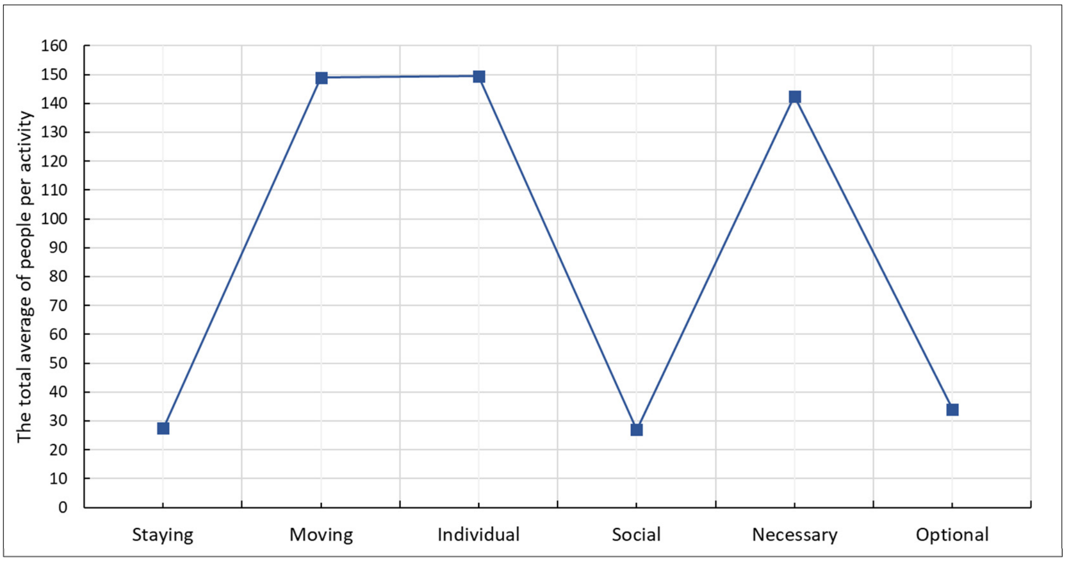


Figure 8.82. Activity pattern. The total average of people per activity in the selected street – red one: case study C.

In terms of the gender pattern in this chosen sample, records state that males comprise about 61.47%, while females only represent 38.53% of the total average pedestrian flow (Figure 8.83) (Appendix One).

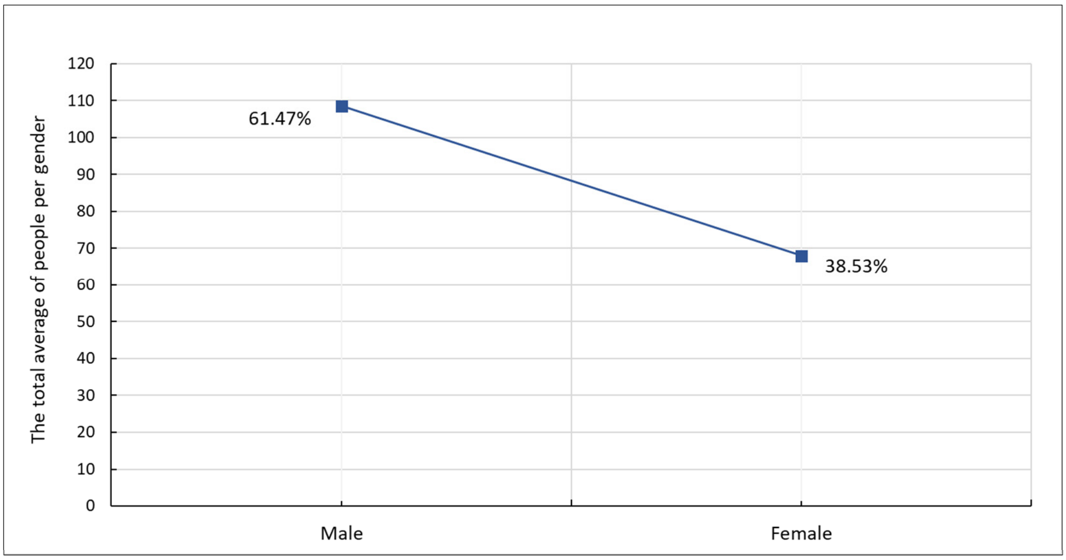


Figure 8.83. Gender pattern. The total average of pedestrians according to the gender. Red one street: case study C.

Regarding the age pattern, the male child was the highest percentage at 30.31%, while the female child only comprised 17.56% of total average. The reason for this proportional share is because boys used this main street to journey between their own houses and their school and vice versa. The teenager-young category represents 9.63% (males) in contrast to 0.85% (females). Within the last category, adult-elder people, the ratio of men and women was at 21.53% and 20.11% respectively (Figure 8.84) (Appendix One).

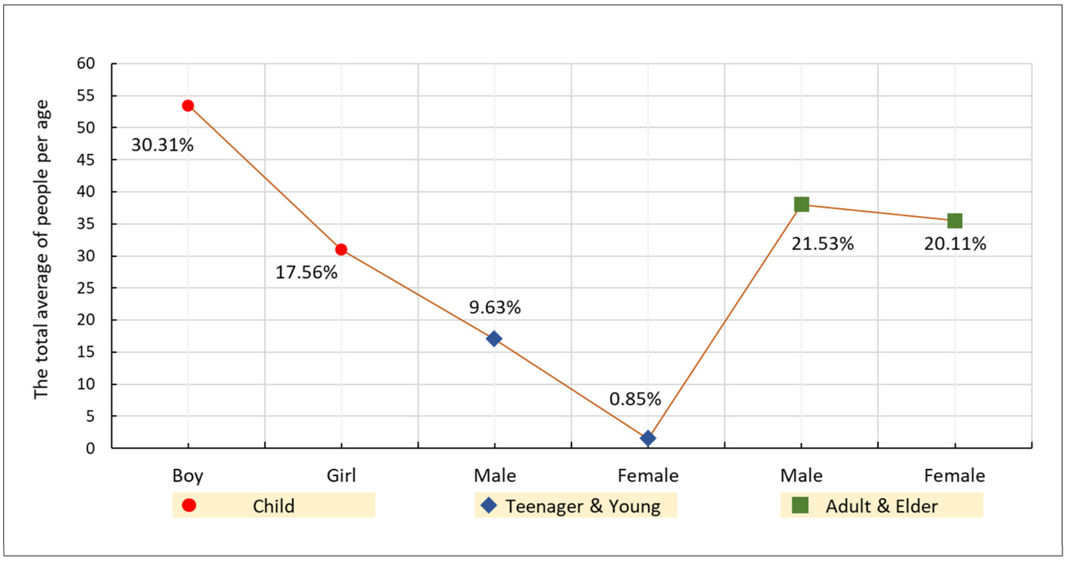


Figure 8.84. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Red one street: case study C.

Along the one hundred meters of the selected segment, two types of the group were observed: 2P-based and 3P-based. From the average, male groups include 2.5~3 groups of 2P, while only one female group was observed. In the mixed group, 14 2P-groups were seen besides two 3P- groups (Figure 8.85). Among the four preceding selected streets, this example shows an increase in the quantity of pedestrian movement.

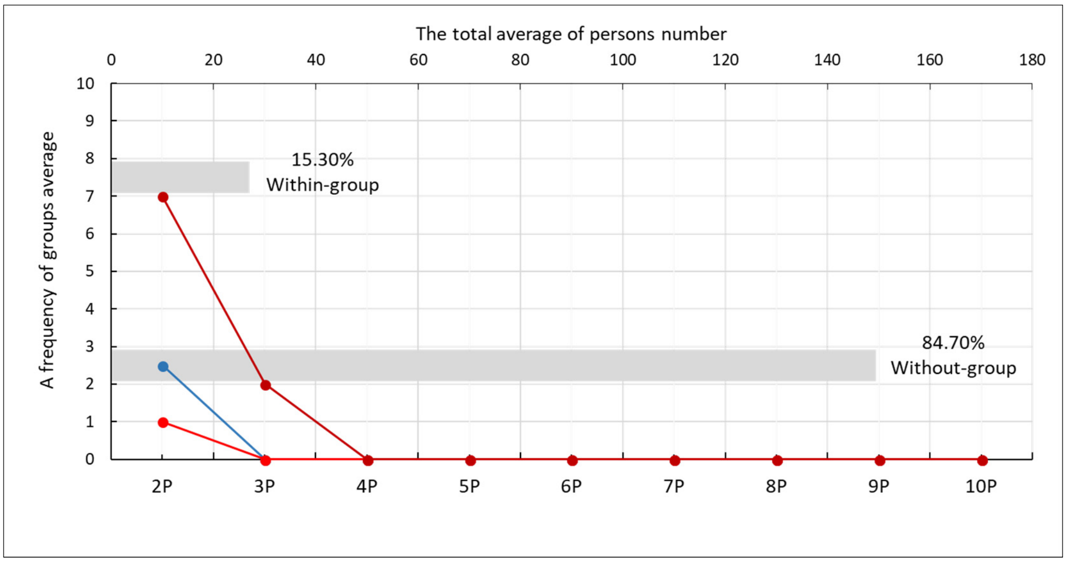


Figure 8.85. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Red one street: case study C.

8.2.3.6 Red Two Street: Case Study C

Street life information was gathered from the field via the same two-camera technique and direct observations (Figure 6.86 and 6.101) Despite the high centrality of the street, a moderate number of people used the street (Table 8.18). Thus, six pedestrians were recorded as entering the street in the morning period, and four were captured as leaving. Noon movement included captured only ten persons entering and eight people exiting, while the afternoon identified ten coming people and seven who leaving the selected street (Figure 8.86). The betweenness centrality can be recognised as a realistic potential value of a particular street, meaning that the centrality provides the opportunity for a street to promote its social life and enables the management of its land use.

Table 8.18. The pedestrian flow of the selected street: red two - case study C.

Case study: C | Street: Red two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	2	6	4	Number of people per activity	0	6	6	0	3	3
			Exiting	4									
			Total	6									
		St2	Entering	4				0	4	4	0	2	2
			Exiting	0									
			Total	4									
							Total	0	10	10	0	5	5
							Average	0	5.0	5	0.0	2.5	2.5
Noon	15 minutes	St1	Entering	7	10	8	Number of people per activity	0	11	7	4	10	1
			Exiting	4									
			Total	11									
		St2	Entering	3				0	7	7	0	6	1
			Exiting	4									
			Total	7									
							Total	0	18	14	4	16	2
							Average	0	9.0	7	2.0	8	1.0
Afternoon	15 minutes	St1	Entering	8	10	7	Number of people per activity	0	14	14	0	12	2
			Exiting	6									
			Total	14									
		St2	Entering	2				0	3	3	0	3	0
			Exiting	1									
			Total	3									
							Total	0	17	17	0	15	2
							Average	0	8.5	8.5	0.0	7.5	1.0
							Total average	0	23	21	2	18	5

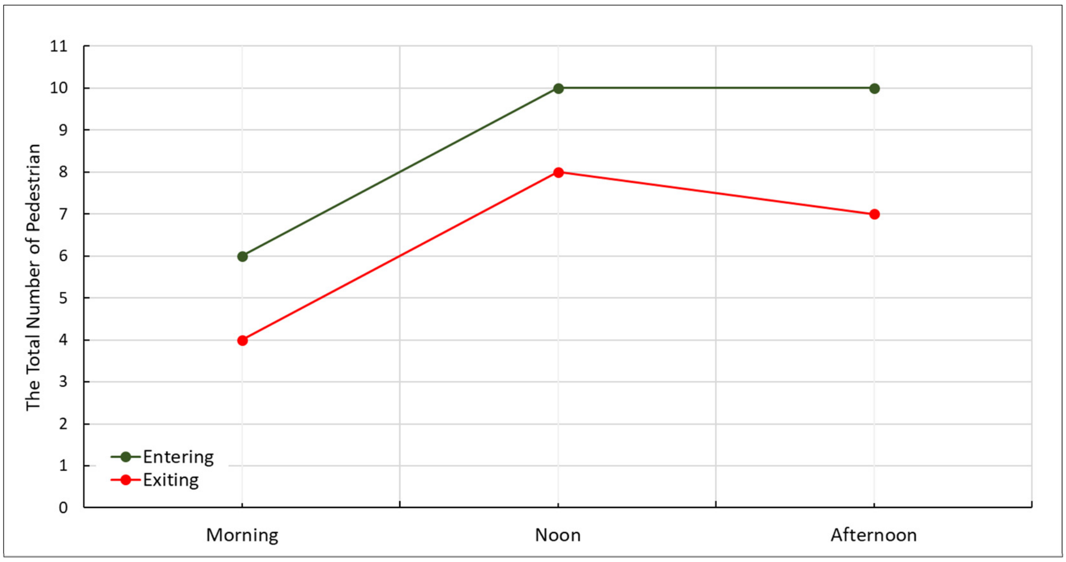


Figure 8.86. Movement pattern: pedestrians entering and exiting through red two street: case study C.

The activity pattern in this segment exhibits some interesting activities on the street edge. Residential houses surround most of the chosen section, with the exception of the convergence point between this and the main street (red one). In this regard, all those observed move rather than stay during the three data capture periods. Social activities are limited within the selected street, but a high percentage is recorded for individual activities. Furthermore, most pedestrians engage with necessary rather than optional activities (Figure 8.87).

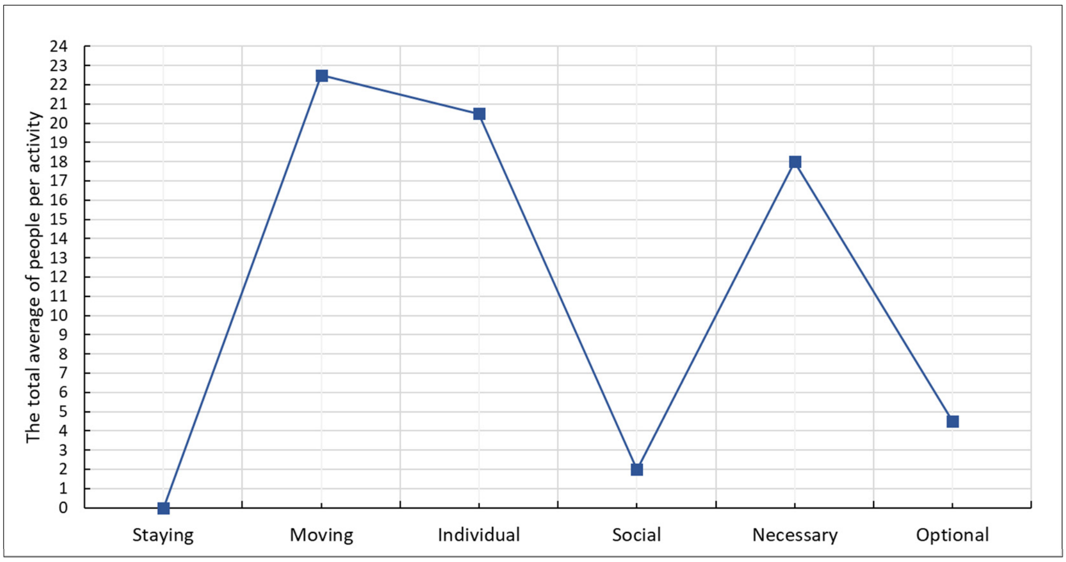


Figure 8.87. Activity pattern. The total average of people per activity in the selected street – red two: case study C.

In this segment, Appendix One, the ratio of male to female is 68.89% to 31.11% of the total average of observed people (Figure 8.88).

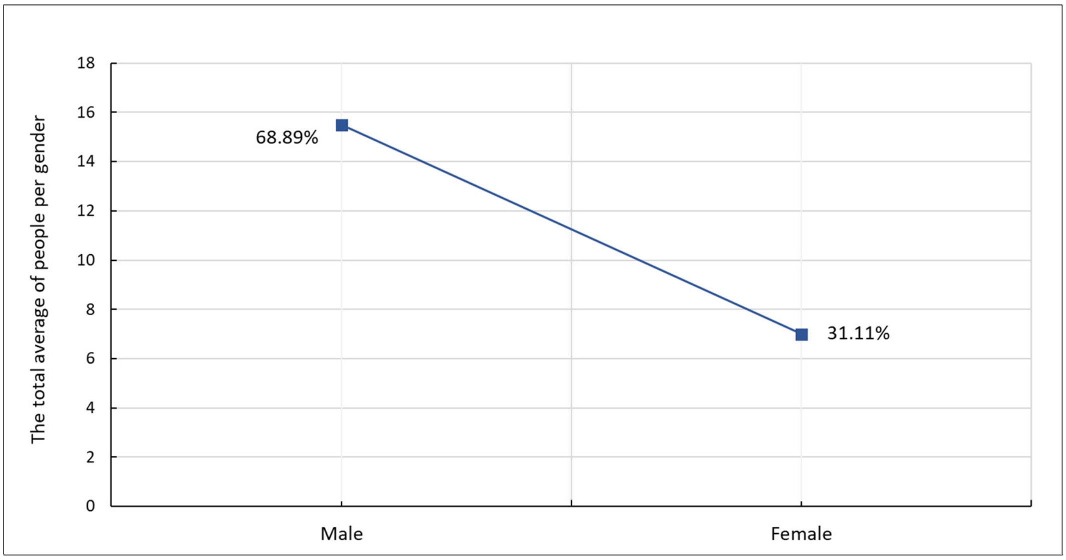


Figure 8.88. Gender pattern. The total average of the pedestrian according to the gender. Red two street: case study C.

Regarding the age pattern, the percentage refers to the adult-elder male who represents the highest proportion at 31.11%. Within the same category, females comprise 24.44% of the overall average. Within the child category, males stand for 24.44%, while females represent only 2.22% of the total mean. Finally, for the teenage-young category, the males again account for about 13.33%, while females comprise 4.44% of the overall mean (Figure 8.89) (Appendix One).

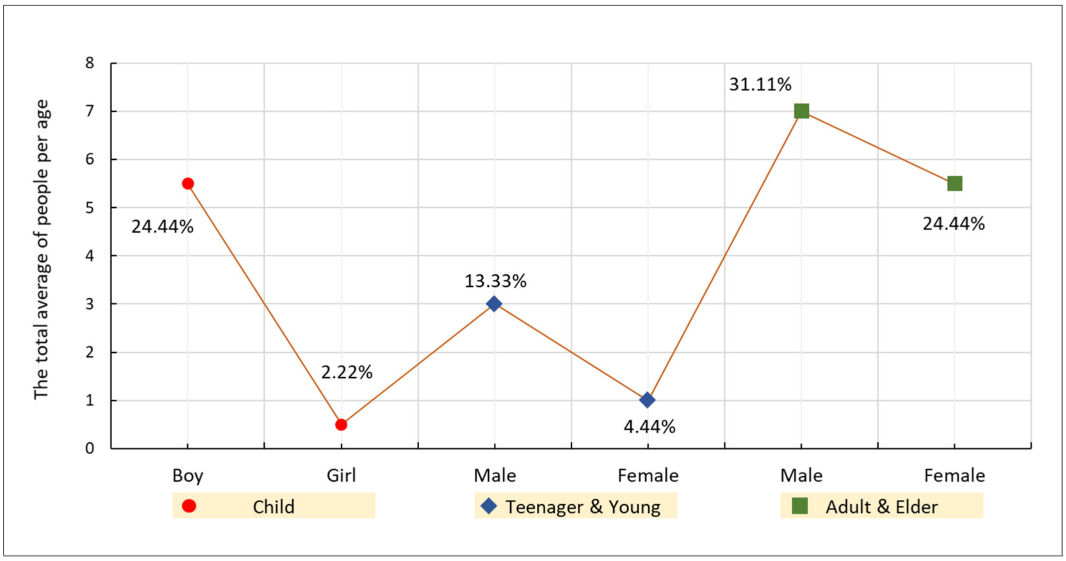


Figure 8.89. Age pattern. The total average of pedestrian based on three categories: child, teenager-young, and adult-elder people. Red two street: case study C.

For the group pattern, Appendix One, the selected segment shows only one cluster for both female and mixed groups, which is the 2P-based group. No other group patterns are observed during any of the three periods of the day (Figure 8.90). In some cases, the number of groups has a fractional value, like 0.5 or 1.5; this happens because the research deals with the total average.

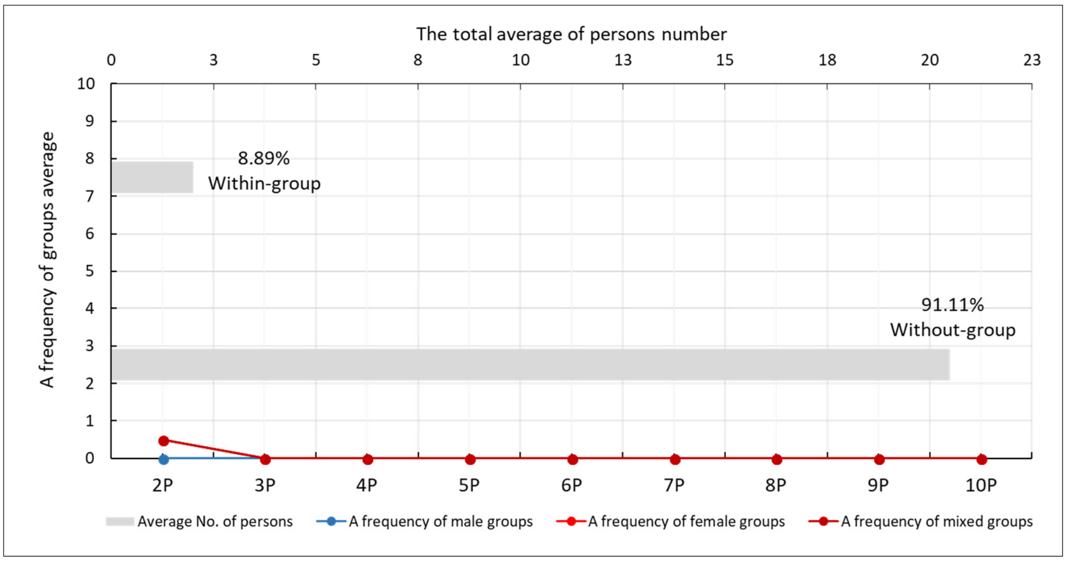


Figure 8.90. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Red two street: case study C.

8.2.4 Case Study D: Loop-grid Pattern

8.2.4.1 Blue One Street: Case Study D

The data gathered for Case Study D are labelled and sorted into Table 8.19.

Table 8.19. The pedestrian flow of the selected street: blue one - case study D.

Case study: D | Street: Blue one - Weekday

Period	Interval	Station	Pedestrian flow Direction	Number of people	Over total Entering	Exiting	Human Activities	Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	3	5	6	Number of people per activity	0	6	4	2	5	1
			Exiting	3									
			Total	6									
		St2	Entering	2				0	5	3	2	3	2
			Exiting	3									
			Total	5									
							Total	0	11	7	4	8	3
							Average	0	5.5	3.5	2.0	4	1.5
Noon	15 minutes	St1	Entering	0	7	6	Number of people per activity	2	3	3	2	5	0
			Exiting	5									
			Total	5									
		St2	Entering	7				5	3	6	2	8	0
			Exiting	1									
			Total	8									
							Total	7	6	9	4	13	0
							Average	3.5	3.0	4.5	2.0	6.5	0.0
Afternoon	15 minutes	St1	Entering	6	8	18	Number of people per activity	2	13	11	4	14	1
			Exiting	9									
			Total	15									
		St2	Entering	2				1	10	6	5	11	0
			Exiting	9									
			Total	11									
							Total	3	23	17	9	25	1
							Average	1.5	11.5	8.5	4.5	12.5	0.5
							Total average	5	20	17	9	23	2

From the three intervals, the morning witnesses only five persons (entering) and six people (exiting). Midday included only seven individuals who visited the segment and six who left. Regarding the afternoon period, the number of people entering was eight, while 18 left the selected street (Figure 8.91).

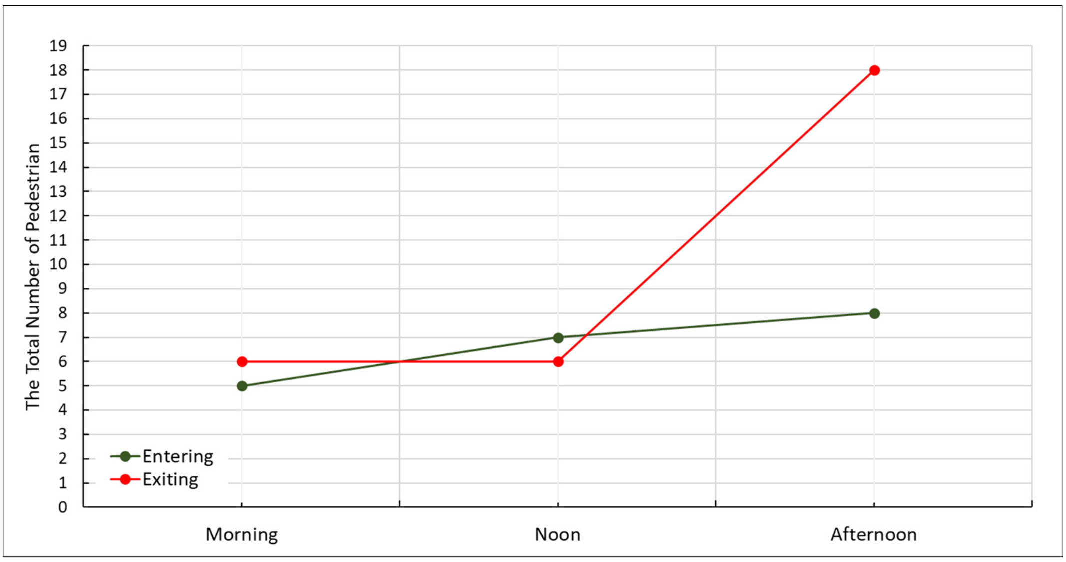


Figure 8.91. Movement pattern: pedestrians entering and exiting blue one street: case study D.

Concerning the activity pattern in this segment, the overall mean of the population presents in the street and their activities varied. In this respect, necessary activities engaged the majority of those observed at 92% of the total average, while optional only represented 8.00%. Individual activities also comprised the greatest percentage at 66.00% whilst 34.00% was recorded for social activities. In terms of staying and moving, people who tended to remain represented 20.00%, which was less than those who walked through the street who comprised 80.00% of the overall mean (Figure 8.92). The pattern of activities in this type of street is, to a large extent, related to those who are chatting while they walk through the street; however, due to the street's residential use, social activities are mostly associated with the neighbours.

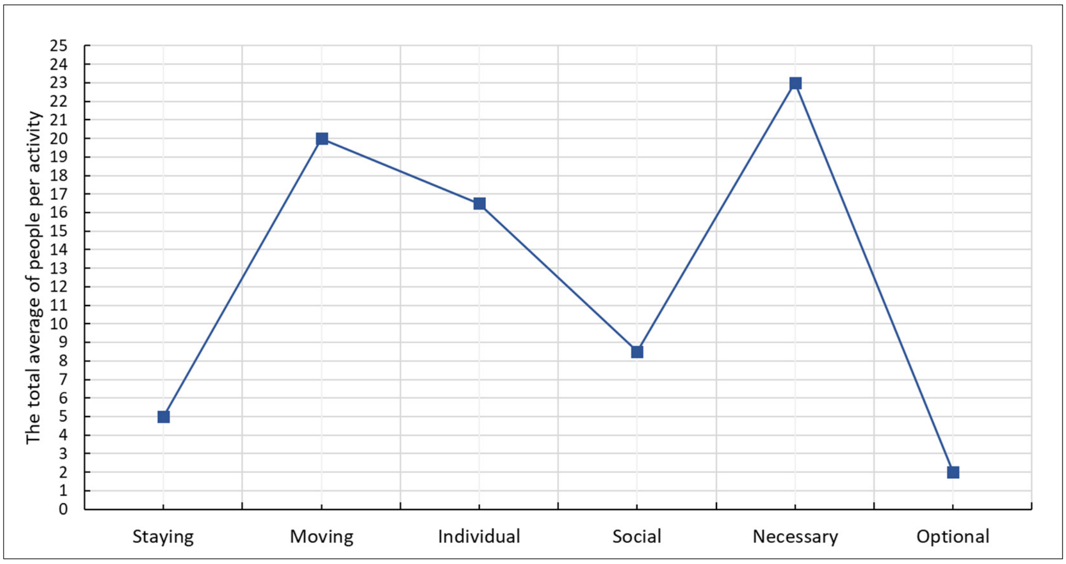


Figure 8.92. Activity pattern. The total average of people per activity in the selected street - blue one: case study D.

In terms of the gender pattern, Appendix One, there are the same number of males and females in this current street (Figure 8.93). This is unusual amongst the samples; for most of the earlier street segments, there is a greater percentage of males than females. Furthermore, amongst the age categories, adult-elder women comprise the greatest percentage of the total mean at 34.00%, while males only represent 28.00%. For the teenager-young class, males comprise 14.00% whilst females represent 12.00% of the overall average. Within the last (child) category, males comprise about 8.00%, whilst a single female represents 4.00% of the total mean (Figure 8.94) (Appendix One). Several pedestrians were observed in groups at 8.5~9 persons, which comprises 34.00%, whilst those observed alone stands for 16.5~17 people or 66.00% of the total average of the people recorded. Only one type of group was observed in this street, which was the 2P-based group. Both male and female share the same number of groups at 0.5~1 group. For mixed-group, there are 2.5~3 groups (Figure 8.95) (Appendix One).

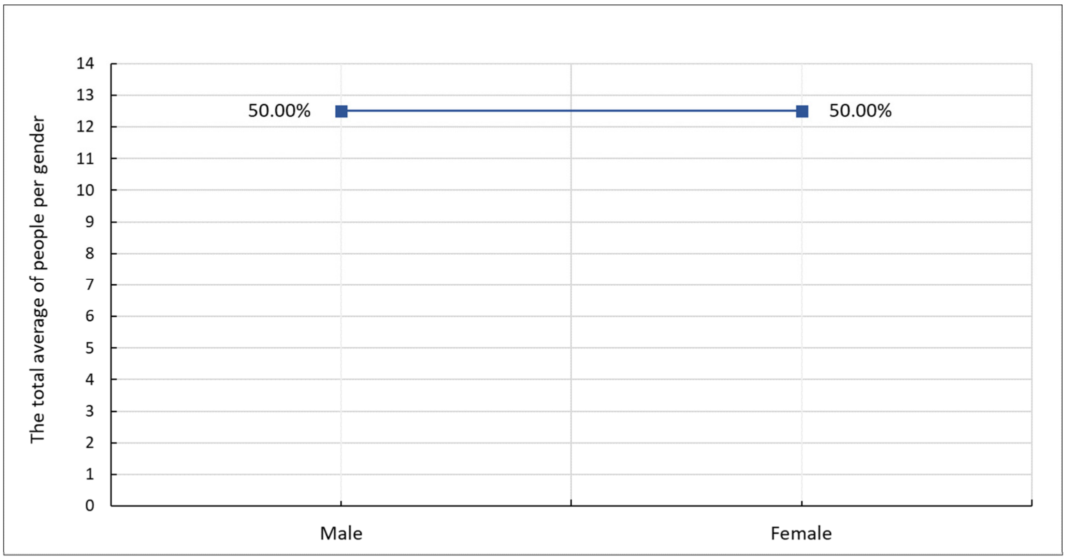


Figure 8.93. Gender pattern. The total average of pedestrians according to their gender. Blue one street: case study D.

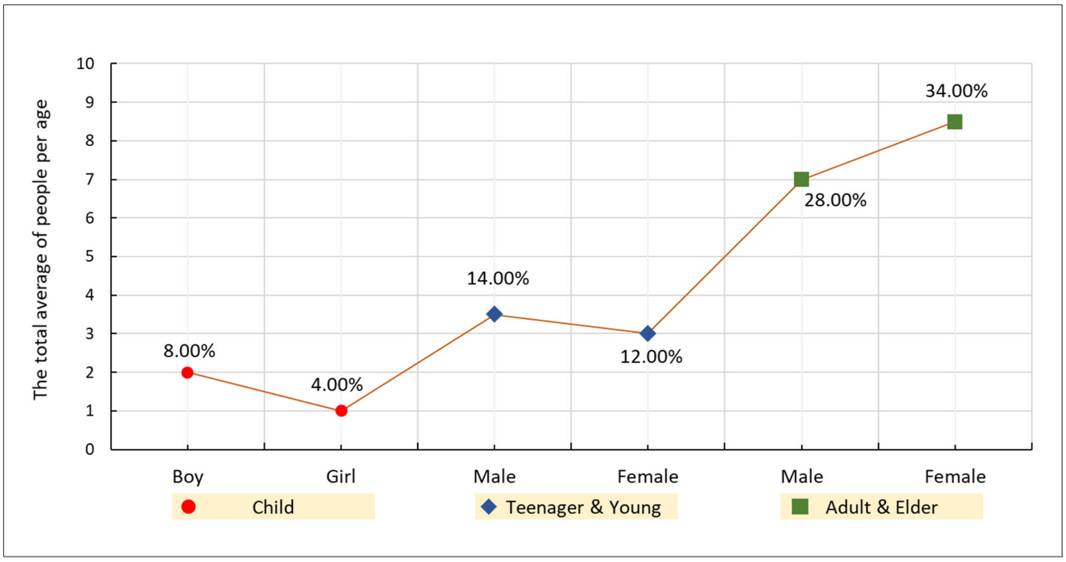


Figure 8.94. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Blue one street: case study D.

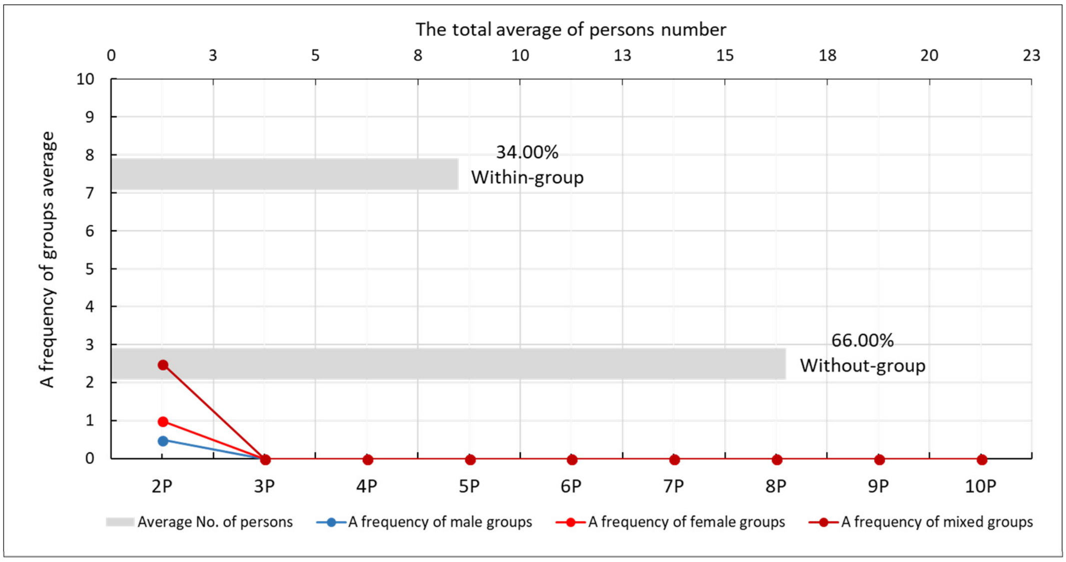


Figure 8.95. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Blue one street: case study D.

8.2.4.2 Blue Two Street: Case Study D

In this segment, observations were conducted over three intervals of time (morning, noon, and afternoon) when people's movements were captured. The chosen segment does record a modest quantity of pedestrians and their activities (Table 8.20).

Table 8.20. The pedestrian flow of the selected street | blue two - case study D.

Case study: D | Street: Blue two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	1	1	5	Number of people per activity	0	1	1	0	1	0
			Exiting	0									
			Total	1									
		St2	Entering	0				0	5	3	2	5	0
			Exiting	5									
			Total	5									
							Total	0	6	4	2	6	0
							Average	0	3.0	2	1.0	3	0.0
Noon	15 minutes	St1	Entering	4	10	7	Number of people per activity	0	9	7	2	7	2
			Exiting	5									
			Total	9									
		St2	Entering	6				0	8	6	2	5	3
			Exiting	2									
			Total	8									
							Total	0	17	13	4	12	5
							Average	0	8.5	6.5	2.0	6	2.5
Afternoon	15 minutes	St1	Entering	1	3	3	Number of people per activity	0	3	3	0	3	0
			Exiting	2									
			Total	3									
		St2	Entering	2				0	3	3	0	3	0
			Exiting	1									
			Total	3									
							Total	0	6	6	0	6	0
							Average	0	3.0	3	0.0	3	0.0
							Total average	0	15	12	3	12	3

Only one person entered in the morning, whereas five people exited. The midday period, this amount increased to ten entering and leaving, whilst the afternoon saw a similar number of people coming and going from the chosen street, namely three persons for each (Figure 8.96).

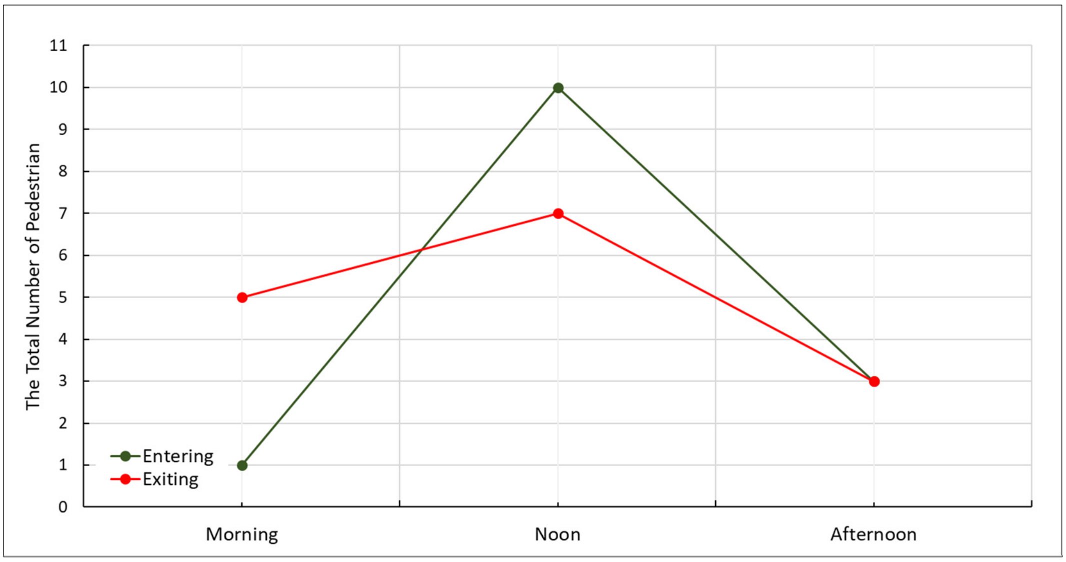


Figure 8.96. Movement pattern: pedestrians entering and exiting blue two street: case study D.

Throughout the street, the number of people who tend to stay is zero, whereas all observed pedestrians passed through the segment without any sign of staying. From the total mean, three people conducted social activities by chatting while they crossed the street, and the remaining people walked individually. Furthermore, most pedestrians using the street engaged in necessary activities, excepting three who engaged in optional activities (Figure 8.97).

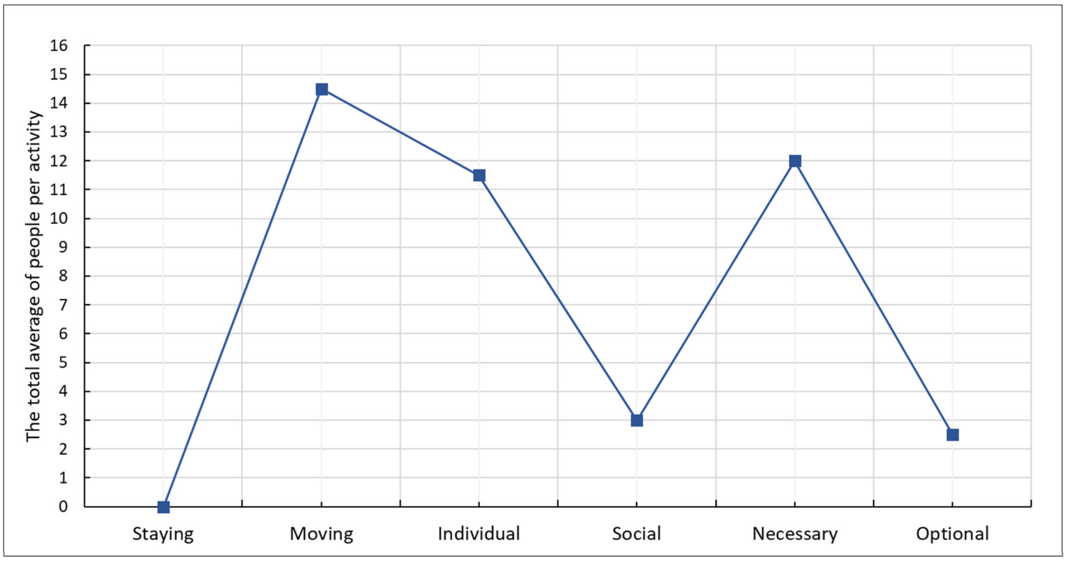


Figure 8.97. Activity pattern. The total average of people per activity in the selected street - blue two: case study D.

In this part, the gender pattern consists of males who comprise about 55.17% and females who represent 44.83% of the total mean of the population within the street (Figure 8.98) (Appendix One).

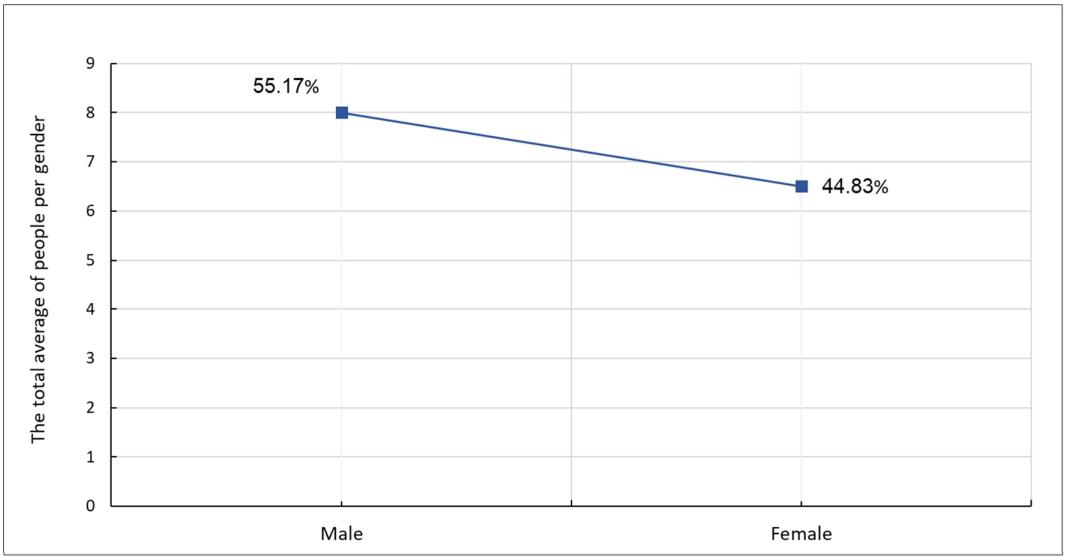


Figure 8.98. Gender pattern. The total average of pedestrians according to gender. Blue two street: case study D.

In considering the age pattern, and because of the low numbers of people present, the pattern is of comparatively little value. However, the numerical ratio suggests that amongst the child category, only 10.34% were male and 0.00% were female. Also, amongst teenager-young people males represented 24.14% and females comprised 0.00%. In the adult-elder category, males represent about 44.83%, while women comprise 20.69% of the overall mean of people observed in the designated street (Figure 8.99) (Appendix One).

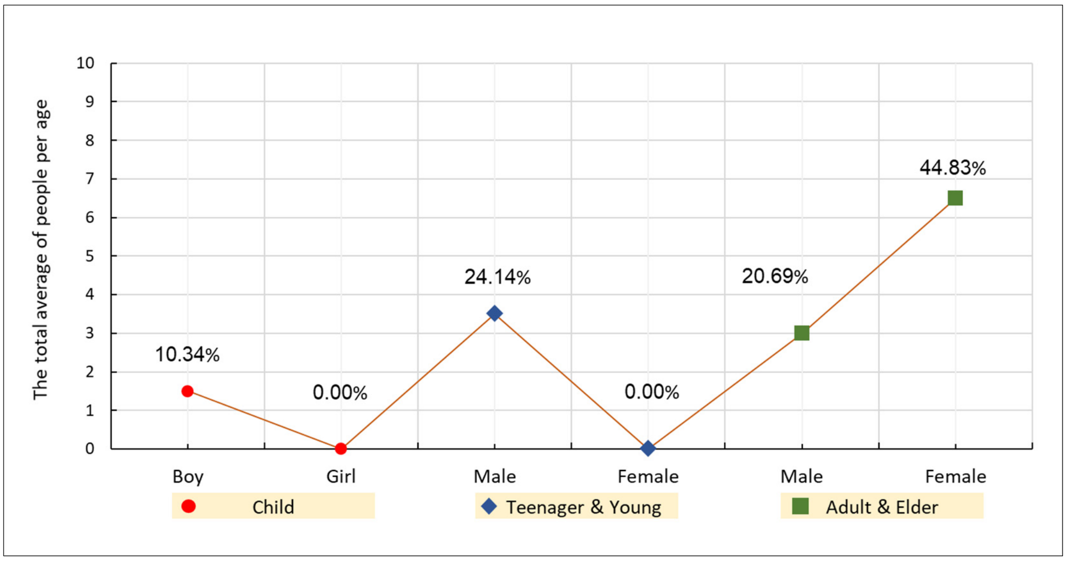


Figure 8.99. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Blue two street: case study D.

The group pattern shows a very modest number of groups; hence, the 2P-based group occurs only within two category male and female with one group for each. In this regard, and overall, people who were observed within groups represented about 20.69% as opposed to 79.31% of those who were seen alone (Figure 8.100) (Appendix One).

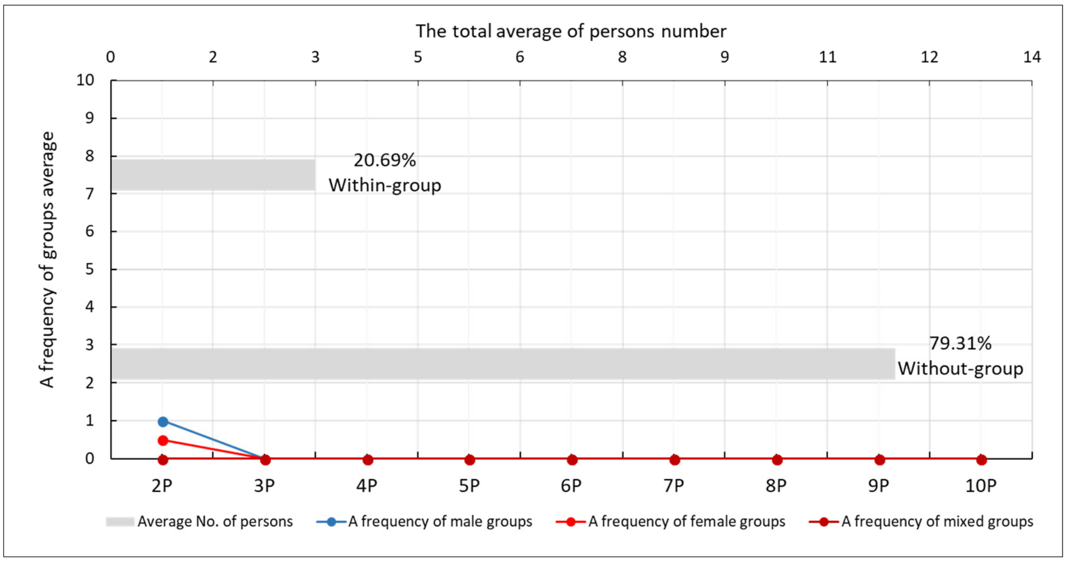


Figure 8.100. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Blue two street: case study D.

8.2.4.3 Yellow One Street: Case Study D

The recorded data were collected, and then listed in Table 8.21. From the observations, the morning period showed eleven persons entering and nine leaving the selected street. The afternoon saw the greatest numbers of people with 74 persons exiting the street, and 17 people entering. At the end of the day, pedestrians entering numbered ten, and those exiting comprised 19 persons (Figure 8.101).

Table 8.21. The pedestrian flow in the selected street: yellow one - case study D.

Case study: D | Street: Yellow one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	6	11	9	Number of people per activity	0	9	3	6	7	2
			Exiting	3									
			Total	9									
		St2	Entering	5				0	11	9	2	8	3
			Exiting	6									
			Total	11									
							Total	0	20	12	8	15	5
							Average	0	10.0	6	4.0	7.5	2.5
Noon	15 minutes	St1	Entering	9	17	74	Number of people per activity	5	16	19	2	18	3
			Exiting	12									
			Total	21									
		St2	Entering	8				12	58	59	11	59	11
			Exiting	62									
			Total	70									
							Total	17	74	78	13	77	14
							Average	8.5	37.0	39	6.5	38.5	7.0
Afternoon	15 minutes	St1	Entering	7	10	19	Number of people per activity	0	17	13	4	16	1
			Exiting	10									
			Total	17									
		St2	Entering	3				0	12	10	2	11	1
			Exiting	9									
			Total	12									
							Total	0	29	23	6	27	2
							Average	0	14.5	11.5	3.0	13.5	1.0
							Total average	9	62	57	14	60	11

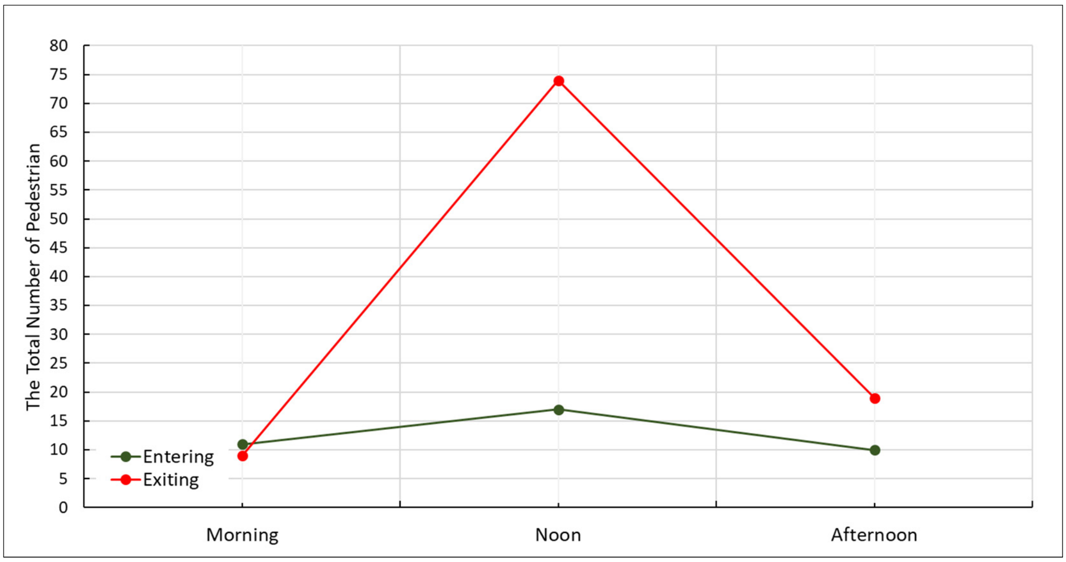


Figure 8.101. Movement pattern: pedestrians entering and exiting yellow one street: case study D.

Moving, individual and necessary denote the most common activity characteristics compared with staying, social and optional. Therefore, moving represents the greatest significant value at 87.86% versus staying comprises 12.14% of the overall mean of pedestrians. Individual activities stand for 80.71%, while social ones only involve 19.29% of the total average. In the last category, necessary activities comprise the largest per cent at 85.00% whilst 15.00% represent optional activities in the yellow one street sample (Figure 8.102).

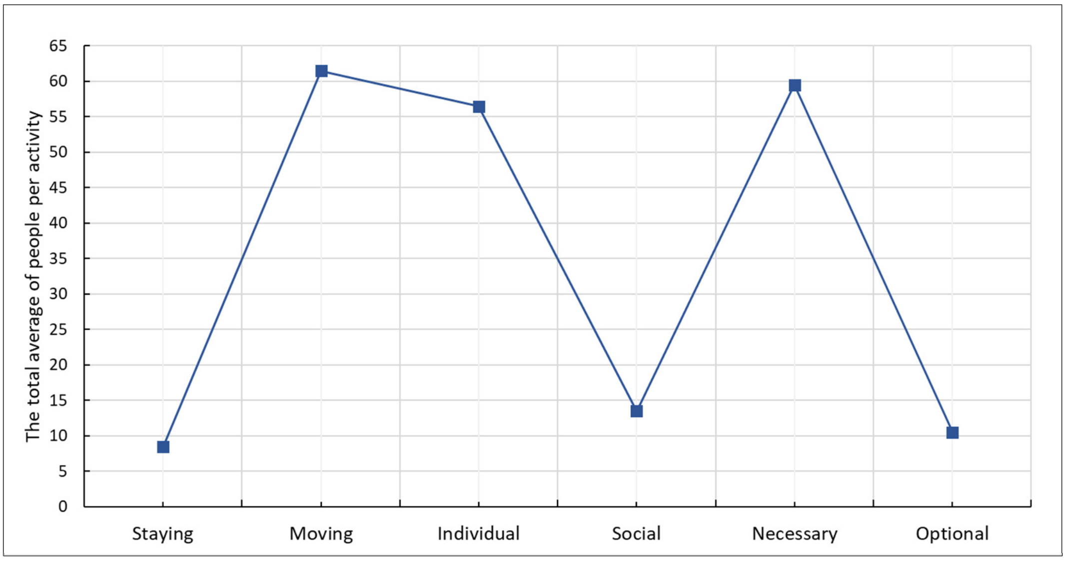


Figure 8.102. Activity pattern. The total average of people per activity in the selected street – yellow one: case study D.

The gender pattern illustrates that females represent a higher ratio than males at 58.57% to 41.43% of the overall mean of the people using the street (Figure 8.103). The greatest number of females was recorded for due to the presence of a secondary school for girls. Otherwise. the street is identified for residential use which involves a limited number of females.

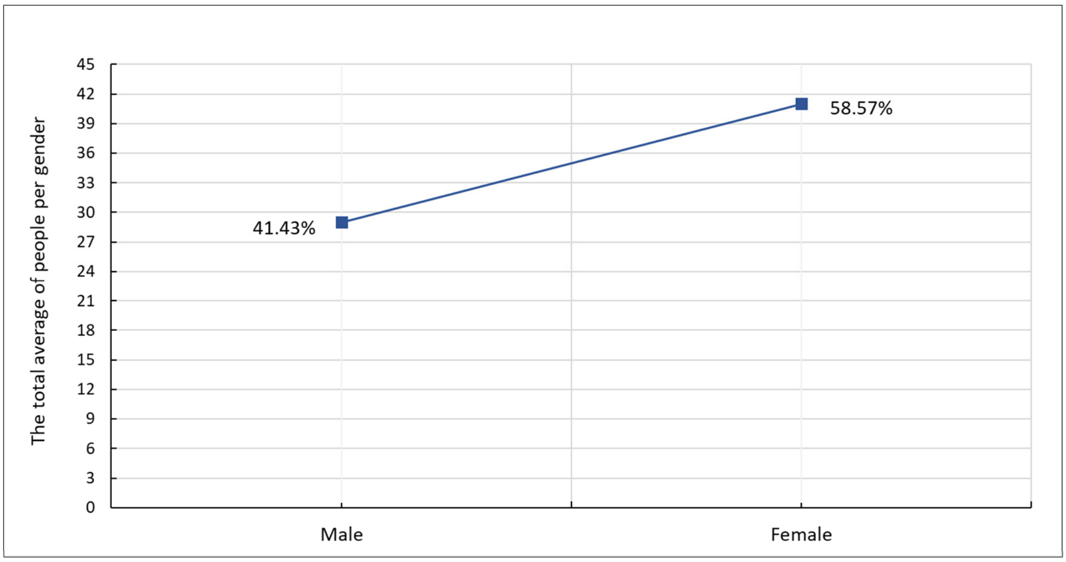


Figure 8.103. Gender pattern. The total average of pedestrians according to gender. Yellow one street: case study D.

In this selected street, the age pattern within the teenager-young people category includes 31.43% for females and 14.29% for males. The child category consisted only of boys at 3.57% of the total mean of people, whilst the number recorded for girls was zero. The adult-elder category captured 23.57% for males, and 27.14% for females (Figure 8.104).

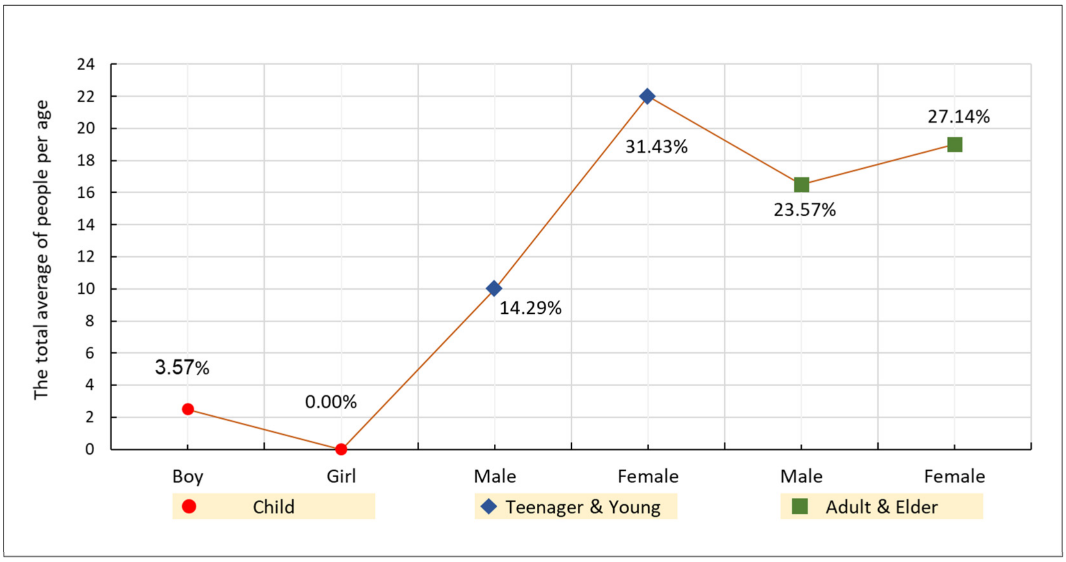


Figure 8.104. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Yellow one street: case study D.

The presence of different ages in a particular street is a sign of the life of the street itself. This can be a measure of the ability of a street and its edges to address the needs of different ages of people who use the street. The 2P- and 3P-based group distinguish the selected street in terms of the grouping patterns of people using the street. The male class includes only one cluster of a 2P-group. Both the female and mixed groups consist of 2.5~3 2P. There is just one 3P-group that is based on the female category (Figure 8.105).

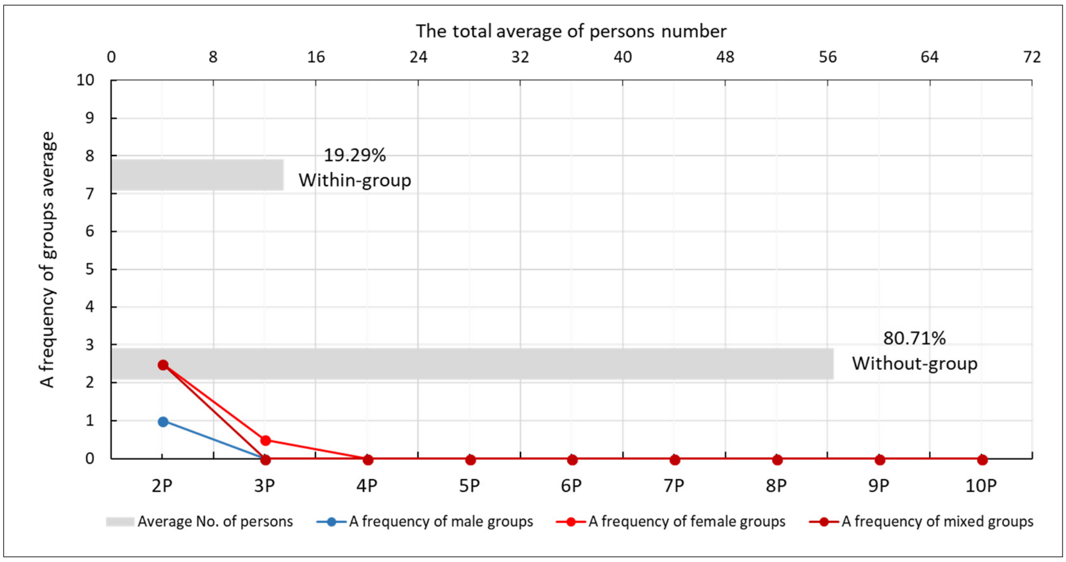
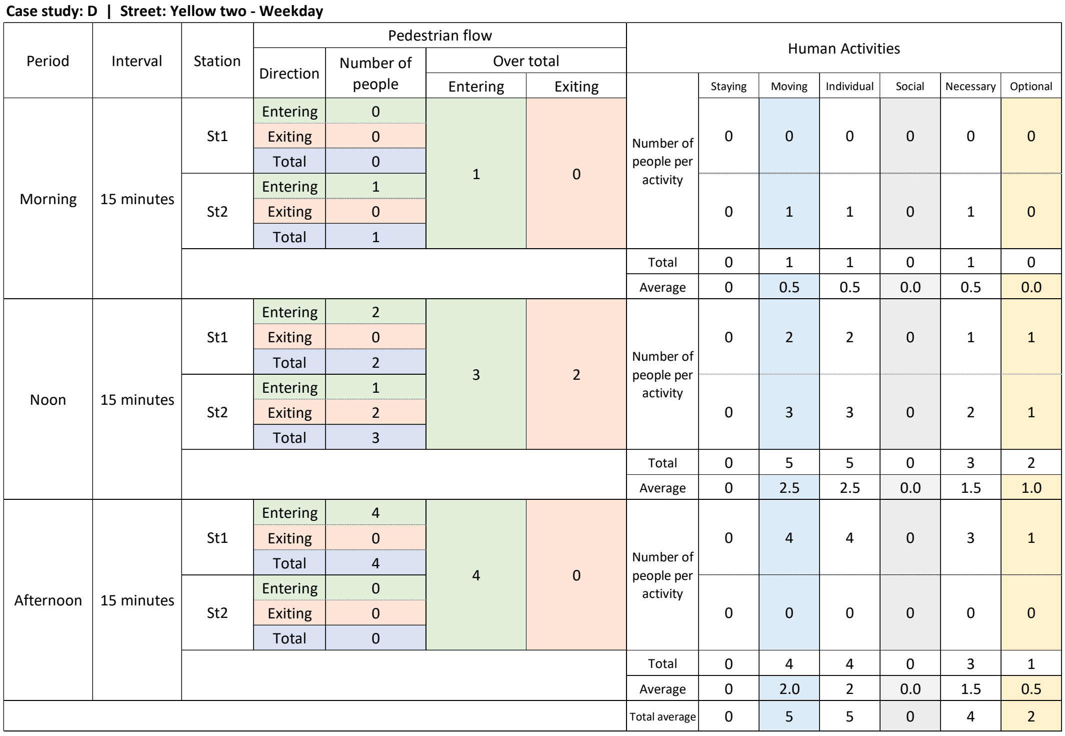


Figure 8.105. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Yellow one street: case study D.

8.2.4.4 Yellow Two Street: Case Study D

Two rows of residential houses shape the street's edges with a considerable value of metric depth for each dwelling. The selected street does not witness a high amount of movement through the three periods: morning, noon, and afternoon (Table 8.22). Counting the pedestrian flow shows that very few people used the segment of the chosen street. During the morning, people who entered the street did not exceed one person, while those who exited was zero. In addition, noon includes only three persons for entering versus two people leaving. In terms of the afternoon, no one at all exited the street, while only four people entered (Figure 8.106).

Table 8.22. The pedestrian flow of the selected street: yellow two - case study D.



Case study: D | Street: Yellow two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	0	1	0	Number of people per activity	0	0	0	0	0	0
			Exiting	0									
			Total	0									
		St2	Entering	1				0	1	1	0	1	0
			Exiting	0									
			Total	1									
							Total	0	1	1	0	1	0
							Average	0	0.5	0.5	0.0	0.5	0.0
Noon	15 minutes	St1	Entering	2	3	2	Number of people per activity	0	2	2	0	1	1
			Exiting	0									
			Total	2									
		St2	Entering	1				0	3	3	0	2	1
			Exiting	2									
			Total	3									
							Total	0	5	5	0	3	2
							Average	0	2.5	2.5	0.0	1.5	1.0
Afternoon	15 minutes	St1	Entering	4	4	0	Number of people per activity	0	4	4	0	3	1
			Exiting	0									
			Total	4									
		St2	Entering	0				0	0	0	0	0	0
			Exiting	0									
			Total	0									
							Total	0	4	4	0	3	1
							Average	0	2.0	2	0.0	1.5	0.5
							Total average	0	5	5	0	4	2

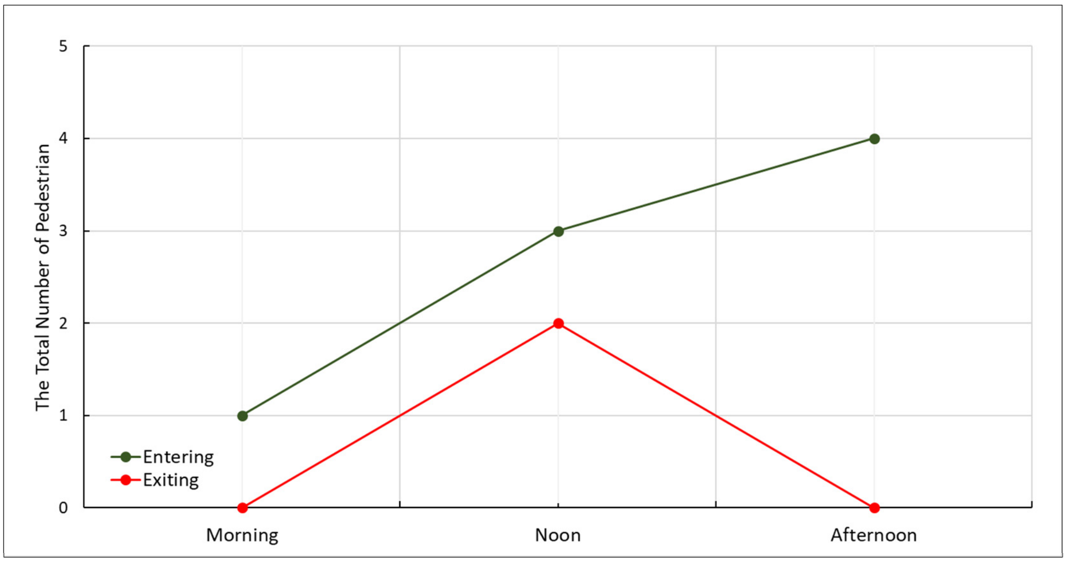


Figure 8.106. Movement pattern: pedestrians entering and exiting through yellow two street: case study D.

Similarly, the activity pattern does not record a significant presence of people in this chosen street. No people were recorded as staying or engaging in social activities, while only 1.5~2 persons were recorded as engaging in the optional activity and 3.5~4 were involved in necessary activities (Figure 8.107). Males account for about 80.00%, while female comprise only 20.00% of the total average of observed people in this selected section of yellow two street (Figure 8.108) (Appendix One).

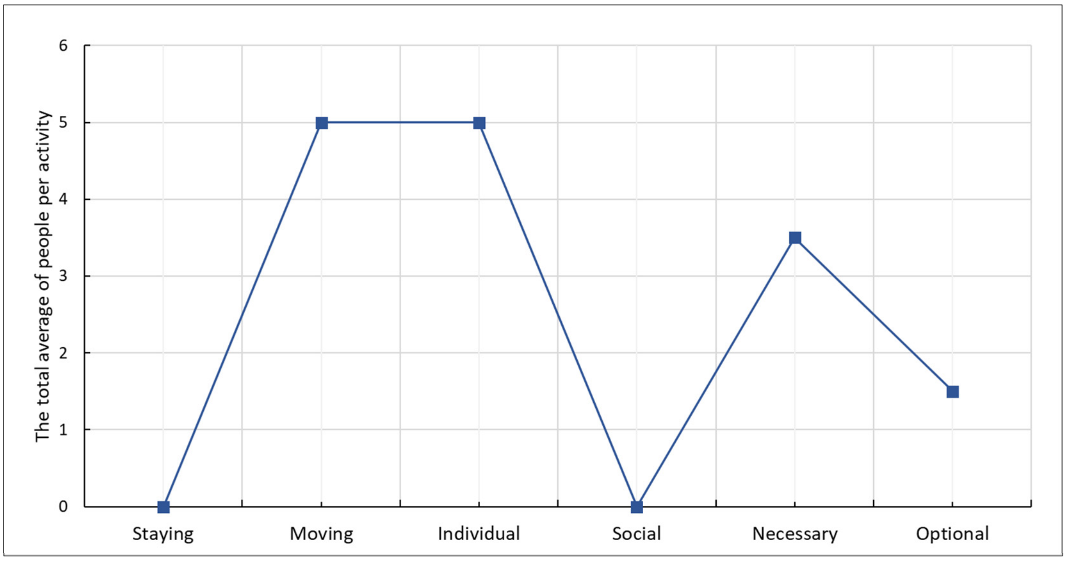


Figure 8.107. Activity pattern. The total average of people per activity in the selected street – yellow two: case study D.

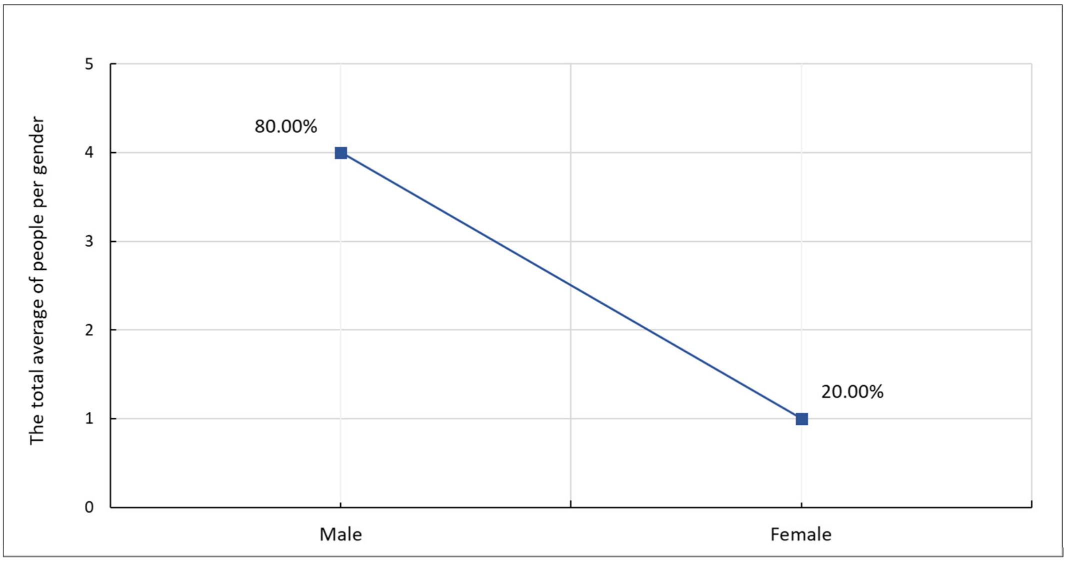


Figure 8.108. Gender pattern. The total average of the pedestrians according to the gender. Yellow two street: case study D.

Although there were not enough people recorded to effectively classify them according to age, the child age only recorded one male, representing 10.00%, while no females were recorded (thus, 0.00%). Teenager-young people consisted of 30.00% male and 10.00% female, whilst the adult-elder category comprised 40.00% males and 10.00% women from the total pedestrian average (Figure 8.109). The street observation did not record any groups during the three different periods of time. Therefore, all people appeared individually in the observations of yellow two street in case study D (Figure 8.110) (Appendix One).

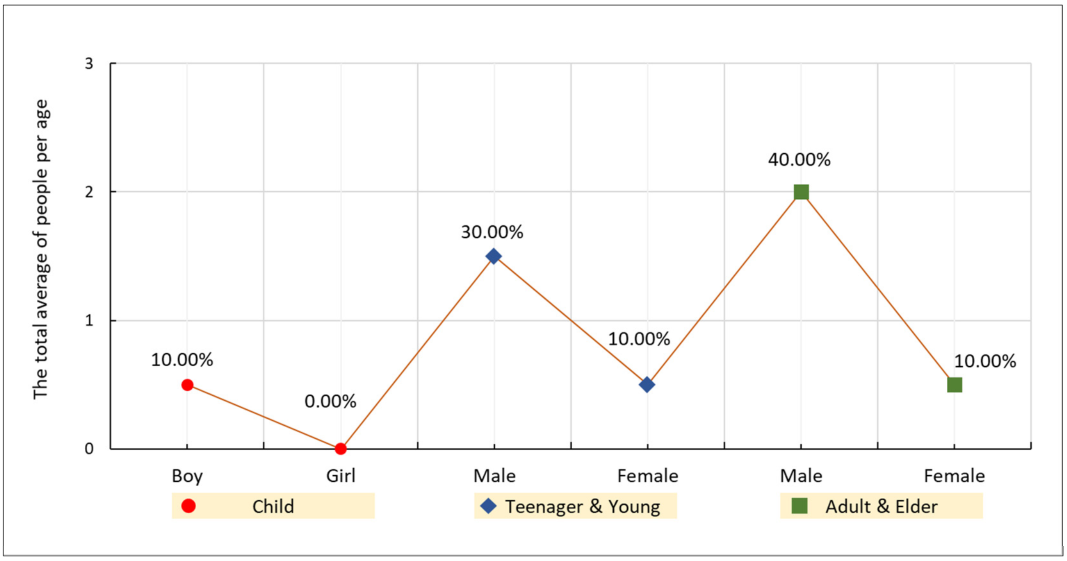


Figure 8.109. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Yellow two street: case study D.

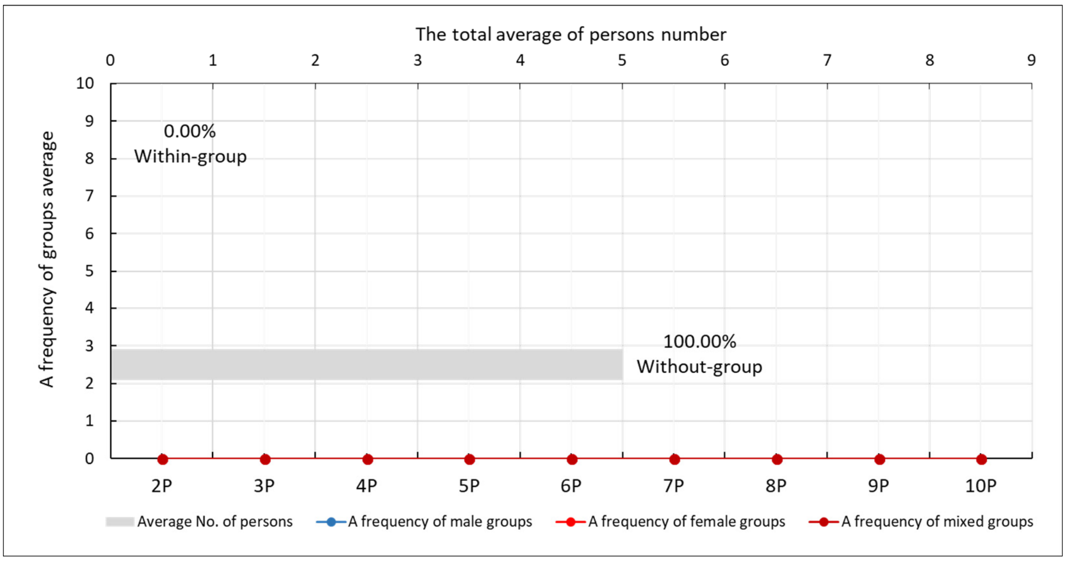


Figure 8.110. Group pattern. The number of groups in which based on the total number of persons per group and the frequency value for each group. Yellow two street: case study D.

8.2.4.5 Red One Street: Case Study D

In this street (Figure 6.106 and 6.119), the movement pattern is listed in Table 8.23. During three different periods of time when the street movement was observed, the afternoon recorded the most significant quantity of pedestrian flow at 121 people entering the chosen segment versus 93 persons leaving it. At midday, the number of people reduced to 50 entering and 60 exiting, whilst the morning period saw only 29 people entering and 46 persons exiting (Figure 8.111).

Table 8.23. The pedestrian flow of the selected street: red one - case study D.

Case study: D | Street: Red one - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	15	29	46	Number of people per activity	12	29	32	9	38	3
			Exiting	26									
			Total	41									
		St2	Entering	14				9	25	22	12	31	3
			Exiting	20									
			Total	34									
							Total	21	54	54	21	69	6
							Average	10.5	27.0	27	10.5	34.5	3.0
Noon	15 minutes	St1	Entering	27	50	60	Number of people per activity	22	38	42	18	48	12
			Exiting	33									
			Total	60									
		St2	Entering	23				15	35	34	16	47	3
			Exiting	27									
			Total	50									
							Total	37	73	76	34	95	15
							Average	18.5	36.5	38	17.0	47.5	7.5
Afternoon	15 minutes	St1	Entering	74	121	93	Number of people per activity	25	98	64	59	70	53
			Exiting	49									
			Total	123									
		St2	Entering	47				29	62	50	41	54	37
			Exiting	44									
			Total	91									
							Total	54	160	114	100	124	90
							Average	27	80.0	57	50.0	62	45.0
							Total average	56	144	122	78	144	56

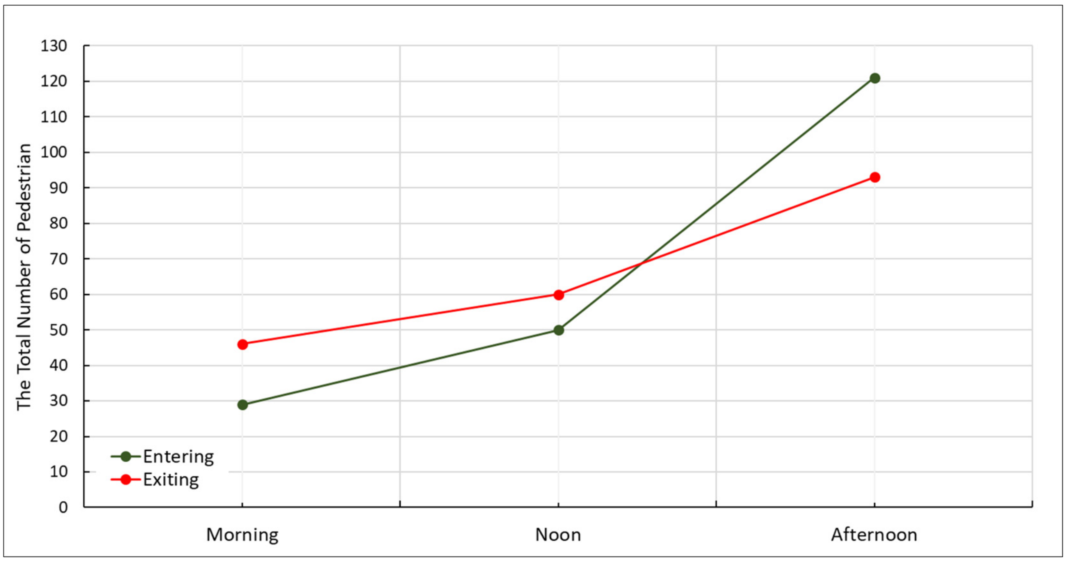


Figure 8.111. Movement pattern: pedestrians entering and exiting through red one street: case study D.

Hence, regardless of any motorised-based movement, pedestrian movement increased generally compared with other selected streets in case study D. When considering interactions between people and the street, the street edge within this segment provide opportunities and activities for those who use the space. In terms of the activity pattern, people who tend to stay comprise 28.07%, while those who move through the street represent about 71.93% of the total mean of pedestrian flow. Social activities comprise 38.85% whilst individual activities represent 61.15% in this segment. Moreover, 72.18% of people engage in necessary activities, whilst only 27.82% engage in optional activities (Figure 8.112).

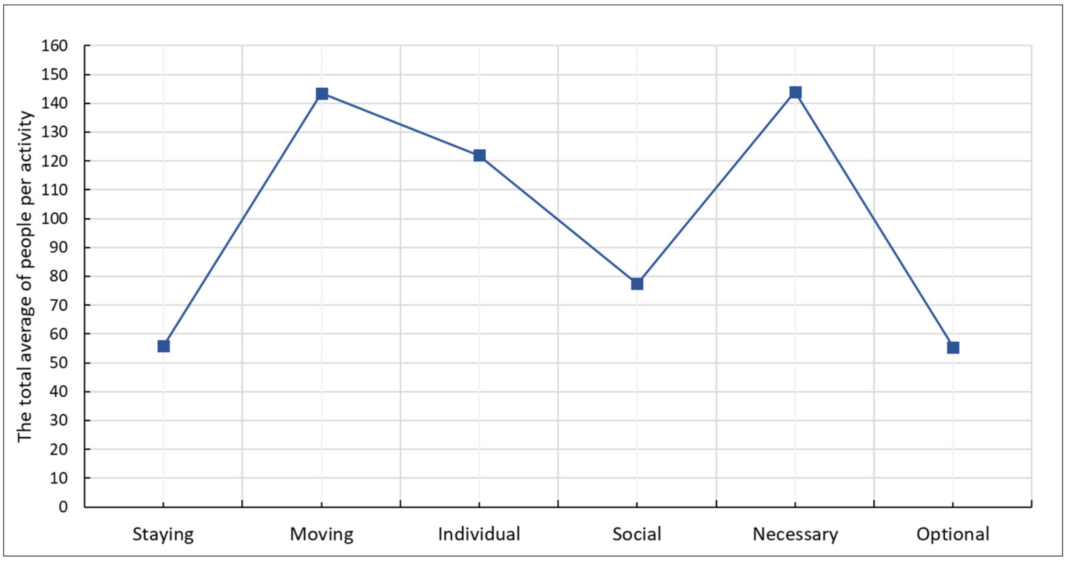


Figure 8.112. Activity pattern. The total average of people per activity in the selected street – red one: case study D.

From the observation, Appendix One, the gender pattern reveals that males (at 71.93%) represented the highest percentage as opposed to the female (at 28.07%) (Figure 8.113). The presence of only one colour for gender in Figure 8.113 is an indicator of the edge's characteristics in a particular street and how the edge could attract both genders rather than the current homogeneous population.

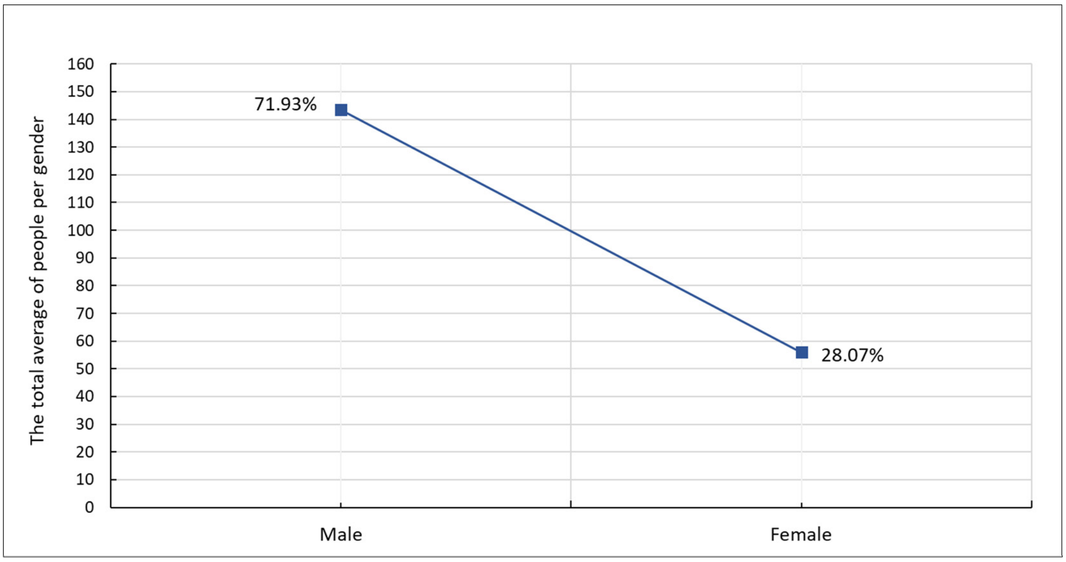


Figure 8.113. Gender pattern. The total pedestrian average according to the gender. Red one street: case study D.

The chosen section shows all categories of age at various ratios (Appendix One). The child category includes 2.26% males and 3.26% females. Teenager-young pedestrians comprise the highest value age amongst the males who represent 29.82%, while female comprise only 7.02% of the overall average. Adult-elder males represent 39.85% whilst women from the same category comprise 17.79% of the total mean of the people who used this street (Figure 8.114).

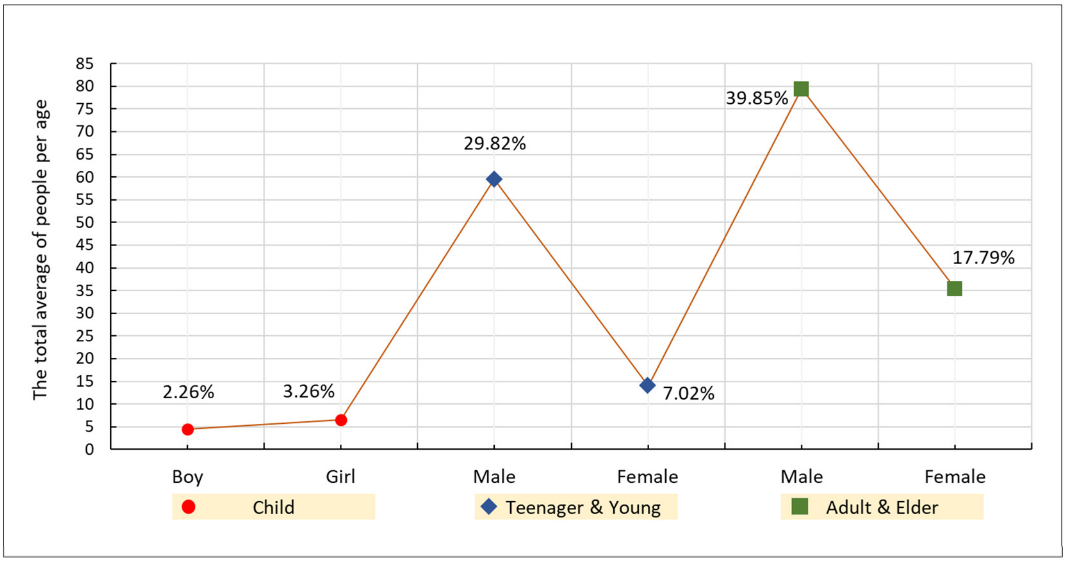


Figure 8.114. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Red one street: case study D.

In terms of the group pattern, Appendix One, the 2P-based group are: 44.44% male, 20.00% female, and 35.56% mixed from the total average. Males constitute the greatest percentage compared with the two other categories: female and mixed. Furthermore, amongst the 3P-based group, the mixed group has the highest rate at 71.43% then the male with 21.43% and the females comprise only 7.14%. Regarding the 4P-based group, both male and mixed have one and 0.5~one groups respectively. Also, the mixed group encompasses one 5P-based group and one 6P-based group (Figure 8.115). Within the high centrality value of the street, people are likely to formulate different group patterns that consist of multiple genders in the street. This consideration, however, is generally restricted to the streets that have a low centrality according to the MCA analysis.

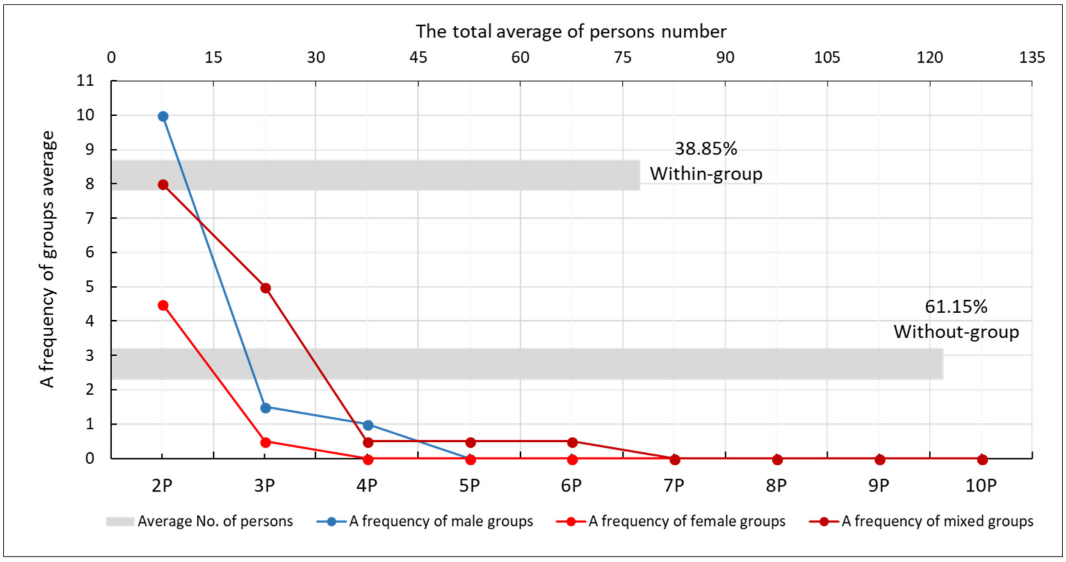


Figure 8.115. Group pattern. The number of groups which is based on the total number of persons per group and the frequency value for each group. Red one street: case study D.

8.2.4.6 Red Two Street: Case Study D

Regarding the selected street, data from the recordings and observations are documented in Table 8.24. The movement pattern during the three intervals of the day: morning, noon, and afternoon, indicate that, at the end of the day, 56 people entered, while 59 persons left the selected street. At the midday, the 49 people entered and 50 exited, and in the morning, 18 people who came into the street and 19 left (Figure 8.116). Thus, the greatest movement occurs during two significant periods: noon and afternoon.

Table 8.24. The pedestrian flow of the selected street: red two - case study D.

Case study: D | Street: Red two - Weekday

Period	Interval	Station	Pedestrian flow				Human Activities						
			Direction	Number of people	Over total								
					Entering	Exiting		Staying	Moving	Individual	Social	Necessary	Optional
Morning	15 minutes	St1	Entering	9	18	19	Number of people per activity	12	8	18	2	17	3
			Exiting	11									
			Total	20									
		St2	Entering	9				5	12	15	2	17	0
			Exiting	8									
			Total	17									
							Total	17	20	33	4	34	3
							Average	8.5	10.0	16.5	2.0	17	1.5
Noon	15 minutes	St1	Entering	24	49	50	Number of people per activity	19	42	32	29	41	20
			Exiting	37									
			Total	61									
		St2	Entering	25				8	30	25	13	27	11
			Exiting	13									
			Total	38									
							Total	27	72	57	42	68	31
							Average	13.5	36.0	28.5	21.0	34	15.5
Afternoon	15 minutes	St1	Entering	28	56	59	Number of people per activity	14	58	41	31	52	20
			Exiting	44									
			Total	72									
		St2	Entering	28				17	26	23	20	38	5
			Exiting	15									
			Total	43									
							Total	31	84	64	51	90	25
							Average	15.5	42.0	32	25.5	45	12.5
							Total average	38	88	77	49	96	30

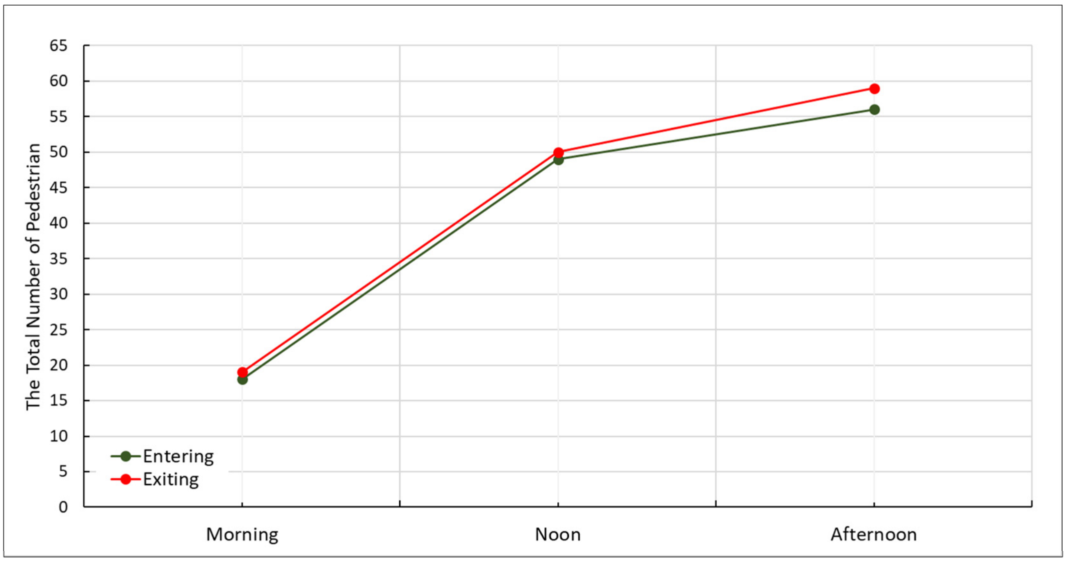


Figure 8.116. Movement pattern: pedestrians entering and exiting through the red two street: case study D.

The activity pattern reveals fewer individuals are staying, social and optional compared with the other opposite activities: moving, individual and necessary. Moving people represent 70.12%, while those who stay comprise 29.88% of the total average. Individual activities comprise 61.35% whilst social activities are undertaken by 38.65%. Only 76.49% of people undertake necessary activities, and only 23.51% conduct optional activities (Figure 8.117).

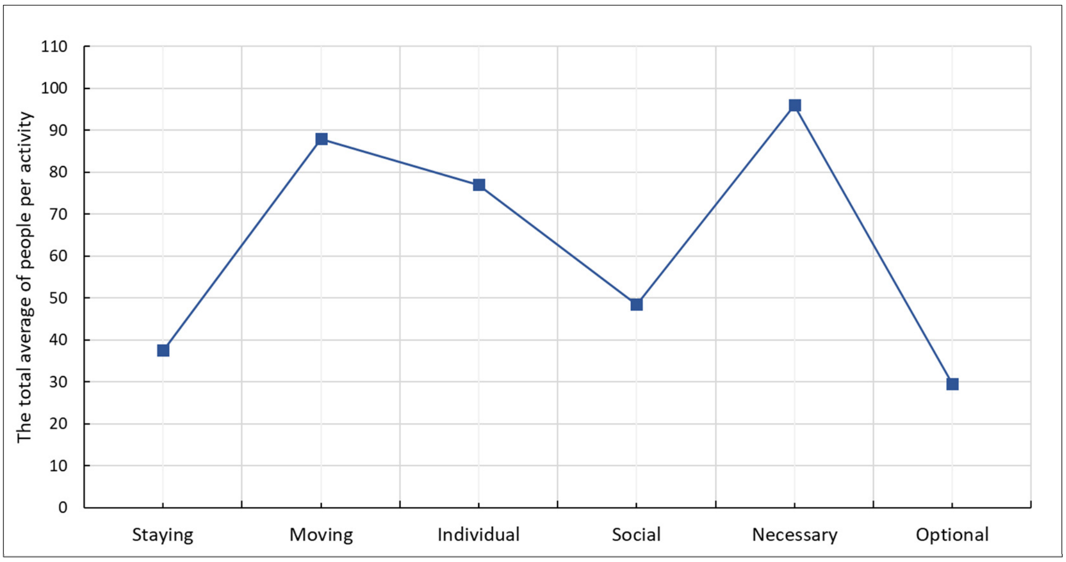


Figure 8.117. Activity pattern. The total average of people per activity in the selected street – red two: case study D.

For the gender pattern, Appendix One, the chosen segment shows a significant gap between male and female. Males represent the greatest proportion at 69.72%, while female only comprise 30.28% of the total average (Figure 8.118).

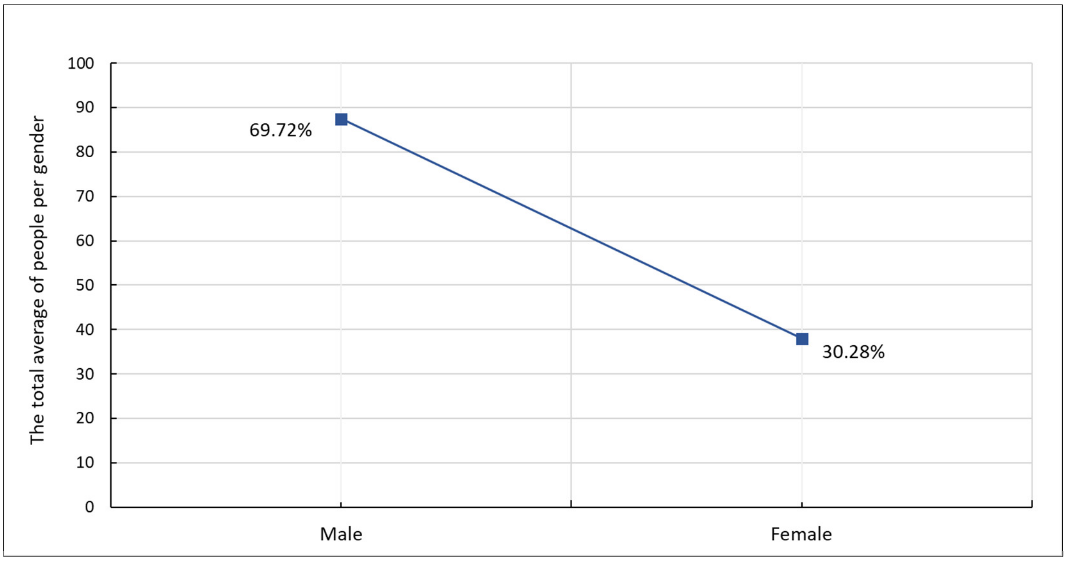


Figure 8.118. Gender pattern. The total average of pedestrians according to gender. Red two street: case study D.

The age pattern, according to observation and Appendix One, witnesses a significant quantity of two categories: teenager-young and adult-elder people, while the child category has the lowest value. From the total means, the adult-elder age comprises 35.46% males and 17.13%

females. Teenager-young people consists of 32.67% males and 12.35% females. The child pattern in this segment encompasses both males at 1.59% and females at 0.80% of the total number of people observed (Figure 8.119).

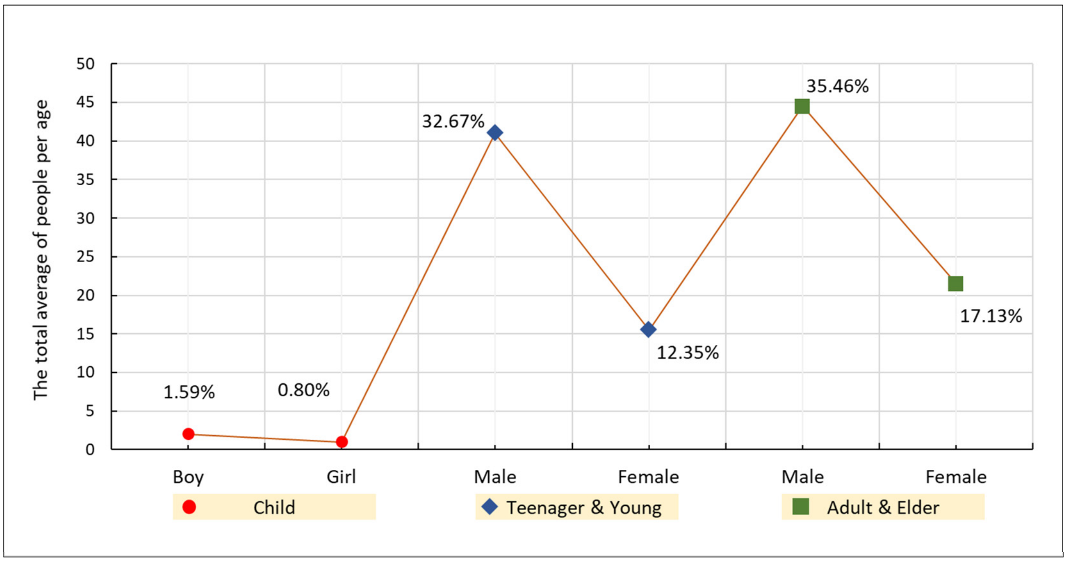


Figure 8.119. Age pattern. The total average of pedestrians based on three categories: child, teenager-young, and adult-elder people. Red two street: case study D.

Regarding the group pattern, the male group represented the highest percentage amongst the 2P-based groups at 42.11%; this ratio decreased for the female and mixed groups, who represented 31.58% and 26.32% respectively. The 3P-based group occurred only within two categories: male and mixed, where males comprised 33.33%, and the mixed groups constituted 66.67% of the total average of groups. There was only one 4P-based group for male and mixed. Generally, people who were observed in groups comprised only 38.65%, whereas those observed individually constituted 61.35% of the total quantity (Figure 8.120).

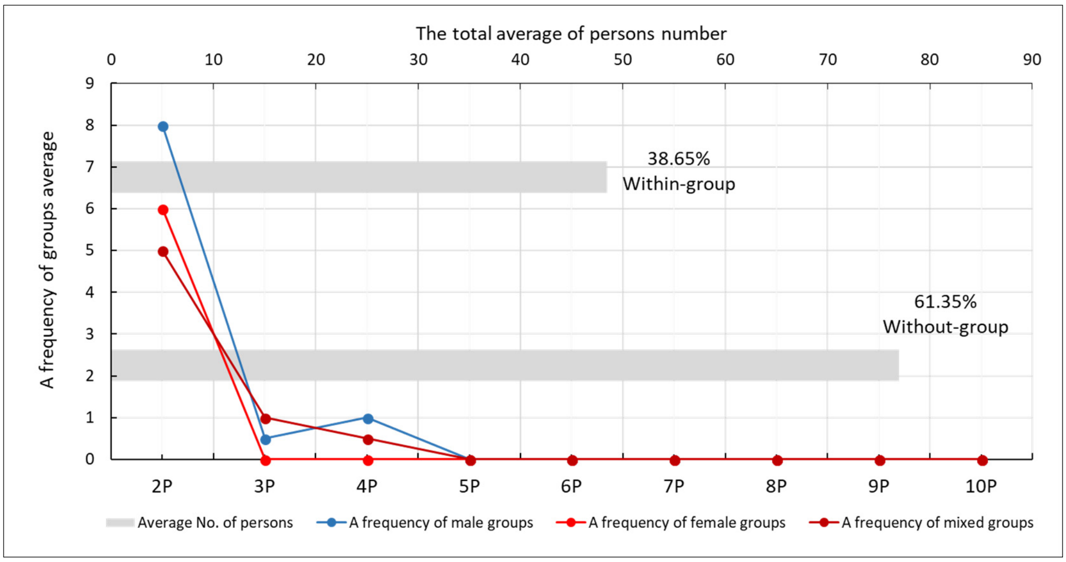


Figure 8.120. Group pattern. The number of groups based on the total number of persons per group and the frequency value for each group. Red two street: case study D.

8.3 Conclusion

The classification of the activity into three opposite pairs (necessary versus optional, individual versus social, and staying versus moving) and their application to the people who use the street exhibited a significant correlation to the street's centrality within sample A (organic pattern). The high centrality value of betweenness (red) is associated with the most significant quantity of people and in turn, the increased likelihood of different activities in a selected street. Throughout the four cases, the pedestrian movement responded to the value of the street regarding the betweenness centrality, which represented the primary factor in controlling the volume of pedestrians. The lower centrality value of betweenness (blue) reflects a lower quantity of people, which affects the opportunity to generate activities in the space. This phenomenon correlated between the centrality and the activities and was also experienced in the medium value of betweenness (yellow).

Five classification patterns were derived from people who used the street in order to understand the ability of the street edge to attract pedestrians. These patterns included movement, activity, gender, age, and group patterns. The likelihood of generating five patterns of presence depended on the street and to the extent to which the edge of the street could offer various opportunities that meet different people's needs in accordance with the five patterns. The level of the street edge regarding the design also relies on the underlying order of the centrality value (globally and locally) and the constitutedness (on a macro and micro scale). The centrality value of the street can play a vital role in developments that could raise the ability of the street to promote social and street life. In turn, this stimulates other factors that contribute significantly to develop the street edge. The comparison, whether for each case study or among the four samples (the research findings and conclusion), will be outlined in the following chapters. Finally, for more information on how the observed data have been classified and managed, the related data concerning various human activities have been labelled and documented in detail in Appendix One.

SECTION FOUR

RESEARCH FINDINGS AND CONCLUSION

Chapter Nine

Comparative and Correlative Analysis of the Four Case Studies

9.1 Introduction

This chapter provides an understanding of the transformation of the urban morphology through its elements (plot, block, and street pattern) from the traditional pattern to the modern model. It also addresses the spatial analysis of the network regarding its different centrality values. This analysis covers three morphological levels, namely, the street, block and neighbourhood. Besides outlining the fundamental results of the study, this chapter offers a comparative reflective analysis of the research findings. The morphological parameters and people are two primary factors that perform city life. An attempt to understand the relationship between human behaviour and the surrounding environment comes from analysing a specific sample and its characteristics and by making a comparison between two or more different cases. The methodological base and the conceptual framework represent a shared platform for the selected samples in order to comprehend where they are similar or differ. Quantifying the analytical study by using a numerical comparison is one of the main aims of the research.

The variables that will be handled refer to plot (perimeter and size), block (perimeter, size, dimension, density, block to the study area ratio, mean area, and block to street ratio). Regarding the street connectivity, nine parameters will be compared, namely: intersection density, street density, link to node ratio, internal node connectivity, external node connectivity, grid pattern ratio, pedestrian route factor, ped-shed and effective walking area. The street centrality (betweenness) will be compared regarding the characteristics of the street edge in terms of constitutedness and permeability. Three levels of comparison and correlation have been addressed in the current research, namely through:

- Comparative and correlative analysis between the selected streets within one case study.
- Comparative and correlative analysis with one/more than one variable(s) across the four selected urban areas A (organic), B (hybrid), C (paralleled) and D (loop-grid).
- The correlation between two variables or more, and their comparison throughout the four chosen samples.

The street centrality MCA in connection with constitutedness and permeability will be addressed and compared separately amongst every single sample and then between the four selected neighbourhoods.

9.2 The Street Network: Betweenness C^B and Closeness C^C Centrality

Three categories deal with the betweenness centrality, which are the highest, medium and lowest values. Each class includes a specific value of betweenness; 0.0017 - 0.1397 for red, 0.0002 - 0.0017 for yellow and 0.0000 - 0.0002 for blue. Amongst the highest range, a comparison is conducted among the four cases. Case B at 39.036% for 162 links is the highest range followed by case A at 36.508% and 184 links, case D at 34.234% with 38 links, and case C at 27.200% with 34 links (Figure 9.1). The variety in the betweenness value derives from the different street pattern besides its relative position, length and quantity.

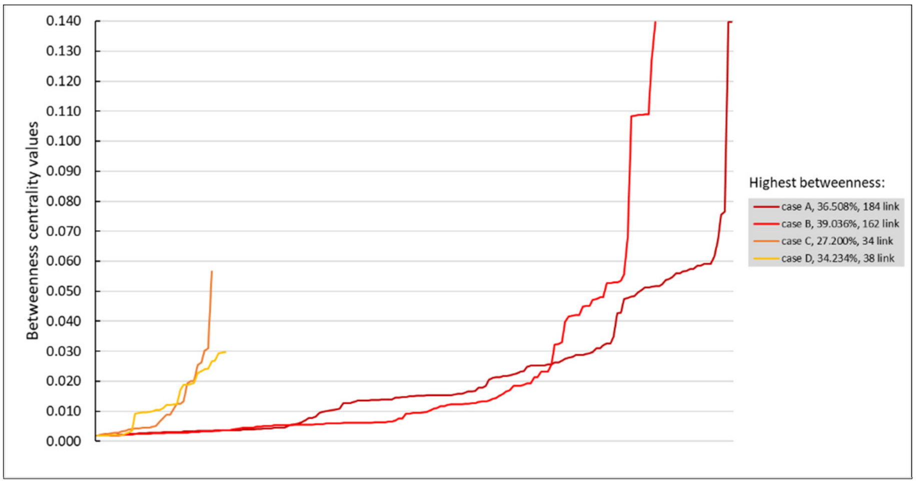


Figure 9.1. Comparison among the four cases illustrates that the A is highest in terms of betweenness at 36.508% with 184 links. This is followed sequentially by case B at 39.036% with 162 links, case D at 34.234% with 38 links, and case C at 27.200% with 34 links. The diversity in the value of betweenness among the four cases, results from the different street patterns besides their relative position, length and quantity.

The second class of betweenness (0.0002 - 0.0017), and this is coloured yellow. Case C is first at 38.400% with 48 links and then case D at 34.234% with 38 links, case A at 31.548% with 159 links, and finally case B at 25.783% with 159 links (Figure 9.2).

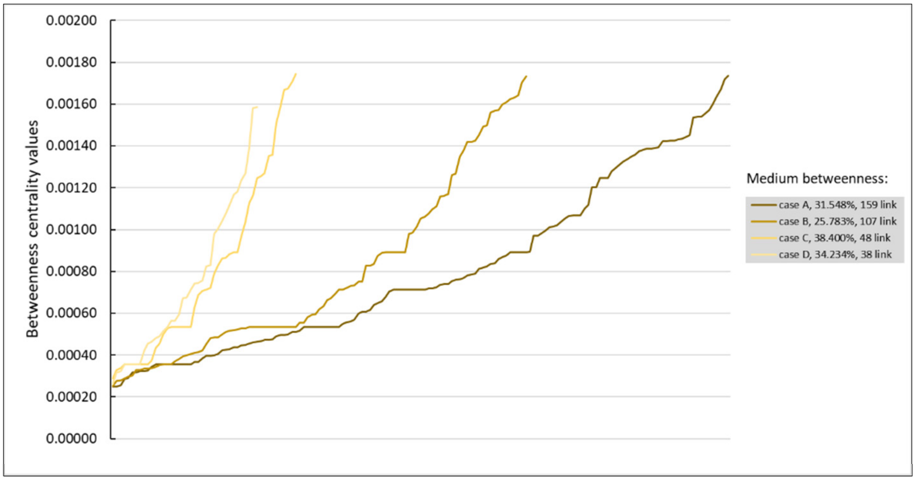


Figure 9.2. Comparison among the four cases illustrates that case C comes is highest within the yellow range at 38.400% for 48 links, then case D at 34.234% with 38 links, case A at 31.548% for 159 links, and finally case B represents 25.783% for 159 links.

The third range of betweenness covers the range 0.0000 - 0.0002 to give the lowest degree. Regarding the four cases, B represents 35.181% at 146 links and case C comprises 34.400% with 43 links, whereas case A constitutes 31.944% with 161 links and case D represents 31.532% at 35 links (Figure 9.3).

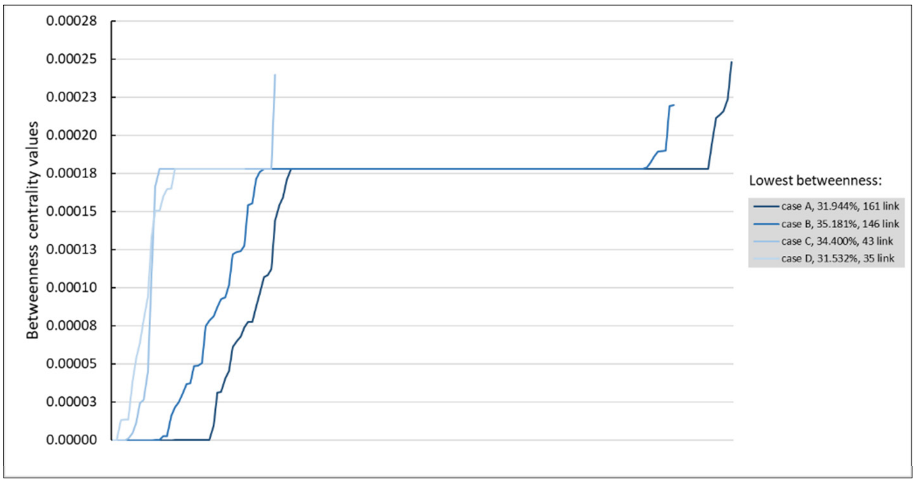


Figure 9.3. The four cases illustrate that the case B comes is the highest at 35.181% per 146 links and then case C at 34.400% with 43 links, case A at 31.944% for 161 links, and finally case D at 31.532% for 35 links.

The percentage values of betweenness centrality are based on each case study, which are affected by the number of links per case (Figures 9.4 and 9.5). The closeness centrality is determined on a global scale, and the values are reduced gradually as one moves away from the old city centre; therefore, some of the values of closeness will disappear. The core centre of Baghdad (case A) has the highest degree of closeness that ranges from 0.000286 – 0.000341 with 479 links to reach about 95.040%, the case study B covered 57.831% per 240 links, while this value vanishes in the other two cases C and D (Figure 9.6).

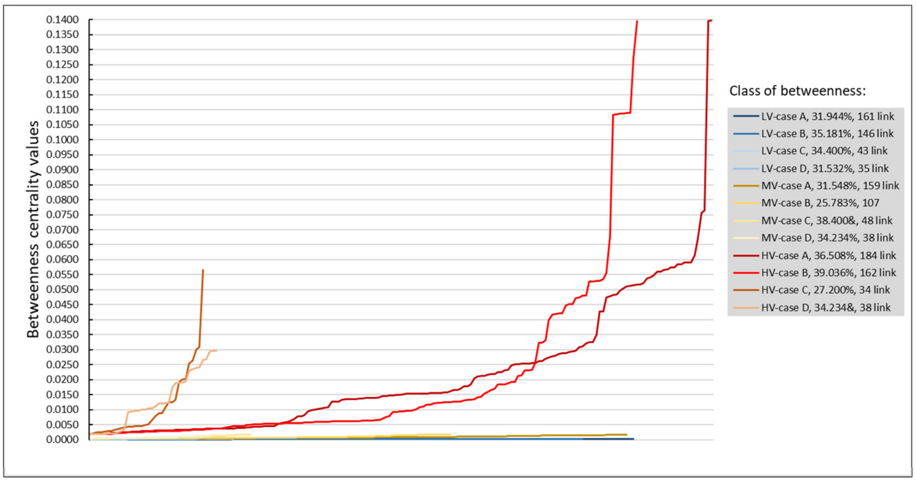


Figure 9.4. Exemplifying the values of betweenness centrality for the four cases (A, B, C, and D) that are classified within three categories based on their range of betweenness; lowest in blue (0.0000 - 0.0002), medium in yellow (0.0002 - 0.0017), and highest in red (0.0017 - 0.1397).

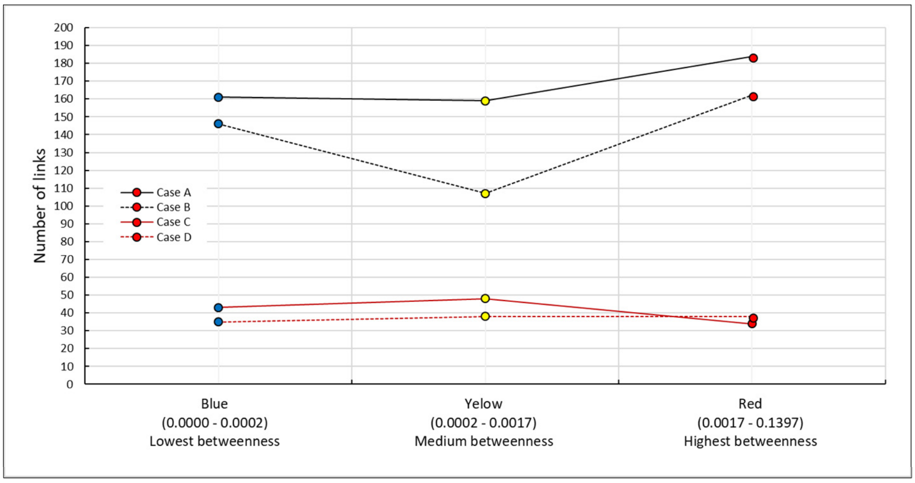


Figure 9.5. The number of links per values of betweenness centrality for the four cases (A, B, C, and D) that are classified within three types of category based on the range of betweenness; lowest in blue (0.0000 - 0.0002), medium in yellow (0.0002 - 0.0017), and highest in red (0.0017 - 0.1397).

Figure 9.6. The four cases show that the case A has the highest degree of closeness that ranges 0.000286 – 0.000341 and case study B, while this value disappears in two cases C and D.

The second category of closeness ranges from 0.000203 – 0.000286 and is classed as the medium value, which covers the three cases B, C and D, while case A is excluded. A large amount of closeness is about 86.486% with 96 links in case D followed by case B that comprises 39.518% for 164 links; case C is around 16.000% for 20 links (Figure 9.7). The third class of closeness centrality (0.000000 – 0.000203) expresses the lowest value, and is mostly exhibited within case C and then decreasingly in D, A and B.

In case of C the closeness value reaches 84.000% for 105 links, while case D represents 13.514% for 15 links, case A is about 4.960% with 25 links, and case B comprises only 2.651% for 11 links (Figure 9.8). There is a dramatic change in the closeness centrality between the traditional area of Baghdad centre and its surroundings, meaning that the value of closeness could be significant when addressed on a global scale (Figures 9.9 and 9.10).

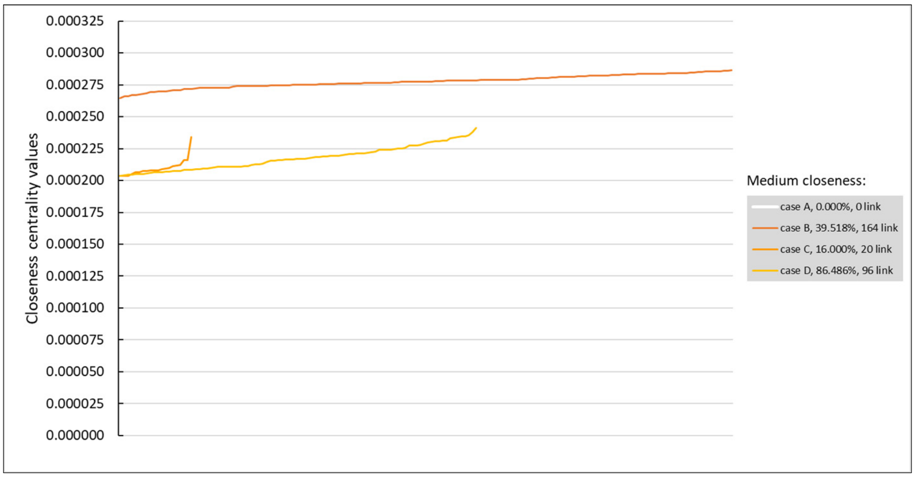


Figure 9.7. Displaying the greatest quantity of closeness at around 86.486% with 96 links is case D and this is followed by case B that represents 39.518% for 164 links, case C represents 16.000% for 20 links.

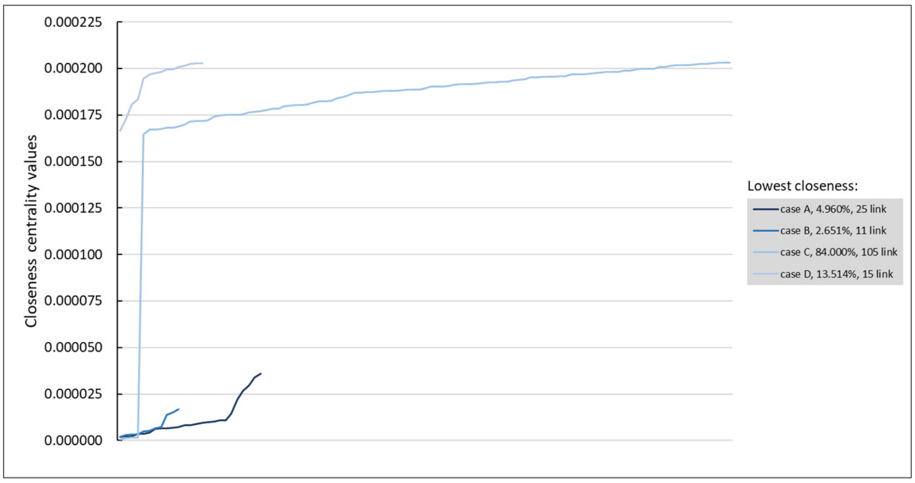


Figure 9.8. Case C has the largest closeness value reaching about 84.000% at 105 links, while case D comprises 13.514% at 15 links, case A constitutes about 4.960% with 25 links, and case B comprises only 2.651% for 11 links.

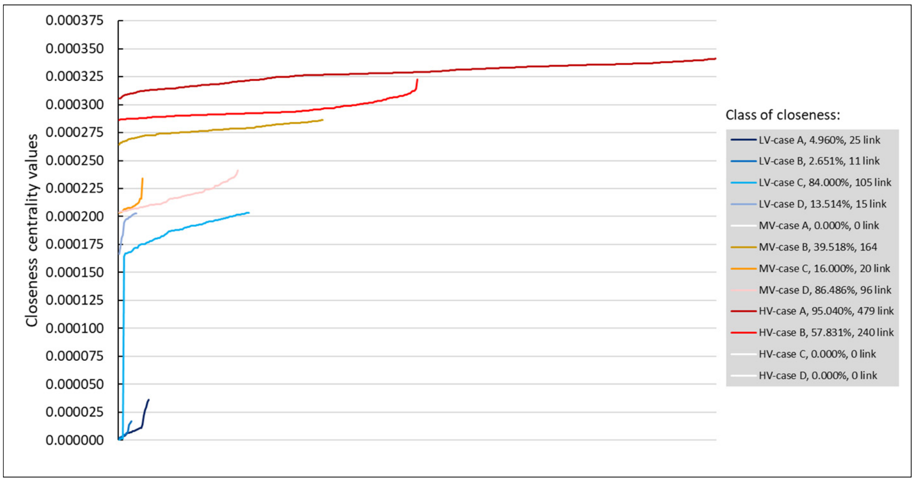


Figure 9.9. Representing the closeness centrality values for the four cases A, B, C, and D that are classified under three categories based on their range of closeness; lowest (0.000000 – 0.000203), medium (0.000203 – 0.000286), and highest (0.000286 – 0.000341); these are coloured by blue, yellow and red respectively.

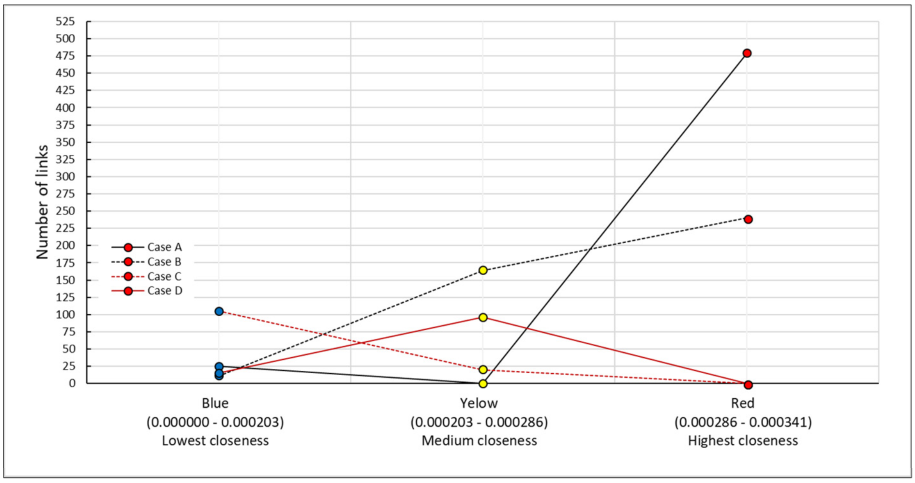


Figure 9.10. The number of links per closeness centrality values for the four cases A, B, C, and D that are classified within three categories based on the range of closeness; lowest (0.000000 – 0.000203), medium (0.000203 – 0.000286), and highest (0.000286 – 0.000341). These are coloured blue, yellow and red respectively.

Therefore, the betweenness centrality gives a well-organised pattern of the network that is already generalised by the MCA process, which includes closeness and the straightness centrality. This results in a new method to designate more influential streets within the selected area. The chosen streets from each case study are subject to the research's variables that are listed in the conceptual framework and originate from the correlation between the MCA's centralities measure and those variables.

9.3 Plot

9.3.1 Perimeter

A significant difference becomes apparent when comparing the four cases regarding the total perimeter of plots per block. The variety in the values across these cases can be identified by each case having a certain number of blocks: A (138-2 riverbank), B (125-1 riverbank), C (49-2 open areas), and D (55-11 open areas). The total number of plots, whether per block or even in one selected area, differs from one case to another; for example, case A includes 1753, B has 1976, C includes 849, and D has 720 plots. According to Figures 9.11 and 9.12, case study C illustrates a high value for the plot perimeter per block; however, there are a lower number of blocks than case A and B. Case study D has the second highest value, where the total plot perimeter per block is greater than A and B, although lower than C. Thus, D still has a higher number of blocks than cases A and B. As Figure 9.11 illustrates, the graphic lines for both cases C and D move in parallel.

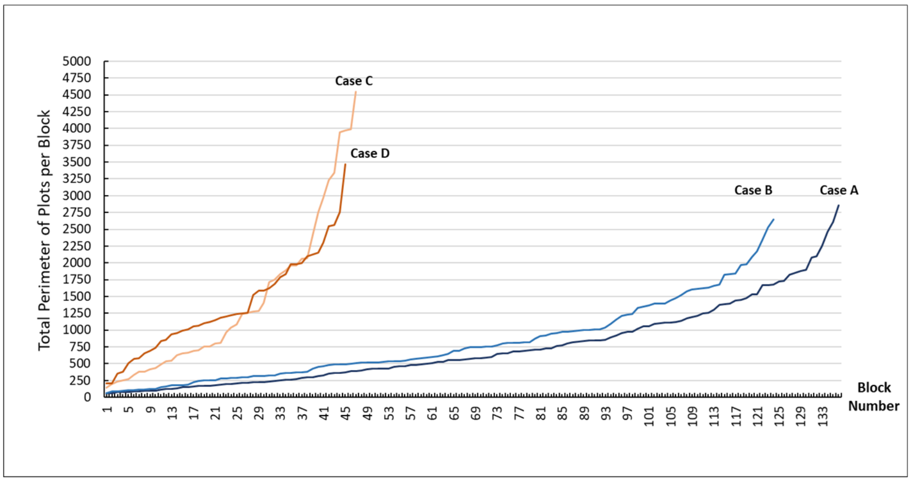


Figure 9.11. The comparison among the four samples A, B, C, and D in terms of plots' perimeter. The trendline of each case shows different perimeter values and tends to group two cases such as A with B, and C with D.

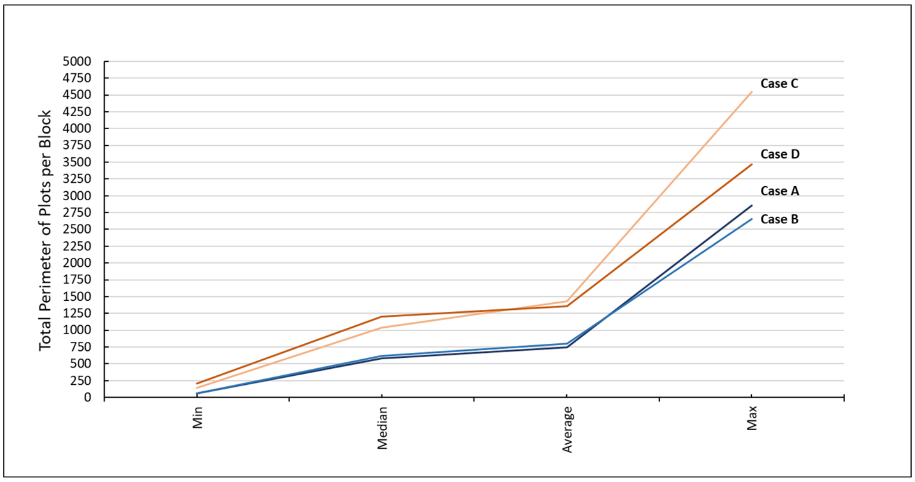


Figure 9.12. Comparative analysis of the four cases A (organic), B (mixed), C (paralleled), and D (loop-grid pattern) in terms of the whole plots' perimeter per block. A significant differentiation occurs among them, especially between the two group clusters, A, B and C, D.

Excepting a few numbers of blocks, case study A has the lowest value in terms of the plots' perimeter. Nevertheless, this case encompasses many blocks (136) and plots (1751), but the border of the plot is small when it comes to the other three examples. In case study B, the trendline of the total plot perimeter per block means it appears third after D and C, even though is a high number of plots (1975) and blocks (124). Furthermore, the trendline for both samples A and B are relatively parallel. These two examples are part of the organic and spontaneous spatial configuration, besides reflecting the mixed pattern for case study B.

9.3.2 Size

In Figures 9.13 and 9.14, the trendline of cases A and B seem identical in part, whilst the same inclination occurs for both cases C and D. Overall, Figure 9.13 illustrates a significant transformation from the traditional area of case A to the modern area of D passing through B and C. In case study A, the plot area represents 410334.73 m2 and is the highest value within a 400-metre sample radius. Case study C is second at about 383441.59 m2 of plot area, followed by case study B at 371732.40 m2. Finally, case study D has a total plot area of 332882.43 m2. The trendline of the plot area in Figure 9.13 moves slightly in cases A to D throughout B and C. Regarding the built-up area, the trendline shows a significant decline from case study A through to the other samples. Example A attains 327532.21 m^2, while cases B, C and D reach 263230.47 m^2, 167130.73 m^2, and 162880.44 m^2 respectively. In cases C and D, the difference between their built-up areas are low in comparison to the variation between A and B or A and C, D (Figure 9.13).

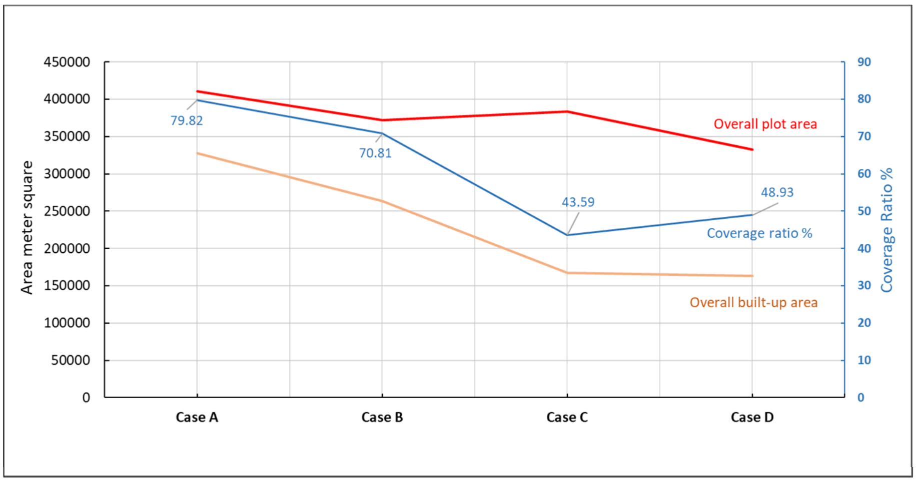
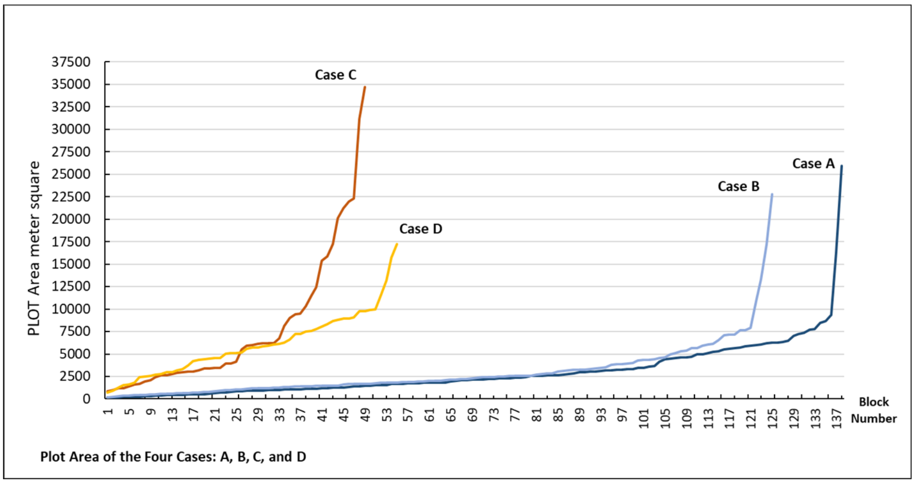


Figure 9.13. Three coloured lines that represent different values of the overall plot area, coverage ratio, and overall built-up area. These values are related to the four case studies. The chart displays a significant differentiation among the selected samples: organic, mixed, paralleled and loop-grid.

Accordingly, the coverage ratio in the selected samples results from the dividing relationship between the built-up area and the plot area. Case study A records the highest rate at about 78.82%, meaning that the area is semi-covered by buildings. While case D records the lowest rate at just 48.93% coverage area, where there is a high ratio of open areas and metric depths that separate the private and public edges. From samples B and C, the former has greater value at around 70.81%, and case C comprises around 43.59% of the coverage area. Evidently, for cases A and B, the descended line between them is slight, and their values are close. On the other hand, the decline between the first group A-B and C-D is steep, while the last two values; C (paralleled pattern) and D (loop-grid pattern), also seem close (Figure 9.14a and b).



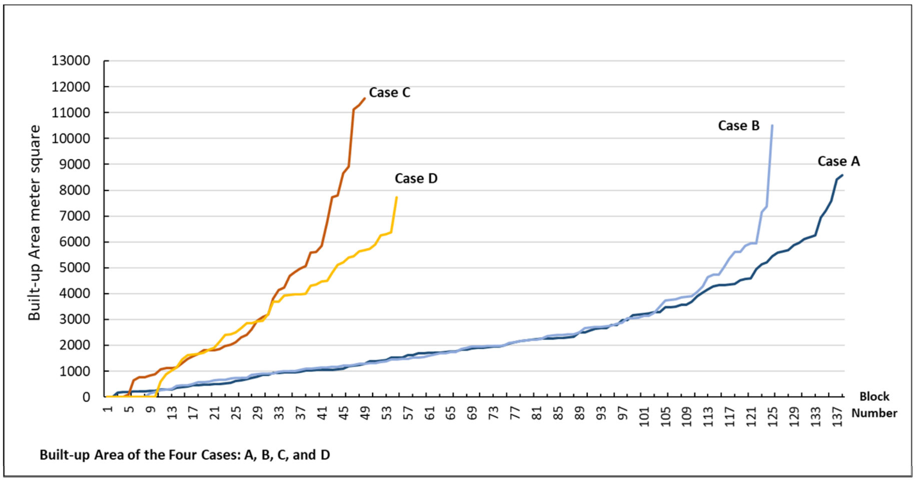


Figure 9.14a. Plot area and comparison of the four cases (above), and Figure 9.14b: The built-up area and comparison of the selected cases (below). Each couple of cases A-B and C-D move together up to a point, such case A, which is an entirely organic pattern and B, which is a mixed pattern. Cases C and D belong to similar modern patterns; paralleled and loop-grid.

9.4 Block

9.4.1 Perimeter

The total value of the perimeter for each case varies between the two groups, A-B and C-D. Case A represents the greatest amount at about 39011.64 meters for 138 blocks within a 400-metre radius of the urban sample. From 125 blocks of case B, the total perimeter is around 35988.27 metres and the second highest value of the four cases. The overall perimeter value of the blocks for A and B are close; the difference between them is approximate -3023.36. The second group is C and D, and the diversity between the total amount of their perimeter blocks is slight at around -1619.05. In this group, sample D has the third largest perimeter value after A and B, at 22821.32 metres. Meanwhile, case study C has the lowest gross perimeter at 21202.27 metres (Figure 9.15). Amongst the four cases, the main trend for each block is distinct, both regarding the number of blocks and the related perimeter. The designated cases are thus divided into two clusters A-B and C-D (Figure 9.16). In the graph for case A, its blocks' perimeters are the lowest value in comparison with the three other cases.

The trendline of case study B is broadly aligned with case A and then slightly moves away with some of its blocks that have a higher perimeter value. The trendlines of both C and D are also in parallel but intersect at two points that represent the minimum and median (average) value of the perimeter. Therefore, both cases C and D tend to alternate between the first and second ranking with the highest perimeter values, while sample B is third and A is last (Figure 9.16).

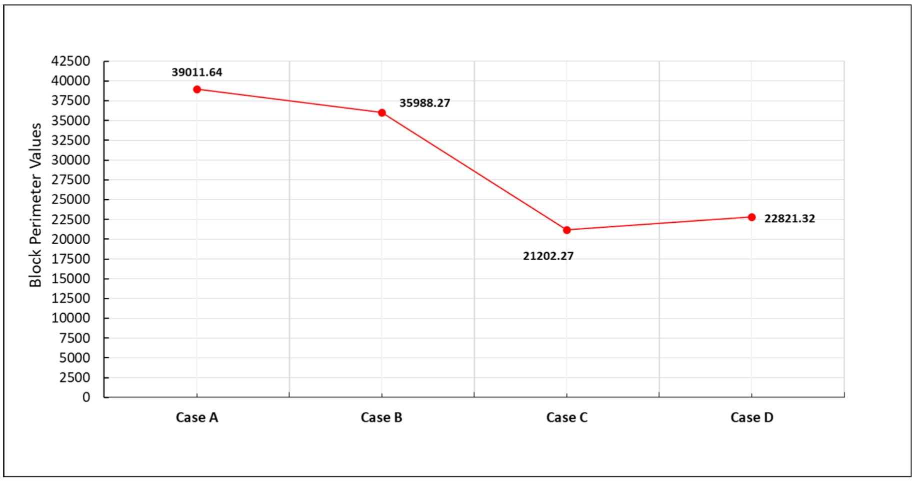


Figure 9.15. The overall perimeter value of the four cases studies A, B, C, and D within a 400-metre radius of the chosen urban area. The graph illustrates the variation among these cases and the degree of differentiation between the two groups where their values are comparatively close: A-B and C-D.

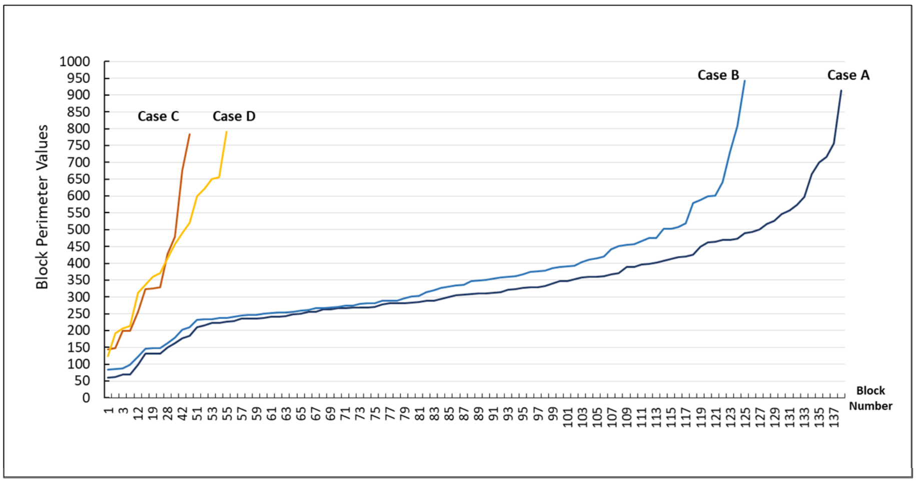


Figure 9.16. The perimeter value per block for the four cases A, B, C, and D. The chart exhibits the trendline for each case separately. Both samples A-B and C-D show convergences in their perimeter values.

In terms of the minimum, median, average, and maximum perimeter values, case study C record the greatest amount for the following; maximum at 1113.15 metres, the average at 432.70 metres, and the minimum at 144.57 metres. Case D fluctuates like the other cases, where the minimum is 124.23 metres, and the maximum is 791.49 meters; as such, it is listed as the lowest ranking after C, B, and A. Meanwhile, the median is calculated at 415.11 metres for case D and is thus ranked first; however, it is ranked second in terms of the average value at 414.93 metres. The comparison between samples A and B differs from C and D, where the trendline for the former have fairly similar values, such as the minimum (60.07; 84.66 metres), median (264.69; 254.06 metres), average (282.69; 287.91 metres), and maximum (913.46; 942.94 metres). Excepting the maximum and median, case A is ranked last in terms of the four statistical values (Figure 9.17).

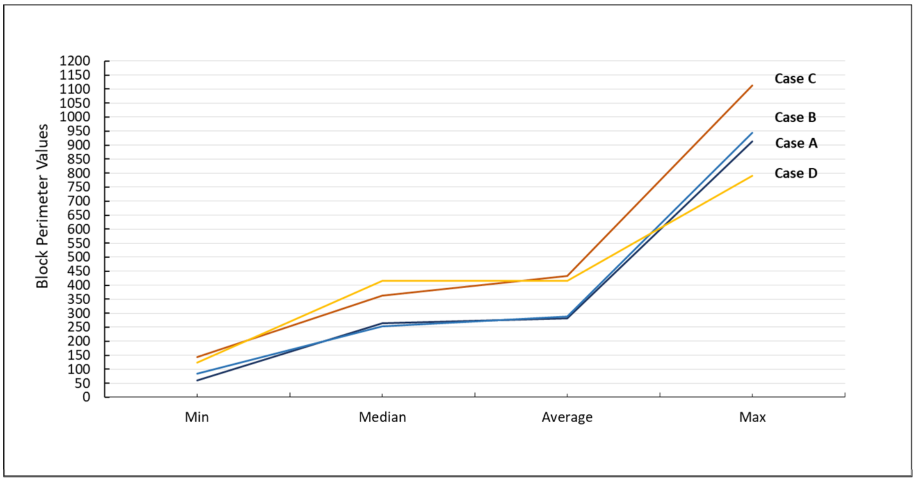


Figure 9.17. The main statistical standards: minimum, median, average, and maximum of the four cases studies A (organic pattern), B (hybrid pattern), C (paralleled pattern), and D (loop-grid pattern) to explain the degree of differentiation among them.

9.4.2 Size

Figure 9.18 illustrates that the overall block size differs from case to case regardless of the number of blocks per sample. Case study C records the greatest size at around 444017.18 m2, while case B has the smallest size at about 404789.00 m2. The second largest block size in this comparison is A, with a value of 444757.98 m2 for the organic pattern. Sample D is calculated at 424050.86 m2 and is third largest among the four samples.

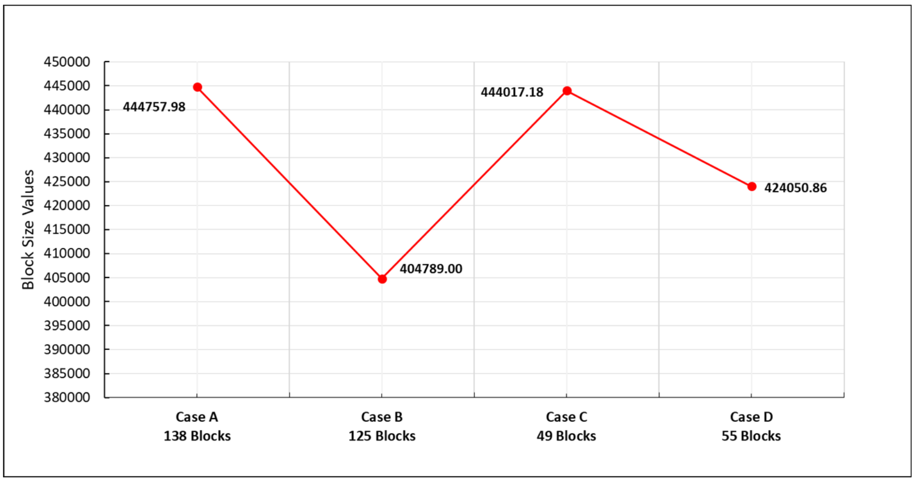


Figure 9.18. The overall blocks' size value per case. The differentiation among the four samples A, B, C, and D is evident regardless of the number of blocks per sample. The diversity is due to the presence of extended blocks.

For cases A and B, their block sizes are close. Case A is ranked last for all its values excepting its highest value; it is then followed by case B, which provides the third trendline. According to Figure 9.19, the block size values for C and D tend to be contiguous in some blocks and then divergent in others. Case C has the greatest amount of block size among the four cases.

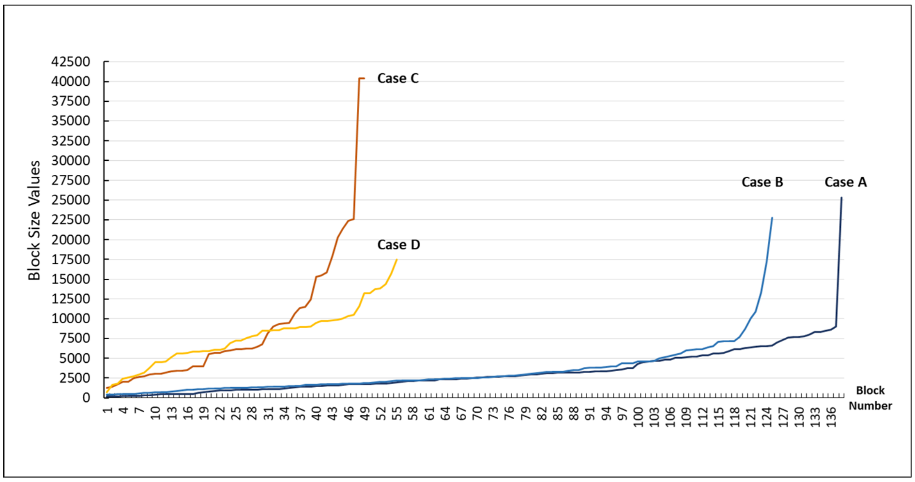


Figure 9.19. The four trendlines of samples A, B, C, and D in terms of their block sizes. Both cases A and B run slightly in parallel while C and D tend to be contiguous. The number of blocks and their sizes are critical in designing neighbourhoods.

From the statistical standards: minimum, median, average, and maximum, the four case studies show different interpretations. Case C has the highest value at 1227.05 m^2, this is followed by case D at 688.47 m^2, case B at 379.71 m^2, and A at 199.59 m^2. Case study C also has the highest value block size, at around 40426.03 m^2, whilst sample D has the lowest at 17466.05 m^2. Cases A and B have the second and third largest at 25326.18 m^2 and 22788.34 m^2, respectively. According to the median standard, case D has a block size of 7800.00 m^2, which is the largest among the cases.

Sample C is calculated at 6131.15 m^2, case A at about 2562.43 m^2, and finally, B at 2374.46 m^2. The average measure differs from one case to another, where case C has to the highest value at about 9061.58 m^2, and A has 3222.88 m^2 and is the lowest. For D and B, their average is 7710.02 m^2 and 3238.31 m^2 respectively (Figure 9.20). This measure has a significant impact on the potential for the urban structure to enable greater connectivity and accessibility. This, in turn, can help to shape urban life, not only at the street level but also involving different neighbourhood scales.

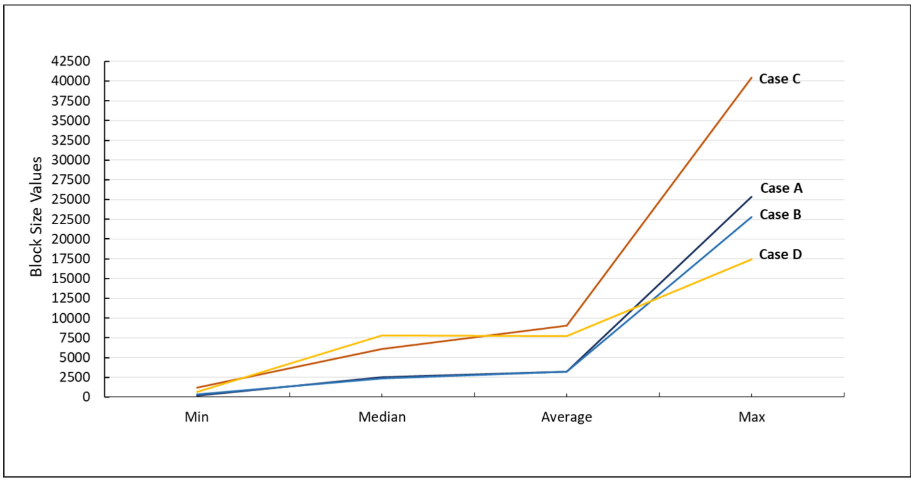


Figure 9.20. Four main arithmetical standards: minimum, median, average, and maximum to explain the degree of disparity among the selected urban areas; A | organic, B | hybrid, C| paralleled, and D | loop-grid pattern.

9.4.3 Dimension

The four-edges are dominant across all samples; cases A and C share the same quantity at 37 blocks each. Case B is calculated as the largest number at 43 blocks, while sample D has the second largest number at 41 blocks (Figure 9.21). In both cases studies A and B, the number of sides per block reached 15 edges for 20 and 16 blocks for A and B respectively. Meanwhile, the block edges for sample C range from 2 – 7 sides, excepting block one that consists of 11 edges. In sample D, the number of edges is confined to between three and eight. The remaining categories of block edge were listed from 5 to 15 and fluctuated between just two cases, A and B.

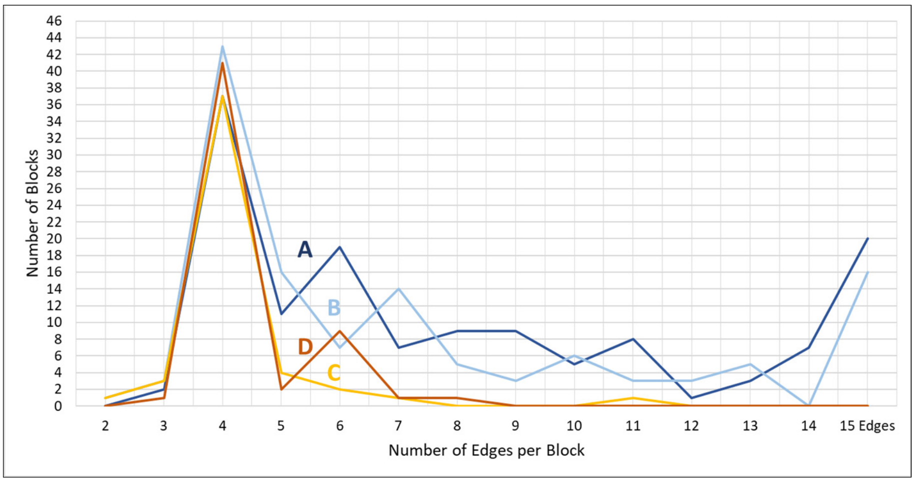


Figure 9.21. A comparison of the four samples A, B, C and D regarding the number of edges per block, which shows a significant disparity. The 4 – edge block is dominant for all cases, while the 15 – edge blocks are limited to case A and B. For both C and D most of their categories fall between two and eight, except for one block in case C.

Three central statistical values are adopted to count the minimum, average and maximum length of a side per sample and then among the cases. At the minimum length of an edge, case B is calculated at about (with 2.38 metres as the shortest dimension); this is followed by cases A, C and D, which attain 2.81, 10.00 and 14.95 metres respectively. Furthermore, sample D has the most extended edge at the minimum class (Figure 9.22).

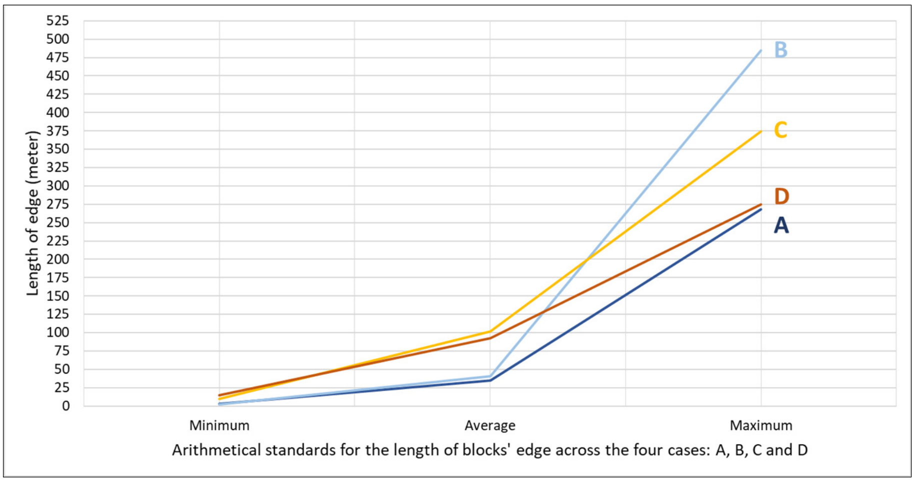


Figure 9.22. A comparison of the four selected cases A, B, C, and D regarding the length of edge. This is categorised by three main arithmetical values: minimum, average and maximum. The differentiation is evident at the maximum and average measures.

An essential differentiation is detected for the maximum values among the four cases. Case B has the greatest edge length at 484.69 metres, whereas case A is only calculated at 267.81 metres. Case study C has the second greatest length at 373.90 metres and is followed by case D at 275.00 metres. For the average measure, also the selected cases show a degree of variation. In this respect, sample C includes the longest average edge at about 101.45 metres, and case A has the shortest at around 35.01 metres. The remaining cases, D and B, encompass 92.71 and 40.37 metres respectively (Figure 9.22).

9.4.4 Density

The block density area is measured at 502654.82 m^2 for case study A, which represents the high block density. This quantity of the compactness slightly decreased in sample B. The block densities for both cases A and B, seems to be close. Like A and B, the results for C and D are also close (Figure 9.23). Subsequently, a high density refers to lower connectivity and permeability, and vice versa. Increasing the number of blocks in a specific area reduces the quantity of the streets and in turn the ability of the selected area to be permeable and connected. In this regard, both A and B are less connected and permeable in their street patterns compared with C and D (Figure 9.23).

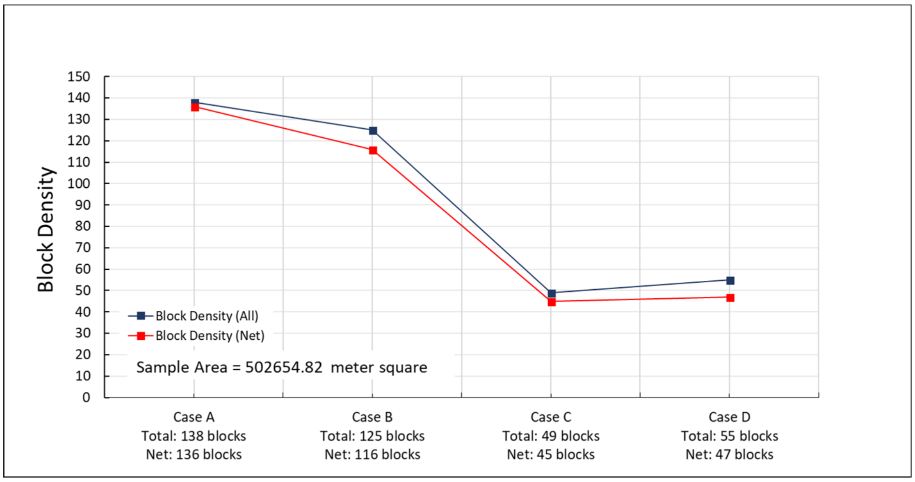


Figure 9.23. Block density of the four selected samples: A (organic). B (hybrid), C (paralleled), and D (loop-grid pattern). This disregards land use, and is based on net values, namely covered blocks (structured and built blocks).

9.4.5 Block Area to the Study Area Ratio

This indicator refers to the ability of the selected area to be connected and permeable and is determined in accordance with the ratio of the block area to the study area. Theoretically, the value one or 100% means that the neighbourhood is entirely covered by blocks, while a low ratio denotes that the area is linked. Consequently, in terms of the Net Block (structured and built block), A is less connected than B, C and D. In comparison, the ratios for B, C, and D are closer to each other (Figure 9.24). This ratio also can be used with the blocks regardless of whether the block is covered (structured and built). The result does not differ in that case study A again comes first with the lowest ratio, then B and D, while sample C holds the highest ratio. From these calculations, it can be stated that both A and C have low connectivity and permeability in comparison with cases B and D (Figure 9.24).

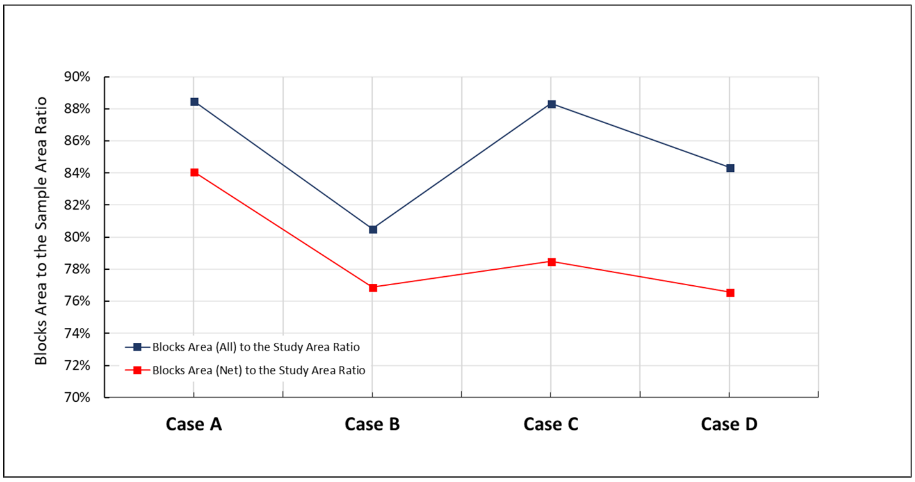


Figure 9.24. The block area to the study area ratio for the four selected samples: A | organic. B | hybrid, C | paralleled, and D | loop-grid pattern. All: regardless the land use, Net: covered block (structured and built block).

9.4.6 Mean Area

The number of blocks within a selected area is the dominant factor in this equation for the mean block area. In an area with a smaller number of blocks, the block sizes tend to be larger, and vice versa. In the old urban area, which is wholly represented by sample A and partially by B, the block size is less than that of cases C and D. Therefore, cases A and B have the largest quantity of blocks (Net), while samples C and D cover the fewest number of blocks. Consequently, the mean block area is less in value within both A and B, while the value is higher in samples C and D (Figure 9.25).

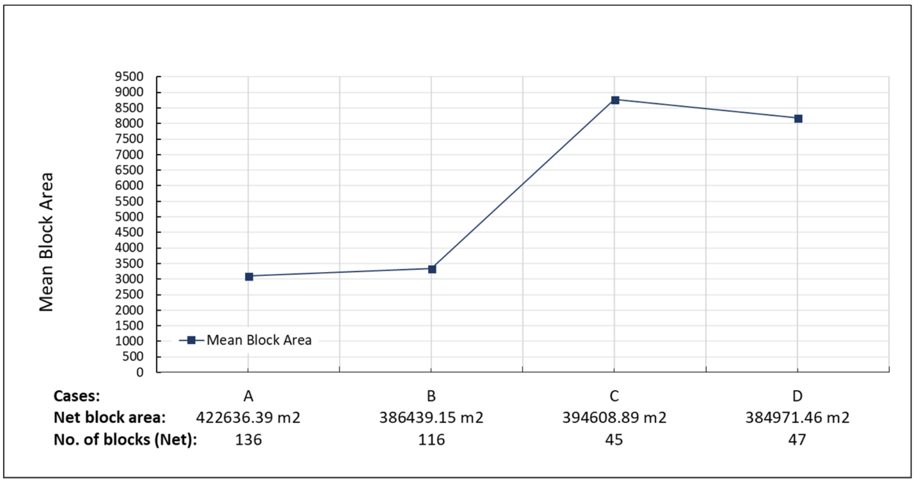


Figure 9.25. The mean block area of the four selected samples: A (organic). B (hybrid), C (paralleled), and D (loop-grid pattern).

9.4.7 Block to Street Ratio

Case study A manifests the highest ratio and the lowest connectivity. In sample D, the block to street ratio had the smallest value with the highest connectivity. For the remaining samples, B and C, their proportions are higher than case D but less than sample A; therefore, their connectivity values are the lowest (Figure 9.26). The multi-measure of the connectivity value of an urban area is a critical factor in understanding the performance of the street network. Amongst other aspects, the connectivity indicator could also be the first controller to govern the street flow and permit the opportunity for people to meet and interact. Hence, each single case study exhibits a different value of connectivity through their urban structure ingredients. Seven variables have been examined and then compared across the four selected neighbourhoods in terms of block's parameters, namely: organic pattern A, hybrid pattern B, paralleled pattern C and loop-grid pattern D.

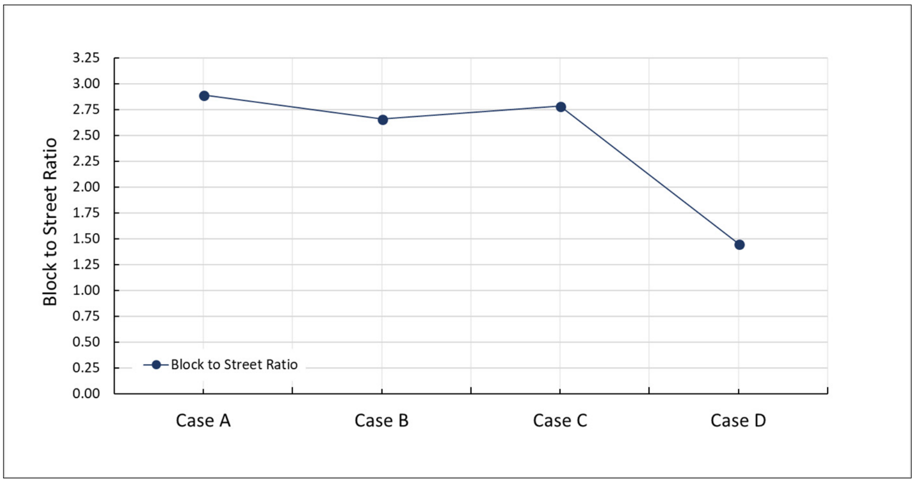


Figure 9.26. Block to street ratio for the four selected samples: A (organic). B (hybrid), C (paralleled), and D (loop-grid pattern).

9.5 Quantifying the Street Connectivity

9.5.1 Intersection Density

It is essential to conducting a comparison across the four samples in terms of I_d in order to diagnose to the extent to which the Intersection Density differs from one case to another. Figure 9.27 illustrates a significant disparity in the number of nodes per type for each sample. Also, it shows the value of I_d per case. Starting with a one-way node (cul-de-sac), case A has the highest number at 111 nodes, and case D has the lowest value at zero. Sample B has the second largest quantity at 97 nodes, while case C has only three cul-de-sacs.

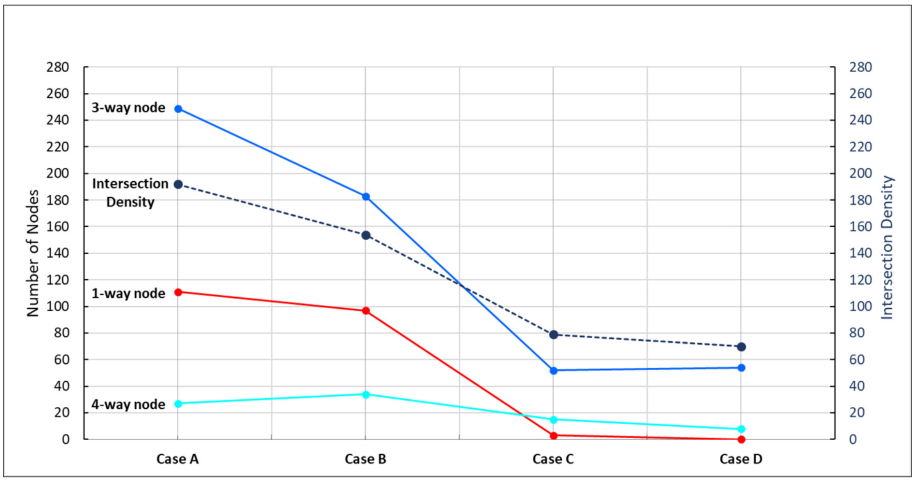


Figure 9.27. The number of nodes per type for each case, and the value of the Intersection Density per sample. The fluctuation among the four samples is evident; also, the difference between nodes' quantity is shown per example.

Regarding the three-way node, case A has the maximum number at 249 nodes, while the other cases are ranked in descending order as: B, D, and C where their values are 183, 54, and 52, respectively. Sample B has 34 nodes third type and four-way node; this is the most among the samples. In contrast, sample D comprises only eight nodes. The remaining samples, A and C, have 27 and 15 nodes respectively (Figure 9.27). The trendline of Intersection Density I_d, reaches the highest value amongst the cases at 192 nodes for case A; it then declines to 70 nodes for case D. Moreover, sample B has the highest value at 154 nodes, and case C has 79 nodes. The percentage value of each type of nodes is counted to determine the dominant share per type. The proportion of four-way nodes reaches its highest per cent at 21.43% in case C; this drops steeply 6.98% in sample A, and then rises moderately in cases B and D, at 10.83% and 12.90% respectively. The percentage of the three-way node in case A is 64.34% and falls slightly to 58.28% in sample B. However, the trendline climbs again to 74.29% for C, and 87.10% for case study D, which represents the largest value and contrast with sample B, which represents the lowest percentage (Figure 9.28).

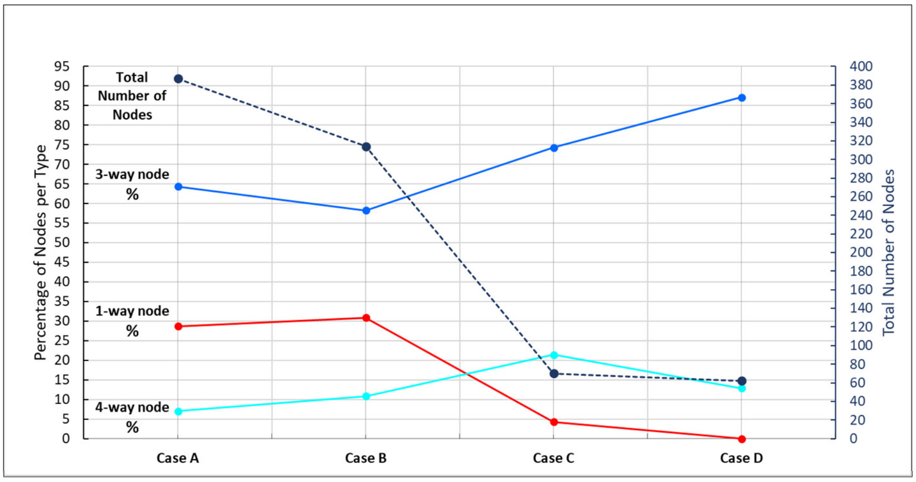


Figure 9.28. A graph shows the percentage values for three types of nodes: 4-way, 3-way, and one-way node (cul-de-sac) of the four cases A, B, C, and D. Besides, the total number of nodes per sample.

The cul-de-sac trendline shows that the most significant per cent is sample B, which gets 30.89%. This dramatically decreases for case C at 4.29% and 0.00% for D. Meanwhile; sample A has the second largest percentage of one-way nodes at about 28.68% (Figure 9.28). In addition, the total number of nodes per sample fluctuates between two groups; A-B and C-D. In sample A and B, there are 387, and 314 nodes respectively; while this overall quantity markedly decreases to 70 and 62 nodes for case C and D respectively (Figure 9.28). Throughout the four samples, A, B, C, and D, the 3-way node is dominant amongst the cases carrying the highest value for each. The second most significant value is for the 1-way node, which includes only cases A and B, but not cases C and D. The four-way node is different, as it is low in cases A and B and then raises in cases C and D (Figures 9.27 and 9.28). Regarding the two indicators; Intersection Density I_d (weighted value) and Connectivity Index *CI* (non-weighted value), case study A reaches the highest level for both indicators. This is then followed by sample B as the second most significant value. Samples C and D ranked third and fourth with the lowest quantity of I_d and *CI*.

9.5.2 Street Density

Sample A has the highest length when it peaks at 18163.31 metres. The trendline of the gross street length drops slightly to 17816.78 metres for case B, and then falls sharply for the samples C and D at 12351.05 and 12049.69 metres respectively. Accordingly, the total number of streets share the same trendline sequence for the gross length of streets. In this regard, case A also has the most substantial number of streets at 504 links. In comparison, sample D has the lowest quantity at 111 links. Sample B has the second largest number 415 streets and case C has 125 links which are the second lowest quantity (Figure 9.29 and Table 9.1).

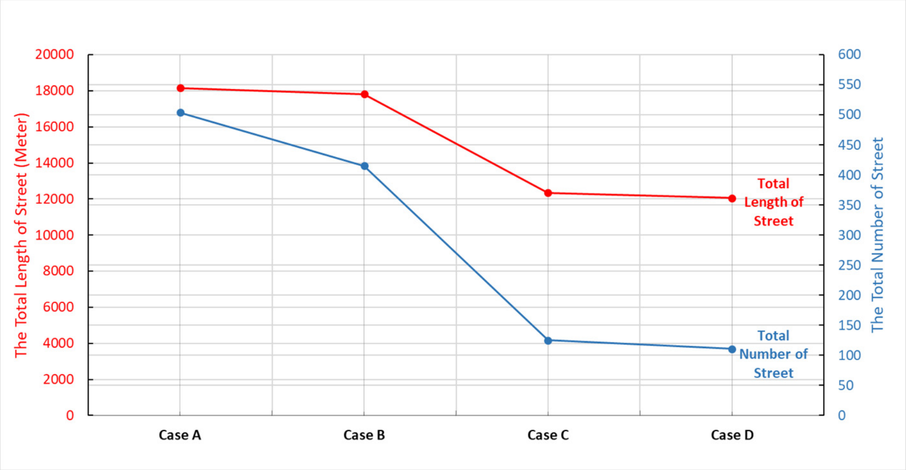


Figure 9.29. The total length of the selected streets per case study, and the total number of streets. It shows the degree of disparity among the four samples A, B, C, and D.

Table 9.1. The parameters of the street density extracted from the unified area (502654.82 m^2) for the four cases A, B, C, and D.

Case study ID	Street Density Parameters				
	Case study area	The total number of streets	The total length of streets	Street area including (parking & squares)	The streets area to case study area ratio %
Case A	502654.82	504	18163.31	122184.26	24.31
Case B	502654.82	415	17816.78	143075.38	28.46
Case C	502654.82	125	12351.05	119825.13	23.84
Case D	502654.82	111	12049.69	189250.17	37.65

Regarding the statistical standards: minimum, median, average, and maximum, the comparison exhibits crucial differences, especially between the two groups A-B and C-D. The minimum length of the street in sample A attains the shortest length at 2.01 metres. This is followed by 3.27, 5.68, and 6.16 for cases B, D, and C respectively. The maximum length in case study C includes the longest street at about 382.18 metres. Meanwhile, the remaining samples appear in descending order, D, A, and B, at the following street lengths: 368.53, 233.25, and 227.20 metres respectively. In terms of average and median length, case D has the highest value for both the average 108.56 and median 80.83, in contrast with sample A that has the lowest average (36.04) and median (28.48). After sample D, case study C also has a comparatively high amount at 98.81 (for the average) and 73.23 (for the median). Sample B includes lower values for average (42.93) and median (32.80) after case A (Figure 9.30 and Table 9.2).

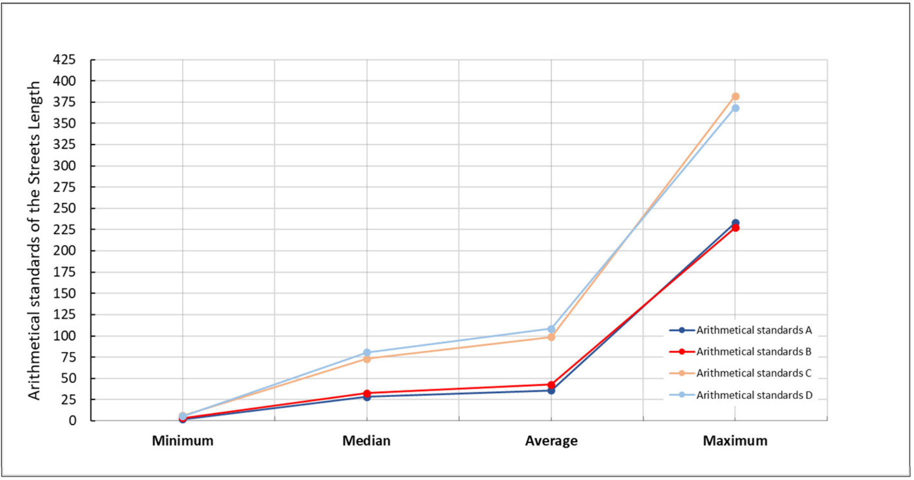


Figure 9.30. A chart of statistical standards of the length of the streets in terms of minimum, median, average, and maximum for the four samples A, B, C, and D.

Table 9.2. Arithmetical standards of the length of the streets about minimum, median, average, and maximum for the four samples A, B, C, and D.

Case study ID	Arithmetical standards of the Streets Length			
	Minimum	Median	Average	Maximum
Case A	2.01	28.48	36.04	233.25
Case B	3.27	32.80	42.93	227.20
Case C	6.16	73.23	98.81	382.18
Case D	5.68	80.83	108.56	368.53

Moreover, the other significant assessment is between the length of the streets and their total area for each selected area. Although case A has the highest value of the gross length of its streets, it has the smallest area for the entire street (except for case C). This contrasts with case D, which encompasses the largest area for the total streets, which contrasts with the lower value for the length of the whole street. Also, sample B reflects the same trend as case A, whereas, for sample C, both values are closer to each other (Figure 9.31 and Table 9.1).

This means that the oldest area in case A is recognised by the narrow street width which reduces the total area of the selected streets, despite having the highest value for both the full length and the number of streets. However, sample D, in this regard, includes the lowest quantity of total length and number of streets, as well as the highest amount of street area, where the streets dimension is completely different, and wider than those in case A (Figure 9.31).

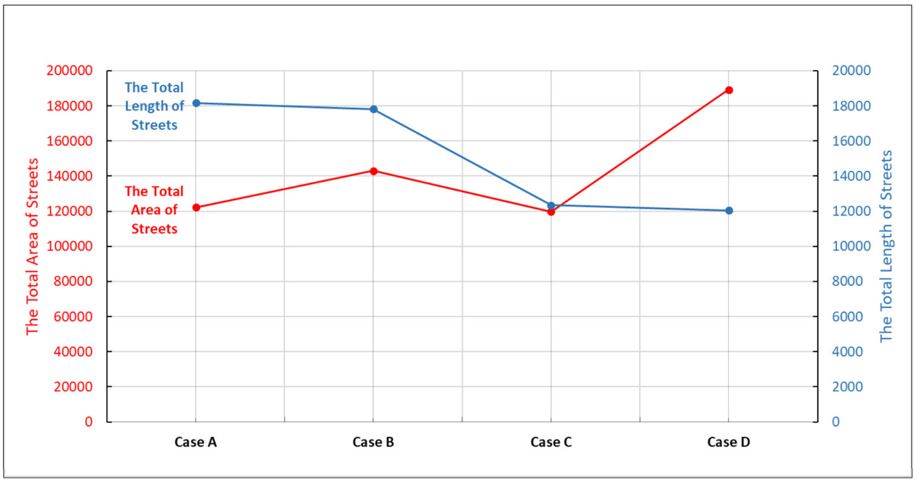


Figure 9.31. The comparison between two significant values: the total area of the selected streets and their full length for each case study.

9.5.3 Link to Node Ratio

The high ratio confirms that the network is connected and permeable and vice versa. Consequently, according to this indicator, samples, A and B, have less connectivity, while C and D have higher connectivity (Figure 9.32). Even though case study A has the most substantial number of the streets, the main concern is about the quantity of the cul-de-sac streets. This number is lower in samples B and C, and completely disappears in case study D.

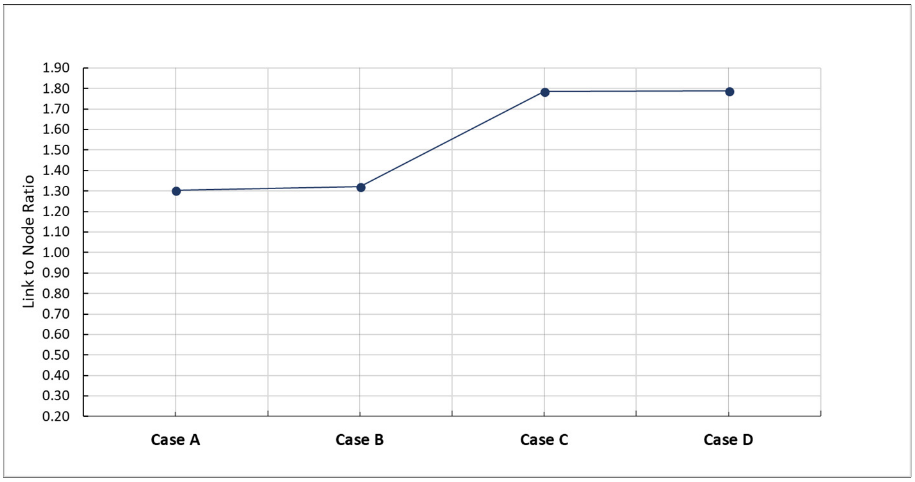


Figure 9.32. Link to node ratio for the four selected samples: A (organic). B (hybrid), C (paralleled), and D (loop-grid pattern).

9.5.4 Internal Node Connectivity

The maximum amount of this indicator is one, meaning that the network system is free from cul-de-sac streets. Thus, case study D has the highest *INC* value, and that gives it more connectivity (like sample C that has a similarly high value) than A and B, which both have a high number of cul-de-sacs (Figure 9.33).

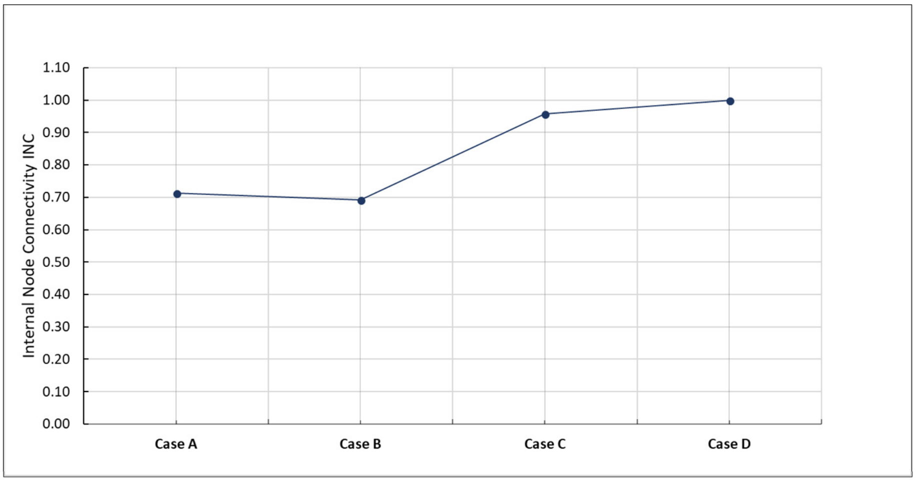


Figure 9.33. Internal node connectivity for the four selected samples: A (organic). B (hybrid), C (paralleled), and D (loop-grid pattern).

9.5.5 External Point Connectivity

Tracking the trendline of *EPC* in Figure 9.34, shows that sample A has a 59.84 metre mean distance with 42 points ingress /egress points. The line moderately declines to 52.36 metres for case B with 48 points (ingress/egress), and then considerably increases to 83.78 metres as a mean distance for sample C which has 30 ingress/egress points. The highest *EPC* value is for case D at about 89.76 metres, which represents the mean distance (Table 9.3).

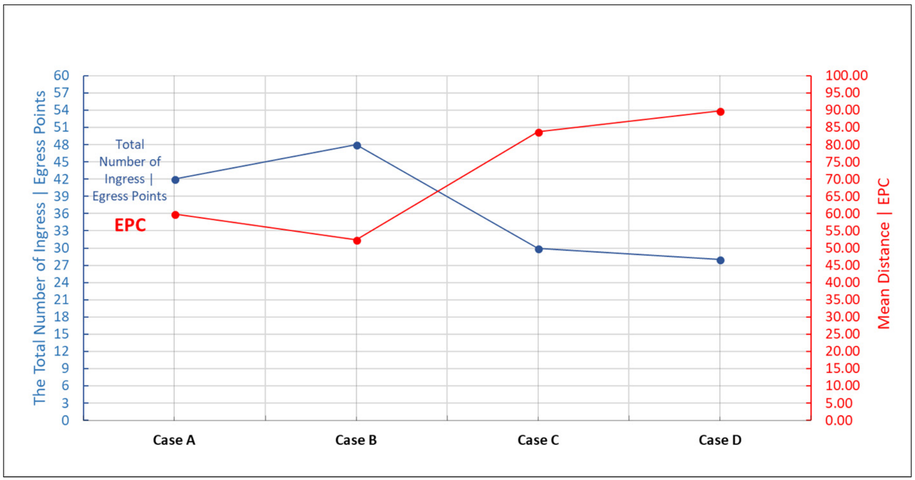


Figure 9.34. The external point connectivity value *EPC* of the four samples A, B, C, and D.

Table 9.3. The mean *EPC* distance and the total number of ingress/egress points. The total length of the boundary per case study.

Case Study ID	Total Length of the Boundary	Total Number of Ingress | Egress Points	Mean Distance | EPC
Case A	2513.27	42	59.84
Case B	2513.27	48	52.36
Case C	2513.27	30	83.78
Case D	2513.27	28	89.76

The *EPC* highest value means the maximum spacing between ingress/egress points and the lowest connectivity between the selected area and its surroundings. Both cases A and B exhibit a minimum spacing between their peripheral points. The network for both A and B consist of a significant number of streets (A has 504 links) and (B has 415 links), and that leads to an increasing number of crossing points on the boundary. On the other hand, samples C and D display the maximum spaces between their ingress/egress points, where their *EPC* is 83.78 metres for C and 89.76 metres for D as their external connectivity decreases. Furthermore, the network for cases C and D have a smaller number of links (C has 125 links and D has 111 links).

9.5.6 Grid Pattern Ratio

The GPR_{weak} values of the four samples are dominant; furthermore, A_{weak}, means that the number of blocks with 4-way corners is limited in all selected areas. On the other hand, GPR_{strong} values also apply to all four cases. The *GPR* indicator can be labelled as a conditioned and relative factor which integrates with other physical urban dimensions to improve the level of connectivity, accessibility and permeability of a street network. Nevertheless, the *GPR* is a significant measure in testing an area and determining the extent to which it strongly or weakly embraces a griddy street pattern and, in turn, the block pattern (Figure 9.35).

A reduction in the 4-way intersection is evident in case study D, although this sample belongs to the modern planning era and therefore contrasts with case A. Also, this phenomenon occurred in sample C, while the area of case B holds the largest quantity of 4-way corners. In some way, limiting 4-way intersections minimises the connectivity and permeability of a street, and affects accessibility through the network; this concern was noted for case studies A and C.

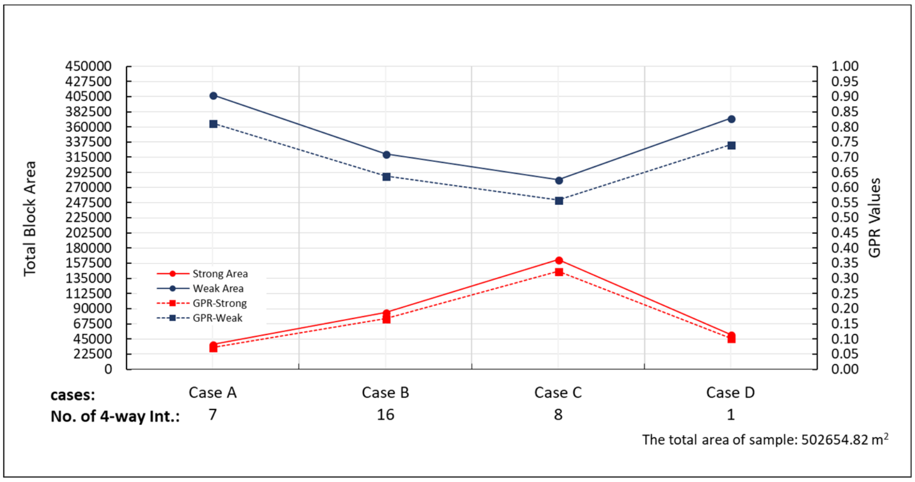


Figure 9.35. A chart illustrates the values of A_{strong}, A_{weak}, GPR_{strong}, and GPR_{weak} for the four selected samples. Open areas are excluded (riverbank, green spaces, parking, squares, and undeveloped land).

9.5.7 Pedestrian Route Factor

Theoretically, the shortest distance between any external nodes (egress/ ingress points) and the centre of the sample indicates the radius of the case study itself, which in this case is equal to 400 metres. The zero value that occurred in both samples A and B means that the external point does not reach the centre; otherwise, the minimum distance is 400 metres. With regard to the maximum value, the comparison shows that case C has the highest amount of *PRF* at about 3.26, while sample A the least at 1.48. For the remaining samples, B and D, their *PRF* ratios are 1.55 and 1.92, respectively. This means that case D has the second highest value (Figure 9.36).

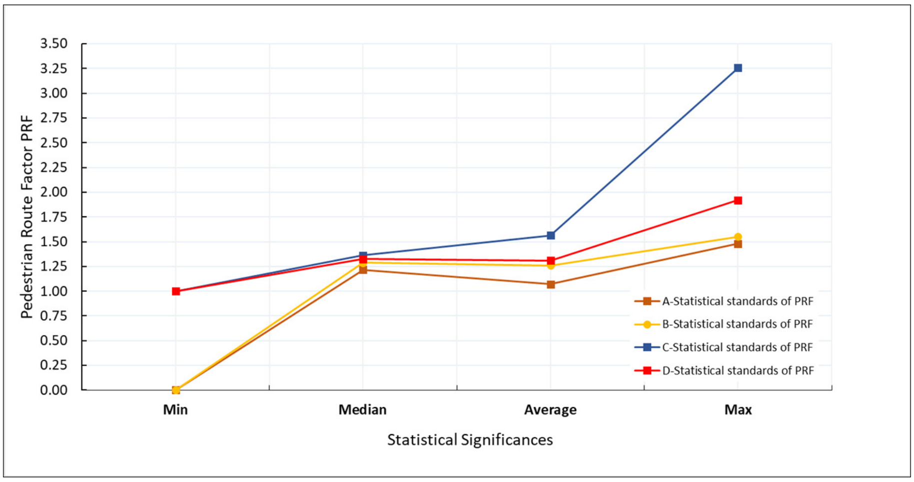


Figure 9.36. The main differences among the four samples A, B, C, and D regarding the statistical standards: minimum, median, average, and maximum.

In terms of the minimum, all four selected areas shared the same value at this arithmetical standard; this corresponds to the unified radius of the samples (namely, 400 metres). The median value is higher for case C at 1.36 *PRF* whilst sample A is only 1.22. In cases B and D, the median is 1.29 and 1.33; thus, sample D has the second highest value after C. Sample C also had the most significant average *PRF* value at about 1.56, whereas case A had the lowest average at around 1.07. Moreover, samples B and D had 1.26 and 1.31, respectively (Figure 9.36). In looking over the primary statistical standards for the four samples (minimum, median, average, and maximum), case study C is markedly dominant over the selected samples as its *PRF* ratios represent the highest values. In contrast, case study A has the lowest values for all *PRF* ratios. Sample B tends to move analogically with case A, while sample D has the second highest values after C (Figure 9.37).

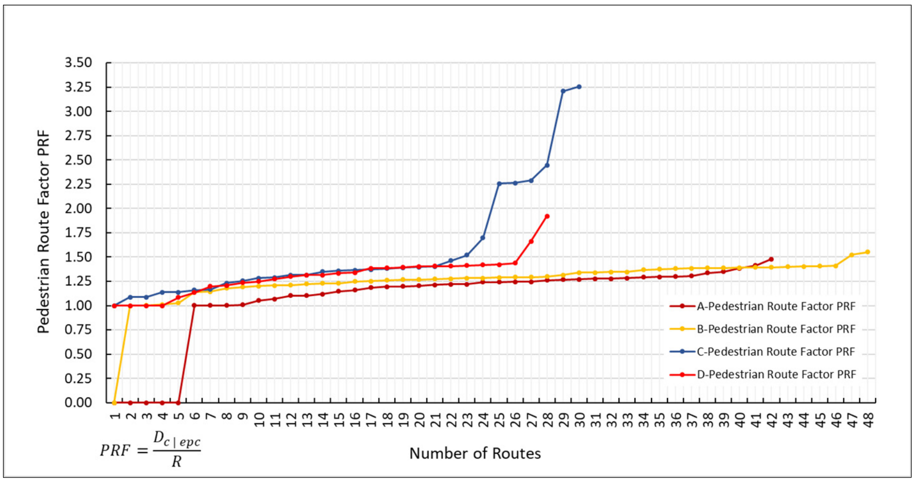


Figure 9.37. The values of the Pedestrian Route Factor *PRF* for the selected areas: A, B, C, and D. This exhibits a significant disparity among the four cases.

The extent to which the routes *PRFs* differ amongst the cases was determined. This was calculated from the average value for the *PRF*, when the standard deviation (*SD*) was applied. Accordingly, the *SD* trendline starts from sample A at 0.41 *SD* and then sharply decreases to 0.22 *SD* for case B. In case C, the trendline reaches the highest *SD* at 0.59, and drops again to 0.20 *SD* for sample D (Figure 9.38).

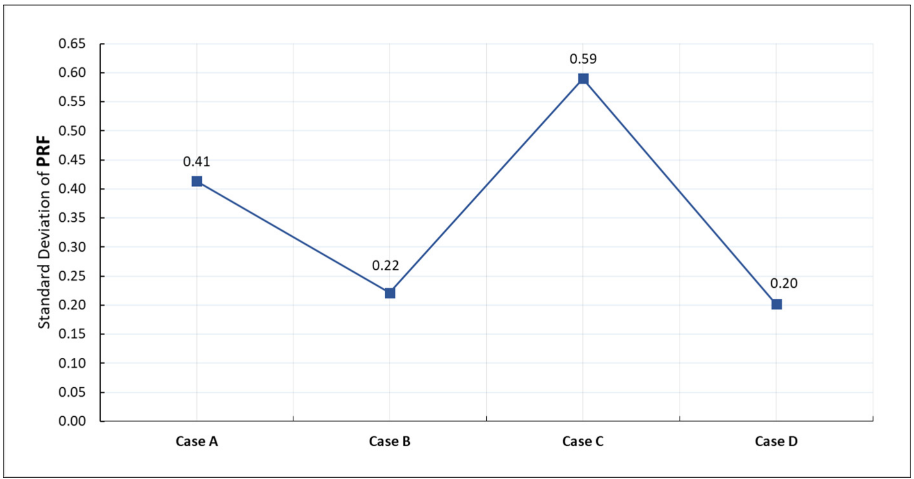


Figure 9.38. The standard deviation of the *PRF*, as a significant value that explains the extent to which the *PRF* of the routes for each selected sample differs from the average *PRF* value.

Regarding the D_{mean}, sample C records the largest amount at about 625.04 metres; in this respect, the D_{mean} exceeds the radius by more than 200 metres. In contrast, sample A has less difference between its radius and the D_{mean} at 486.11 metres, and where the disparity is only 86.11 metres. Accordingly, the routes in case study A give a reasonable distance for movement compared with sample C. Also, the selected area in case B shows a slight variance between two quantities; D_{mean} at 514.21 metres and the radius 400 metres at 114.21 metres. In sample D, the value of D_{mean} is 523.40 metres; therefore, the difference is about 123.40 metres of the radius. For both samples B and D, their D_{mean} values are close (Figure 9.39).

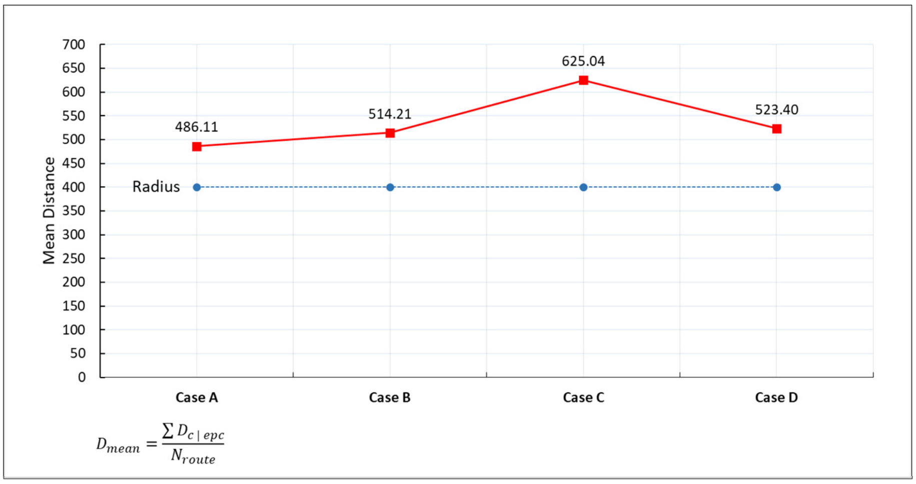


Figure 9.39. A chart displays the values of the mean distance for the four selected urban areas, besides the difference between these values and the radius.

9.5.8 Ped-shed and Effective Walking Area

Two indicators, the Ped-shed and the Effective Walking Area deal with each selected sample separately to calculate the results for the PS_{Built}, PS_{Plot} and EWA. Each case has unique values based on the total number of plots, plot areas, and built-up areas. Two tables show and enable a comparison of the four cases; Table 9.4 displays the plot areas and built-up areas, besides the Ped-shed area as a plot and built-up. This is followed by the ratio between each category. Table 9.5 shows the number of plots which are classified by the total number, Ped-shed, Non-ped-shed, and the ratio. From two tables, a meaningful comparison is made to capture the degree of difference across the four selected urban areas within a 400 metre radius. Based on the net plot area (excluding open lands, such as parking, riverbank, park, and undeveloped area), case A has the largest amount at about 369494.07 m^2, and the trendline reduces moderately to reach the minimal value at sample D at 293803.03 m^2. For the other two cases, B and C, their plot areas (net) are 353382.56 m^2 and 334033.30 m^2 respectively.

Table 9.4. The plot areas and the built-up area, besides the Ped-shed area as a plot and built-up, this is followed by the ratio between each category.

Case study ID	Case study				Ped-shed		Ratio	
	Total plot area	Total built-up area	Total open area	Net plot area	Total ped-shed plot area	Total ped-shed built-up area	Ped-shed to the net plot area of sample (plot area)	Ped-shed to the selected sample (built-up area)
Case A	391615.93	329281.60	22121.59	369494.35	245681.02	227069.17	0.66	0.69
Case B	371732.40	263779.19	18349.85	353382.56	200673.00	159000.13	0.57	0.60
Case C	383441.59	167130.73	49408.29	334033.30	214193.25	115277.13	0.64	0.69
Case D	332882.43	162880.44	39079.40	293803.03	131966.28	79579.29	0.45	0.49

Table 9.5. The number of plots which are classified by the total number, Ped-shed, Non-ped-shed, and the ratio.

Case study ID	Total number of plots	Total number of plots (ped-shed)	Total number of plots (Non ped-shed)	Ratio ped-shed number to total number
Case A	1753	1164	589	0.66
Case B	1976	1067	909	0.54
Case C	849	579	270	0.68
Case D	720	319	401	0.44

The disparity, regarding the net plot areas, is slight between the samples. The result is different when considering the Ped-shed indicator across the cases. The trendline, in this regard, starts with the highest area in sample A at about 245681.02 m^2 and case C with 214193.25 m^2 as the second highest value; meanwhile, sample D has the lowest area at around 131966.28 m^2, and case B is ranked third at 200672.00 m^2. The PS_{Plot} value reaches its peak in sample A at 0.66; it then falls to 0.45 for case D. Sample C also has a high value at about 0.64, whereas case B is calculated at 0.57 (Figure 9.40).

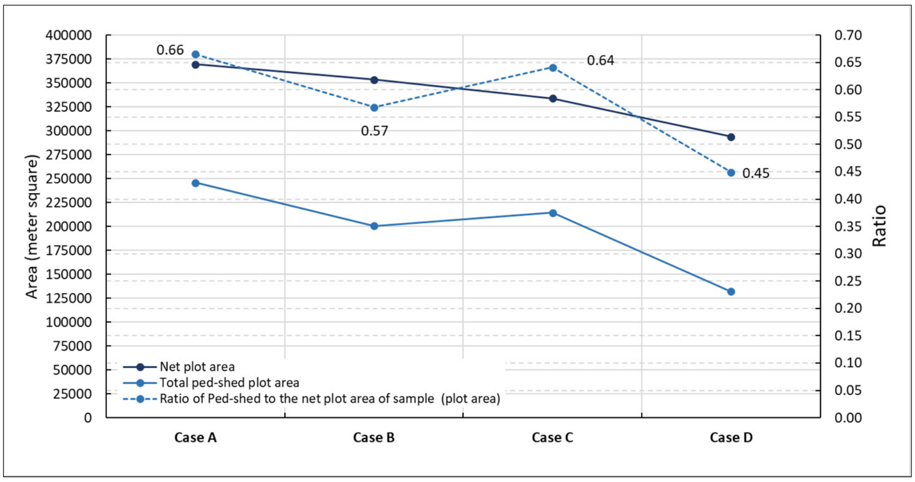


Figure 9.40. The significant values of net plots' area, the Ped-shed plots' area and the ratio between them.

Regarding the built-up area for both the plots and Ped-shed plots, the comparison exhibits a significant disparity among the selected samples. The total built-up area of the plots in sample A (organic pattern) is about 327532.21 m^2 where most plots, in this case, are covered entirely, and the metric depth (setback) is relatively limited. Furthermore, the plot size is small, which allows for an increase in the number of plots in a particular area (Figure 9.41).

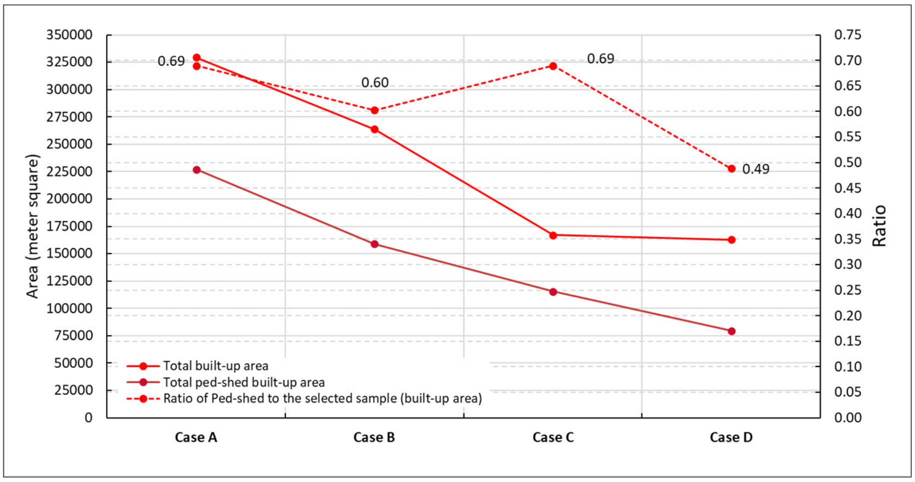


Figure 9.41. The significant values of the net plots' built-up area, the Ped-shed built-up area and the ratio between them for the four selected samples A, B, C, and D.

In contrast, case D includes plots with a more regular layout and a bigger size than those in case A. Therefore, the number of parcels is low, and the total built-up area is about 162880.44 m^2, where the selected region can be distinguished by the metric depth of most plots. Similar to case A, case B consists of small plots, whether in its oldest or more modern parts. Also, the value of metric depth is zero for a considerable number of plots; thus, the total built-up area is 263230.47 m^2 and thus represents the second largest amount. Case study C is quite close to D in terms of the characteristics of its plot pattern (size and metric depth); therefore, the built-up area of C is about 167130.73 m^2 (Figure 9.41).

In terms of the Ped-shed built-up area, the trendline across the four samples shows a more significant amount for case A with a built-up area of about 226211.77m^2; the value dramatically dips to 79579.29 m^2 for case D (Figure 9.41). With built-up areas of 159000.13 m^2 and 115277.13 m^2 the remaining samples, B and C, are second and third, respectively. The ratio of Ped-shed to the selected sample (built-up area) illustrates a disparity among the four cases. The ratios for samples A and C are close at about 0.69, while case D has the lowest ratio at about 0.49, and 0.60 for sample B. A comparison of the number of plots per selected sample for the Ped-shed and the total number of plots, reveals a significant difference. The EWA value fluctuates across the samples; in this respect, sample C gets has the highest ratio at about 0.68, and case A has the second highest at 0.66; this is followed by sample B at 0.54, whilst the lowest ratio is for D at only 0.44. The total number of plots and Ped-shed plots also vary between the two groups A-B and C-D. Sample B includes the most significant number of plots, namely 1976 versus 1067 as the Ped-shed. Case A encompasses 1753 and 1164 Ped-shed plots. The number of plots markedly decreases to the lowest quantity in both C and D, where C consists of 849 plots and 579 Ped-shed, and D comprises only 720 plots and 319 as Ped-shed plots (Figure 9.42).

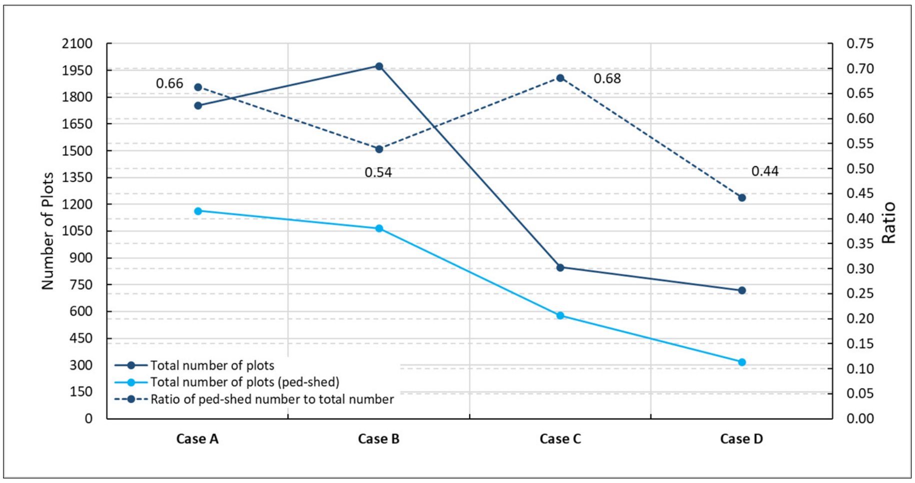


Figure 9.42. The total number of plots and Ped-shed plots for the four selected urban areas A, B, C, and D, as well as the ratio between them.

From the comparison and based on the built-up area, plot area and a total number of Ped-shed plots, case A study exhibits a high number of attainable plots by tracking the routes that start from the centre of the sample toward the boundary within a 400-metre walking distance. Like sample A, C has a more significant number of plots that are accessible from the adjacent street via the 400-metre route length from the centre of the case. Even though samples A and C have different street and plot patterns. The former represents a more organic pattern with high diversity in plot size, while the latter includes a more regular plot pattern and a unified plot size (Figure 9.43).

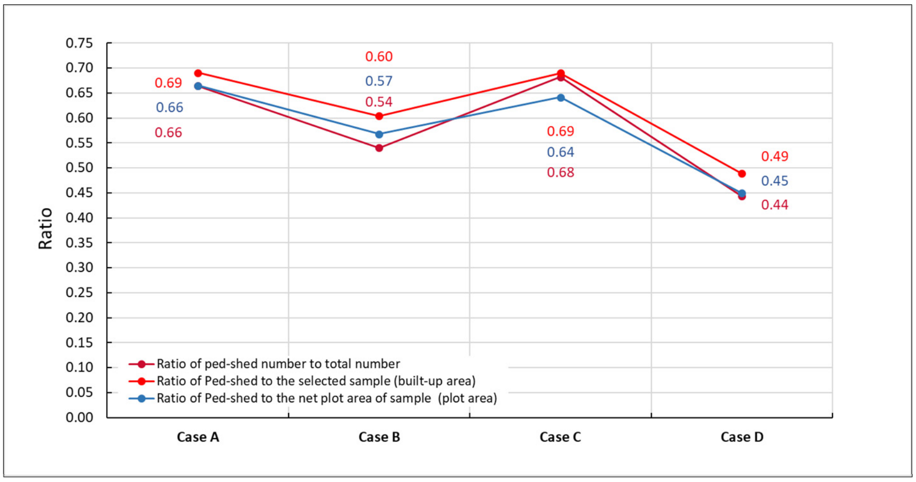


Figure 9.43. The value of PS_{built}, PS_{Plot} and EWA for the four selected samples. The result shows a significant difference among these cases.

In sample B, the reachable plots (built-up) decreased compared with A and C. The lowest reachable Ped-shed occurs in case study D, where the area covered by accessible plots and the number of plots are quite low (Figure 9.42). The comparison of three values: PS_{Built}, PS_{Plot} and EWA reveals a slight difference between these indicators (Figure 9.43). Table 9.6 shows different significant values of each urban form parameter and its weight regarding the selected samples (A | organic, B | hybrid, C | paralleled and D | loop-grid pattern). Besides the total average of pedestrian across the six selected streets (2 Blue, 2 Yellow, 2 Red).

Table 9.6. The parameters of urban form and the total average of pedestrian across six selected streets (2Blue, 2Yellow and 2Red for each single case study).

Urban Form and Urban Life	**Parameters**	**Unit**	**Case Study**			
			A | Organic	**B | Hybrid**	**C | Paralleled**	**D | Loop-grid**
Plot	**Perimeter**	Length m	101843.6800	98943.6300	67032.3100	60929.6000
	Size	Area m^2	410334.7325	371732.4045	383441.5866	332882.4300
		Built-up Area m^2	327532.2076	263230.4699	167130.7305	162880.4356
		Ratio	0.7982	0.7081	0.4359	0.4893
Block	**Perimeter**	Length m	39011.6400	35988.2700	21202.2700	22821.3200
	Size	Area m^2	444757.9800	404789.0000	444017.1800	424050.8600
	Dimension	Min Edges 4	37	43	37	41
		Max Edges 15	20	16	0	0
	Density	Block No. Total	138	125	49	55
		Block No. Net	136	116	45	47
	Area	All Area m^2	444757.9789	404788.9969	444017.1764	424050.8588
		Covered Area m^2	422636.3904	386439.1491	394608.8897	384971.4625
		All Area Ratio	0.8848	0.8053	0.8833	0.8436
		Covered Area Ratio	0.8408	0.7688	0.7850	0.7659
	Mean Area	Area m^2	3107.6205	3331.3720	8769.0864	8190.8822
	Block to Street Ratio	Ratio	2.8881	2.6588	2.7834	1.4495
Street - Intersection	**Intersection Density**	No.	192	154	79	70
	Street Density	Total length	18163.3096	17816.7792	12351.0451	12049.6909
		Ratio $_{area}$	24.3078	28.4639	23.8385	37.6501
		No.	504	415	125	111
	Link to Node Ratio	Ratio	1.3000	1.3200	1.7900	1.7900
	Internal Node Connectivity	Ratio	0.7100	0.6900	0.9600	1.0000
	External Point Connectivity	Distance m	59.8400	52.3600	83.7800	89.7600
	Grid Pattern Ratio	GPR_{strong}	0.07	0.17	0.32	0.10
		GPR_{weak}	0.81	0.64	0.56	0.74
	Pedestrian Route Directness Factor	Max	1.48	1.55	3.26	1.92
		Median	1.22	1.29	1.36	1.33
		Average	1.07	1.26	1.56	1.31
		Min	0.00	0.00	1.00	1.00
	Ped-shed	Ratio $_{plot\ area}$	0.66	0.57	0.64	0.45
		Ratio $_{built\text{-}up\ area}$	0.69	0.60	0.69	0.49
	Effective Walking Area	Ratio $_{plot\ number}$	0.66	0.54	0.68	0.44
Urban Life	**Total average of Pedestrian across six selected streets (2Blue, 2Yellow, 2Red)**	No.	5817.00	891.00	264.00	441.00

9.6 Land use

The quantity of land use (density and diversity) plays a crucial role in formulating the movement of the street and its volume in terms of motorised-based movement and pedestrian flow. These two types of movement are responsible for promoting the vitality of the street and in turn any social interaction with street life. However, the priority is to maximise non-motorised-based flow and to minimise vehicular movement. Hence, land use might help to ration the distribution pattern and control movement. In this comparison, the study adopts the total number of plots per land use, the percentage of both plots' areas, and the built-up area as three criteria to diagnose the variance among the selected cases. Each case study has a different number of plots within the unified circular area (400-metre radius), namely: A has 1753 plots, B has 1976 plots, C has 849 plots, and D has 720 plots. In this regard, case study B has the highest number of plots, while sample D has the lowest quantity.

The difference in the total number of plots for each case affects its density and diversity in land use. In the oldest part of the city (case A) the land use grown progressively over time and includes attempts to label and categorise these uses. In contrast with sample A, the distribution pattern of land use for cases C and D are subject to a pre-planned scheme, and they follow the predetermined purpose of land use-based zoning. Sample B is a hybrid pattern and combines both a spontaneous and pre-planned order. With regard to the number of plots for samples B, C, and D, residential use represents the most significant number of plots at 1298/1976, 715/849, and 607/720, respectively. In comparison, for case A, the highest number of plots is for commercial and business use at 545/1753 and residential purposes comprise only 477/1753. Even though commercial and business activities represent the greatest quantity in sample A, within the other cases, this function is either represented as pure or mixed with other uses. In sample A, for example, there are the administrative and commercial uses, the residential and commercial uses, and the mixed-use CBAI (commercial, business, administrative and industrial use), where the total number of plots are 70, 136, 317 respectively (Figure 9.44).

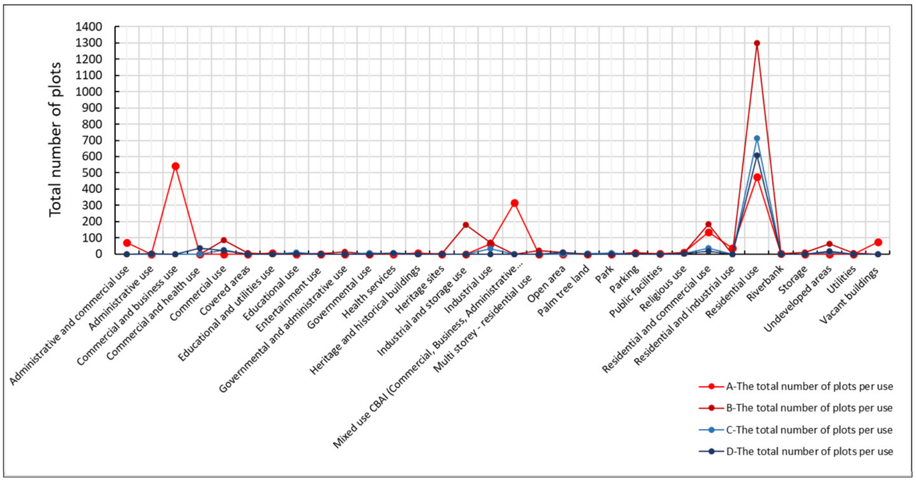


Figure 9.44. The total number of plots per land use across the four samples A, B, C, and D. Two dominant uses are the residential use and commercial use (pure and mixed).

Residential and commercial represents the second highest number in sample B and C at 185/1976 and 38/849 respectively, while commercial and health use 38/720 in the case study D is the second highest. The remaining uses spread over each sample proportionally or are concentrated in the main street with a different number of the plots (Figure 9.44). Combining the different commercial uses under one title leads to an increase in this activity in terms of the total number of plots. Accordingly, sample A includes 1068/1753, B has 271/1976, C has 62/849, and case D has 76/720. The highest percentage occurs in case A at 60.92% and then lowers to 13.71% for B, lowers again to 10.56% for D and the lowest rate is for sample C at 7.30% of the total number of plots.

Plots' area is another significant indicator when comparing the four cases. In this respect, the percentage of the plot area is expressed in the disparity among the selected samples. In examples B, C, and D, residential use is the dominant purpose, where its ratio is 33.51%, 62.52% and 71.65%, respectively. The most dominant use in sample A is commercial and business use at 31.23%, while residential use is the second greatest percentage at 14.19%. The second most common proportion is found in sample B, which records industrial and storage use at 9.84% while in case study C parks represent 9.86%, and in sample D, open area is the second highest ratio at 9.60%. The third percentage is also varied throughout the selected samples; for case A, mixed-use CBAI (commercial, business, administrative and industrial use) comprises 14.16%. In comparison, for case B governmental and administrative use is the third significant ratio at 8.12%, whilst in the case C educational use represents 6.61%. Finally, for case D commercial and health use comprises 4.88% (Figure 9.45).

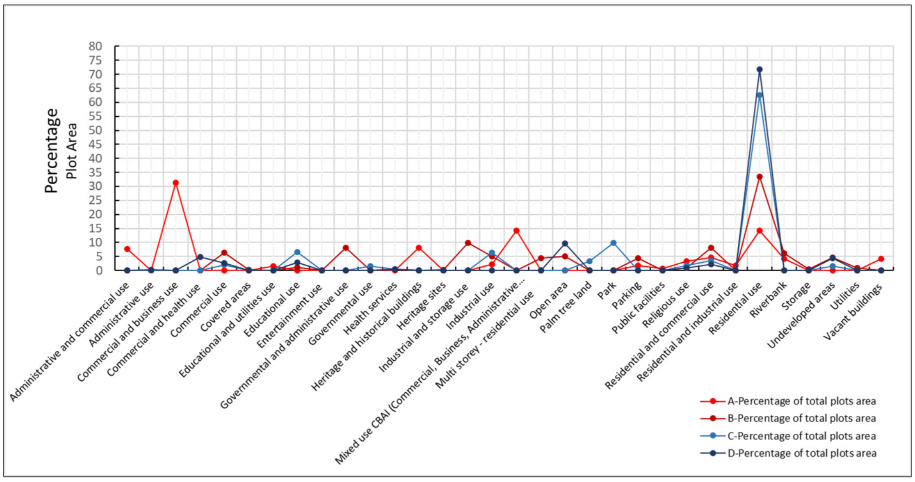


Figure 9.45. The comparison among the four selected samples in terms of the percentage of the plots' area for each sample.

Regarding the other uses, their plots areas are varied, meaning that a particular use may have many plots, although it might not necessarily have the most extensive of the total plots area and vice versa. Hence, the level of the coverage area governs the degree of land use. The built-up area is the third indicator that is applied within this comparison among the four selected samples. There is a need to distinguish between the plot area and to the extent to which a building, or structure cover this plot. Starting with sample A, the commercial and business use includes the most significant built-up value at 36.36%, while residential use in case B represents the highest amount at 44.18%. For both samples, C and D residential use are also more common at 76.71% and 79.32% respectively. The second most dominant ratio of the built-up area across the selected samples differs from one case to another in terms of the type of land use. Thus, case study A shows that mixed-use CBAI (commercial, business, administrative and industrial use) represents 16.57% while both cases B and C record industrial and storage use as the second highest ratio at 13.16% and 6.85% respectively. Finally, for case D, commercial and health use represent the second most significant amount of built-up area at 8.70%. Each case deals with the types of land use differentially regarding the coverage area and its percentage, which is associated with the other surrounding activities.

The third most significant use amongst the chosen cases, is for residential use and in sample A, this is recorded at 15.84%, while for samples B and C, the residential and commercial use capture the third highest ratio at 11.05% and 4.91% respectively. Finally, sample D records 4.58% for commercial use as its third most significant use (Figure 9.46). The two criteria of density and diversity occur in sample A and are represented by the different colours of land use, which are considerable. Also, case study B exhibits various activities in determining land use with a variety of values in terms of the total number of plots, plots' area, and the built-up area (Figure 9.44). The density of land use in the samples C and D tend to emphasise one purpose, whereas residential use is greater than any of the other uses and activities. This, however, might be related to the primary aim of the pre-planned neighbourhood, which prioritises pre-decisions about use-based zoning and determines areas for commercial use and areas for residential purpose.

The types of land use examined in this current research consist of 32 activities. These uses are derived from the four chosen samples A, B, C, and D where some are shared (such as residential and commercial use, and residential use and religious use), and others are not. There are 14 different uses in case A and 19 in case B, although this quantity decreases in cases C and D to eleven and ten types of land use (Table 9.7). Analysing the land use amongst the four selected samples helps to understand the spreading pattern of different activities and to comprehend the potential trend of land use at the micro level of the street edge. The ability to change the usage pattern at the micro level could be easier than attempting to make a whole shift, especially, when considering the oldest part of the city.

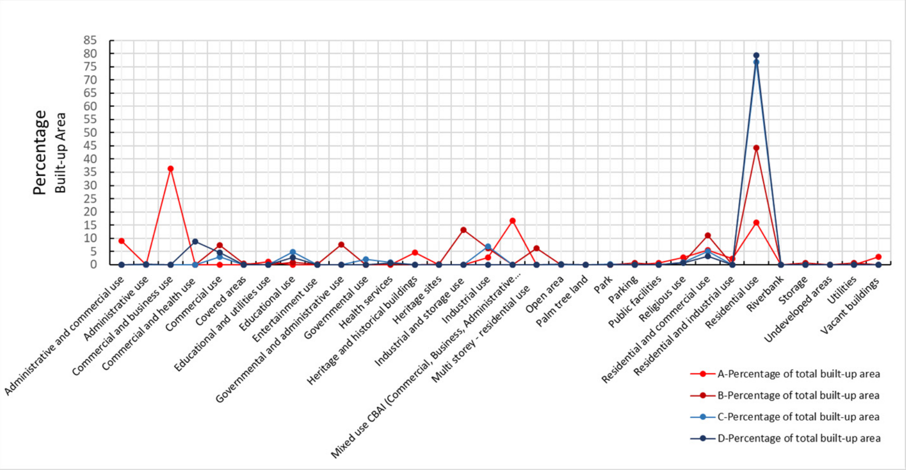


Figure 9.46. The percentage of the built-up area across the four selected samples A, B, C, and D.

Table 9.7. The land use of the four selected samples A, B, C, and D. There are 32 uses that spread over the four cases with the different densities and diversities.

Land use	**The total number of plots per land use**			
	Case A	**Case B**	**Case C**	**case D**
Administrative and commercial use	70	0	0	0
Administrative use	0	0	0	1
Commercial and business use	545	0	0	0
Commercial and health use	0	0	0	38
Commercial use	0	86	24	20
Covered areas	0	6	0	0
Educational and utilities use	6	0	0	0
Educational use	0	4	11	3
Entertainment use	0	2	0	0
Governmental and administrative use	0	13	0	0
Governmental use	0	0	6	0
Health services	0	1	2	5
Heritage and historical buildings	8	0	0	0
Heritage sites	0	1	0	0
Industrial and storage use	0	179	0	0
Industrial use	62	72	33	0
Mixed use CBAI (Commercial, Business, Administrative and Industrial use)	317	0	0	0
Multi storey - residential use	0	21	0	0
Open area	0	11	0	10
Palm tree land	0	0	4	0
Park	0	0	5	0
Parking	8	10	0	0
Public facilities	2	0	0	0
Religious use	10	8	2	1
Residential and commercial use	136	185	38	18
Residential and industrial use	36	0	0	0
Residential use	477	1298	715	607
Riverbank	2	1	0	0
Storage	0	9	0	0
Undeveloped areas	0	63	9	17
Utilities	0	6	0	0
Vacant buildings	74	0	0	0
Total	**1753**	**1976**	**849**	**720**

9.7 Street Centrality MCA | Constitutedness and Permeability

9.7.1 Comparing the Individual Case Study

9.7.1.1 Organic Pattern | A

Comparing six streets along the 100 metre length, the permeability per building differs from one category to another and even between streets that have the same betweenness centrality. This is because the independent factors are varied regarding the street width, metric depth, and a number of storeys for each building. Red one street has a high centrality (0.0017 – 0.1397) according to the MCA analysis, while the permeability value of its buildings (17) is less than 1. Within 11 buildings, in red two segment the permeability for just two buildings is 1, and the rest is less than 1. Regarding yellow one sample, there are 17 buildings, and most of them fall under 1 except for three buildings, which exceed 1 in permeability value. Blue one has the largest number of buildings; 19 within 100 metres. Yellow two segment has 15 buildings; four just take less than 1, and the others exceed the value of one for permeability.

In case study A, both two blue street compared with yellow and red, reached to the greatest value of permeability (P_{St}) and constitutedness (C_{St}), where blue one (P_{St} = 16.5403 and C_{St} = 0.87054), and the second blue was P_{St} = 20.53777 and C_{St} = 1.46698. The yellow category was also high in degree but less than the earlier (yellow one: P_{St} = 14.13878 and C_{St} = 0.83169); (yellow two: P_{St} = 20.72136 and C_{St} = 1.38142). Meanwhile, both red classes records the lowest value (red one: P_{St} = 6.70263, C_{St} = 0.39427; red two: P_{St} = 7.18757 and C_{St} = 0.65342) (Table 9.8 and Figure 9.47). At the micro scale, the value of the street in terms of its centrality (betweenness and closeness) differs from its value regarding its constitutedness (intervisibility and permeability). This means that, for example, the blue street has a low degree of betweenness, but it encompasses a high value of constitutedness. In this regard, the red street has a high degree of betweenness and closeness, whereas its constitutedness is the lowest among the other streets.

A networked organic and zigzag pattern represents the main characteristics of streets in the oldest part of Baghdad. Nevertheless, the routes directly reach the adjacent public edge without an intermediate space. The sequence of movement is different in the modern street pattern where the width is fixed on one value, and the private edge, in this situation, is responsible for shaping the street edge in terms of the depth (setback) rather than the width, like the traditional street.

Table 9.8. A table exhibits the six streets of case study A and number of plots along 100 meters for each selected segment and its two values: Permeability and Constitutedness.

Case Study ID	Street Centrality	Number of Plots per 100 meters	Permeability of Street	Constitutedness of Street
A	Blue One	19	16.5403	0.87054
	Blue Two	14	20.53777	1.46698
	Yellow One	17	14.13878	0.83169
	Yellow Two	15	20.72136	1.38142
	Red One	17	6.70263	0.39427
	Red Two	11	7.18757	0.65342

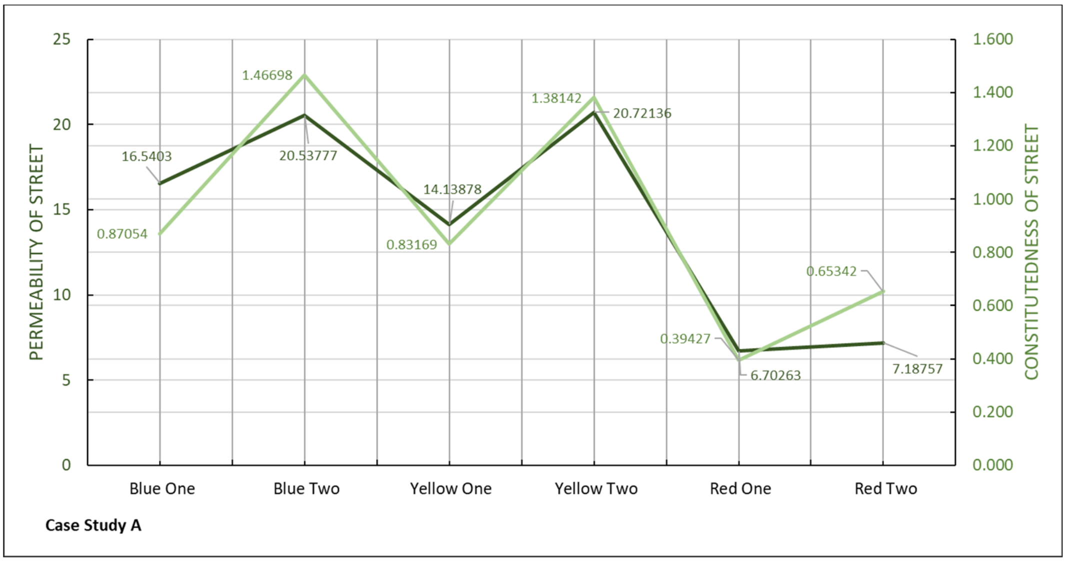


Figure 9.47. The interrelationship between permeability and constitutedness in the six streets of case study A along the 100 metres for each selected segment.

9.7.1.2 Hybrid Pattern | B

In case B, although the blue street represented the lowest betweenness value of MCA analysis (0.0000 – 0.0002), it has the highest degree of permeability and constitutedness (blue one: P_{St} = 12.88101; blue two: P_{St} = 16.53779). Meanwhile, the red street is calculated at the maximum betweenness value (0.0017 – 0.1397), but according to its constitutedness and permeability, these are at a minimum degree (red one: P_{St} = 5.0812; red two: P_{St} = 4.46307). The yellow street (0.0002 – 0.0017), lies between red and blue regarding the betweenness and permeability measurements (yellow one: P_{St} = 8.88271; yellow two: P_{St} = 8.02492), (Table 9.9 and Figure 9.48). The constitutedness depends on the number of plots per selected street and its permeability; both blue lines reached to the highest value (C_{St} = 0.51524; C_{St} = 0.51681), the values for the yellow and red are close (C_{St} = 0.38620; C_{St} = 0.39086 respectively). Furthermore, both yellow and red two have an approximate rate of constitutedness (C_{St} = 0.28660; C_{St} = 0.29754).

Table 9.9. A table exhibits the six streets of case study B and number of plots along 100 meters for each selected segment and its two values: Permeability and Constitutedness.

Case Study ID	Street Centrality	Number of Plots per 100 meters	Permeability of Street	Constitutedness of Street
B	Blue One	25	12.88101	0.51524
	Blue Two	32	16.53779	0.51681
	Yellow One	23	8.88271	0.38620
	Yellow Two	28	8.02492	0.28660
	Red One	13	5.0812	0.39086
	Red Two	15	4.46307	0.29754

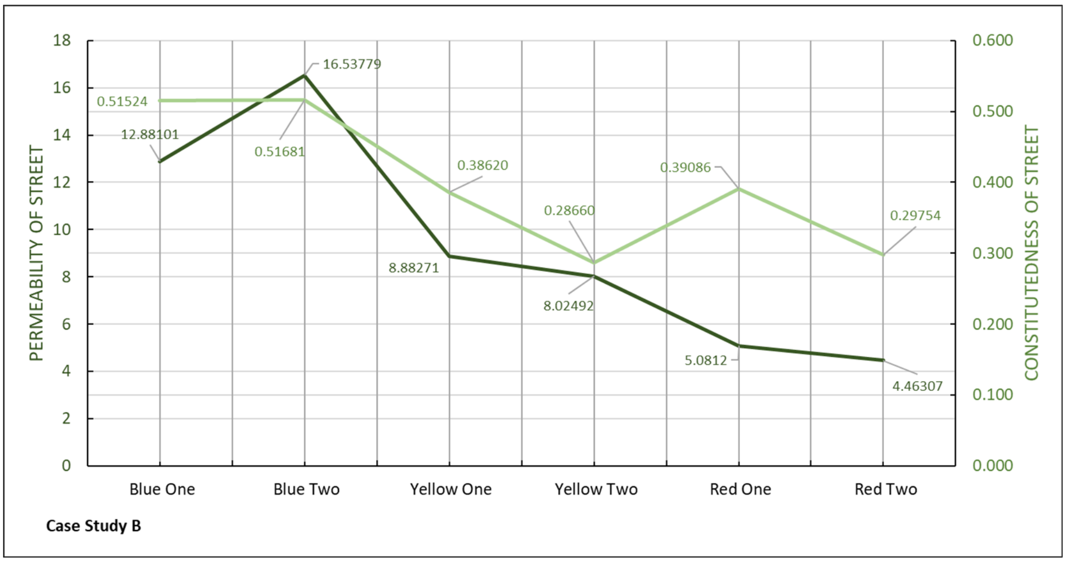


Figure 9.48. The interrelationship between permeability and constitutedness in the six streets of case study B along the 100 metres for each selected segment.

9.7.1.3 Paralleled Pattern | C

In case study C, the homogeneous spatial configuration of the plot-block system and the network pattern play a key role in formulating both the permeability and constitutedness values. In this regard, the constitutedness values for all selected segments are close to each other: (blue one C_{St} 0.13844 and blue two = C_{St} 0.09919, yellow one and two = C_{St} 0.10334; C_{St} 0.11427, and red two = C_{St} 0.12705). However, red one is excluded as its value is, C_{St} 0.37724 (Figure 9.49). The degree of permeability for segments, like their constitutedness values, are generally also close, except for the blue one and red one street. The permeability of blue two street is P_{St} 1.19022; yellow and two is P_{St} 1.5501 and P_{St} 1.48548 respectively, and red two is P_{St} 1.90575. For blue one and red one, their values are higher than for other segments at P_{St} 2.76881 and P_{St} 4.52691, respectively (Figure 9.49). Regarding blue one, the high permeability value is due to the number of houses; as such, 20 plots are located adjacent to the street edge. Although red one has just 12 buildings along 100 metres on both sides, its permeability is the largest among the other selected segments. This means that the number of units per building is high (Table 9.10). Across the six streets in case study C, the interrelationship between the private and public edges are examined, and how these edges are employed to constitute the street space including how that affects the social interaction and people – edge interface. Red one street is evidence of the morphological and functional transformations, from residential purposes to commercial use.

Table 9.10. The six streets of case study C and number of plots along 100 metres for each selected segment and its two values: Permeability and Constitutedness.

Case Study ID	Street Centrality	Number of Plots per 100 meters	Permeability of Street	Constitutedness of Street
C	Blue One	20	2.76881	0.13844
	Blue Two	12	1.19022	0.09919
	Yellow One	15	1.5501	0.10334
	Yellow Two	13	1.48548	0.11427
	Red One	12	4.52691	0.37724
	Red Two	15	1.90575	0.12705

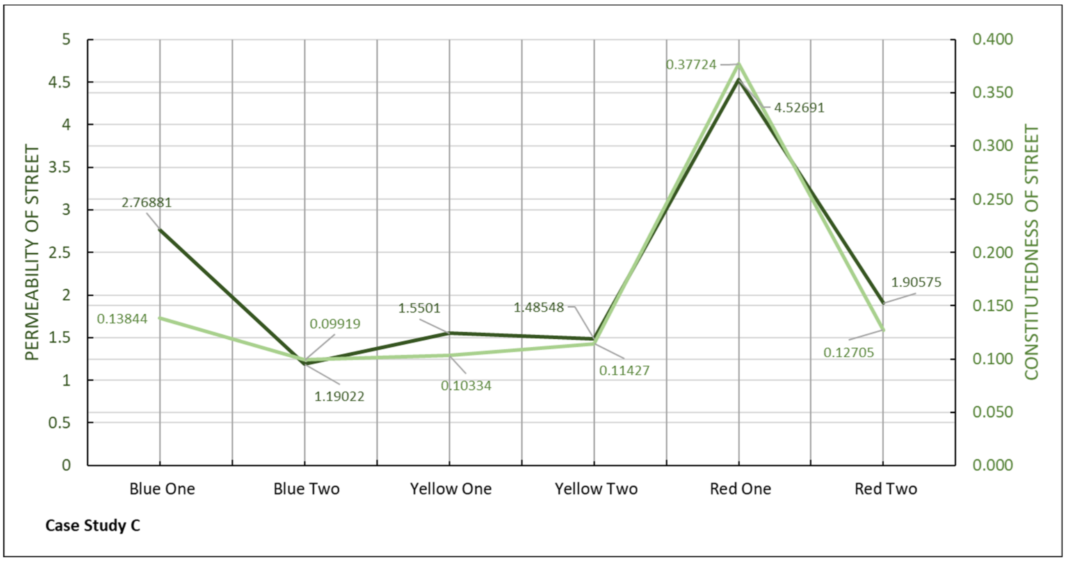


Figure 9.49. The interrelationship between permeability and constitutedness in the six streets of case study C along the 100 metres for each selected segment.

9.7.1.4 Loop-grid Pattern | D

The comparison of both values' constitutedness and permeability and their interrelationship provide a complete picture of the different types of streets. These six streets are classified according to their betweenness centrality after running the Multiple Centrality Assessment (MCA) analysis. In this for case D, the constitutedness degree is varied particularly for yellow one and red one (C_{St} 0.32335, C_{St}0.27014 respectively). Also, their permeability value is greater than other chosen segments, where yellow one = P_{St} 1.94009 and red one = P_{St} 3.78199. The number of storeys for each building and the units per floor in red one segment lead to an increase in both their values permeability and constitutedness. Meanwhile, the number of units in DP27P1 in the yellow one street increases the permeability and constitutedness (Table 9.11 and Figure 9.50).

For the remaining segments in case study D, the permeability values are quite close, such as blue one and two, yellow two, and red two (which are P_{St} 1.55361, P_{St} 1.22756, P_{St} 1.20467, P_{St} 1.27766 respectively). In this regard, the constitutedness values within blue street are very close, namely: blue one = C_{St} = 0.08631, blue two = C_{St} = 0.08768, yellow two C_{St} = 0.10952, and red two C_{St} = 0.18252. The street width is used in the equation to derive the intervisibility value; this is calculated by the inverse hypotenuse value for each storey. In the red two segments, the width is 60 metres which reduce the intervisibility value as a depth storey factor and result in minimising the degree of permeability. Therefore, the interface between the edge's height and the street's width is a critical factor to deal with the degree of permeability, such as in case study D: red one and two.

Table 9.11. The six streets of case study D and the number of plots along the 100 metres for each selected segment and its two values: Permeability and Constitutedness.

Case Study ID	Street Centrality	Number of Plots per 100 meters	Permeability of Street	Constitutedness of Street
D	Blue One	18	1.55361	0.08631
	Blue Two	14	1.22756	0.08768
	Yellow One	6	1.94009	0.32335
	Yellow Two	11	1.20467	0.10952
	Red One	14	3.78199	0.27014
	Red Two	7	1.27766	0.18252

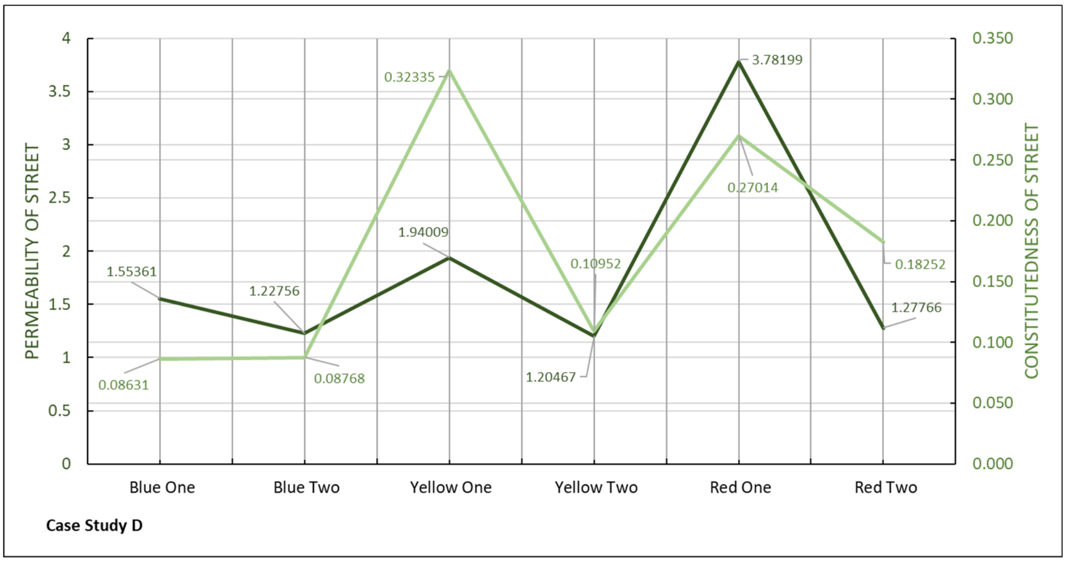


Figure 9.50. The interrelationship between permeability and constitutedness in the six streets of case study D along the 100 metres for each selected segment.

9.7.2 Comparing Across the Four Case Studies

The Multiple Centrality Assessment (MCA) offers a systematic platform for all cases regardless of other network classifications or, at this stage, any morphological analysis and urban form elements. Based on MCA's method, the betweenness centrality determined the values of the links, which included: Blue at 0.0000 – 0.0002, Yellow at 0.0002 – 0.0017, and Red at 0.0017 – 0.1397). From the four cases, 24 streets are arranged as eight streets for each category of betweenness. Each case study has been addressed in detail in terms of the interrelationship between the centrality value and the degree of constitutedness with two its indices; intervisibility and permeability.

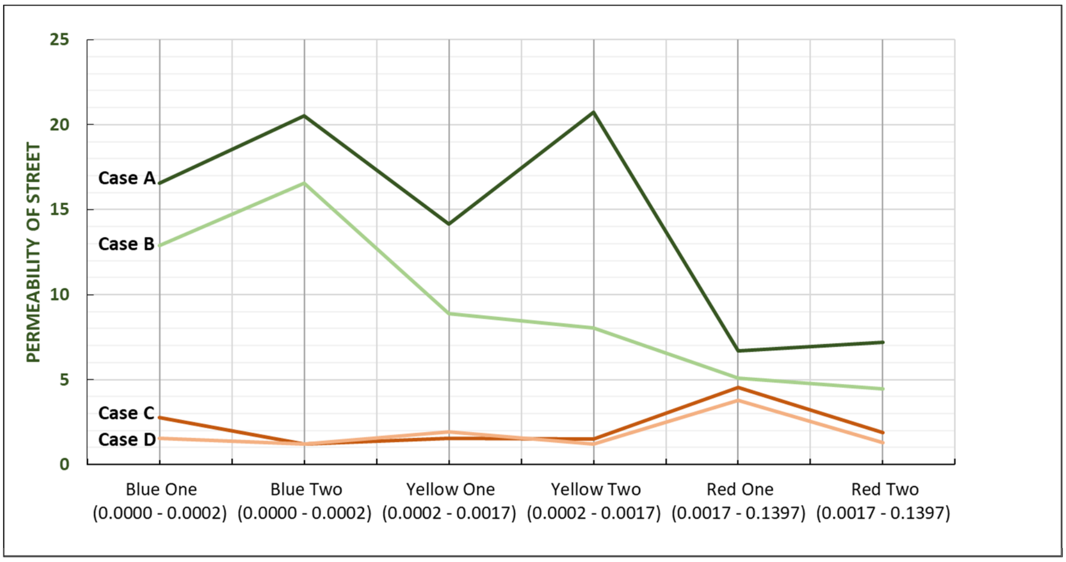


Figure 9.51. A comparison of the permeability value among the four cases: A (organic pattern), B (hybrid pattern), C (paralleled pattern), and D (loop-grid pattern). It shows a significant differentiation across the cases.

Conducting a comparison among the four cases enables an understanding of the extent to which the centrality and constitutedness are associated. In Figure 9.51, case study A displays the peak permeability value and reaches the maximum among all other cases. Case B achieves the second highest after case A, where the permeability for all its selected segments are the higher than cases C and D. There is a significant gap between cases C and D, and A and B in terms of the permeability values, particularly for blue one and two, and yellow one and two. In this comparison, case study C is third, excepting blue one in case D. The final value is the case study D, which shows the lowest permeability, and represents the minimum across all the cases. Regarding the constitutedness, case study A has the highest value of constitutedness amongst all the cases.

The second highest is the case B, as its selected streets have the highest value of constitutedness in comparison with cases C and D. A difference in constitutedness occurred between the cases C and D, in the yellow one and red two, the constitutendness of case C declined in opposition to case D; otherwise, it was unchanged from the other streets. However, it was the third highest after A and B, whilst case study D was last among the cases (Figure 9.52). The constitutedness and permeability represent the micro level of the street edge in terms of how the adjacent plots'-buildings constitute the frontage of the street and in turn how that could affect both the street life and people's responses to the street. Along with the constitutedness and permeability values, the centrality value of the selected street is a significant factor that plays a crucial role in governing the different patterns of movement.

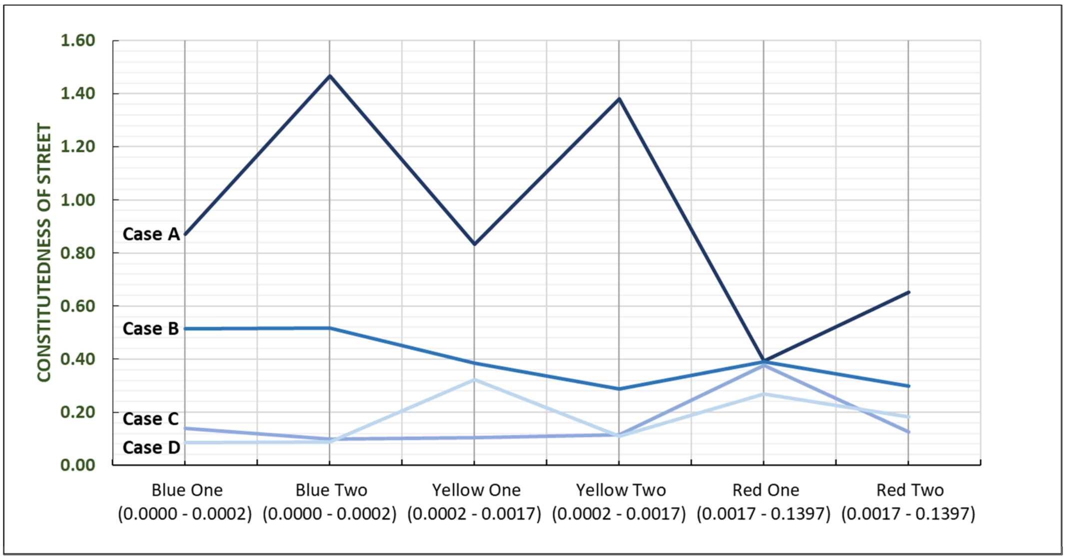


Figure 9.52. The comparison chart of the constitutedness value among the four cases A | organic pattern, B | hybrid pattern, C | paralleled pattern, and D | loop-grid pattern. It shows a significant differentiation across these selected cases.

9.8 Conclusion

This chapter has addressed the seven aspects of the quantitative analysis including the urban form and the street network. The primary aim of the chapter was to outline the most relevant results in terms of their comparative importance across both comparative levels: firstly, for every single sample individually, and then secondly, across the four case studies. An understanding of the most significant differences and disparities amongst the four samples was needed to determine their points of convergence and spacing. An appreciation of the hierarchy in reading the urban components and their constitutedness helps to understand the importance of the association between multiple levels; these ranged from the micro level to the neighbourhood scale. From the global scale through to the micro level, the Multiple Centrality

Assessment (MCA) played a crucial role in evaluating the street value regarding its relationship and its relative position to the other components (links and nodes) within the entire network.

The comparison manifests a significant disparity between the four samples regarding the plot analysis. The difference of plot was apparent between the historical area (sample A) that was based on the spontaneous order and the modern model, which follow a pre-planned system. The plot’s characteristics that have been addressed in this study, regarding perimeter and size, play a critical role in formulating the block pattern. In this regard, the block was subjected to seven parameters (perimeter, size, dimension, density, ratio, mean area, and block to street ratio). The central transformation in the urban structure from the traditional pattern to the new urban configuration affected all seven block parameters. Consequently, a plot can be acknowledged as the miniature generative unit in the urban structure. The way that the plots take their place in a specific order shapes the urban block, regardless of whether a spontaneous or planned order and organic or geometrical pattern.

Land use can be seen as a key ‘operator’ in promoting and increasing the density and diversity of a city pattern. It is an indicator that affects the urban environment, expressly social interactions, human activities, and the uniform use of public space. Furthermore, the mini-functional use of the plot along the street edge is another central factor that not only maximises the density and diversity of use but also attracts people and determines their different responses to the street edge. Case study A–organic pattern yielded a high response to the fine-functional use, and partially in sample B. This phenomenon is quite confined in the two samples, C and D, even in the commercial streets, such as Red one in the case study C, and Red one and two in neighbourhood D (loop-grid pattern).

At the micro level, the constitutedness, including the intervisibility and permeability, have first been examined according to the plot’s characteristics, and secondly from the constitutedness of the street and its permeability. The centrality value is the primary criterion employed to determine the six streets in order to examine their constitutedness. Mostly, a low centrality value is related to the constitutedness and permeability, while the highest betweenness refers to the most moderate amount of constitutedness and permeability. This relationship is evident in cases A and B, but fluctuates in cases C and D.

Chapter Ten

Relating Human Activities and Urban Form

10.1 Introduction

This chapter is a continuation of the research findings and reflective analysis. It is designed to highlight street life and how people respond to street edge through the three opposite pairs of the activities: necessary versus optional, social versus individual, and staying versus moving. People who were observed in the chosen streets were divided into three main categories: kind, volume and group pattern. Five patterns of responses to the street edge were addressed, namely: movement, activity, gender, age, and grouping. The comparison includes the three centrality categories: low (betweenness: 0.0000 – 0.0002 - Blue), medium (betweenness: 0.0002 – 0017 - Yellow) and high (betweenness: 0.0017 – 1397 - Red). This chapter will address the individual comparisons within every single case and those amongst the four selected neighbourhoods. This comparison and significant correlation include five patterns, namely: movement, activity, gender, age and group pattern, which are related to the street centrality (Blue, Yellow and Red). The same technique will be implemented over the four samples: organic – A, hybrid – B, paralleled – C and loop-grid pattern – D.

The second part of this chapter makes a correlation among three variables; human movement, the urban form (Constitutedness and Permeability) and the centrality value (betweenness). The correlation is based on the street centrality, in accordance with the Multiple Centrality Assessment (MCA). Each category of betweenness (Blue, Yellow and Red) becomes the shared factor among the four tested urban areas in Baghdad. Under each class, there are four streets which represent four samples. The comparison helps to expose the differentiation in pedestrian flow in connection with the constitutedness and permeability of the street edge. Also, this part will include two levels of comparison and correlation; the first is related to the individual case study, and the second is concerned with the four selected urban areas.

10.2 Street Life | Street Centrality

10.2.1 Comparing the Individual Case Study

10.2.1.1 Organic Pattern | A

After examining human activity across the six streets in case study A: organic pattern, a comparison was conducted to note the level of similarity, disparity and differences observed. The result of the human activity analysis reveals the more significant relationships between the three different centralities of betweenness and the levels of interaction between people and the street edge. The high betweenness centrality (0.0017 – 0.1397) classified by Red one and two refers to the raised pedestrian flow during three different times of the day (morning, noon, and afternoon). Although red one street has the highest degree of centrality of the five selected streets, red two street also sees a considerable amount of pedestrians. The other betweenness centralities range from 0.0002 to 0.0017, and are categorised as Yellow one and two. These capture the second most significant amount of passersby. Yellow one street see the third, while the yellow two see the fourth most pedestrians among the six streets. The last category of betweenness centrality (0.0000 – 0.0002) refers to Blue one and two, which have the lowest level of centrality. The study proves that a low centrality reflects in less influx of pedestrians movement, such as is already examined by both blue one and two (Figure 10.1).

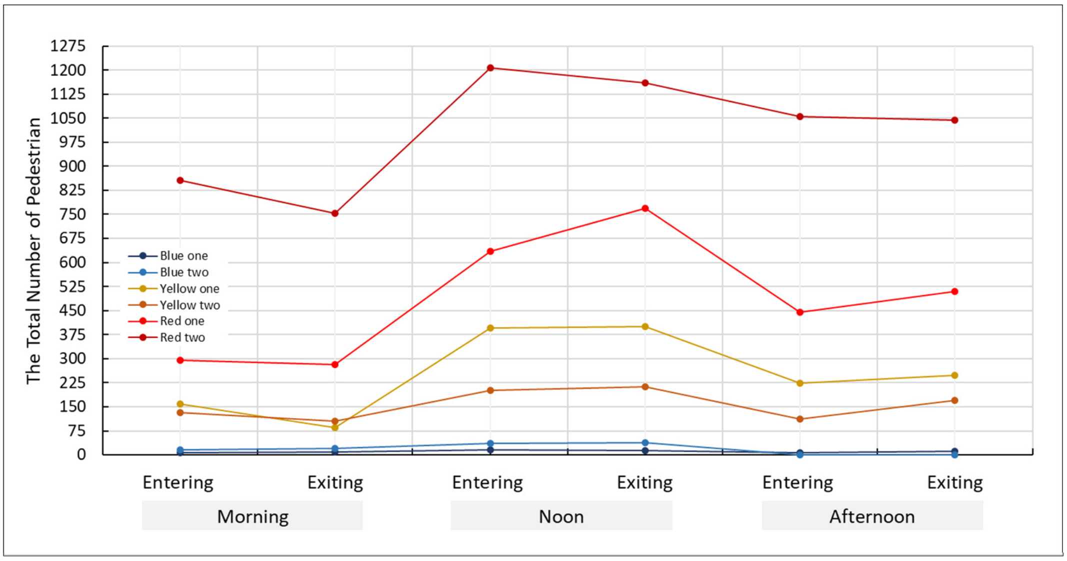


Figure 10.1. A diagram shows the most significant correlation between the value of betweenness centrality and the volume of pedestrian flow across the six selected streets that are classified according to MCA measure. Case study A: organic pattern.

Each pair of coloured streets (Blue, Yellow, and Red) are parallel, and are ranked according to their centrality value. For the yellow pair, the trendline is analogous except for exiting (morning); both lines represent the medium centrality value, and they cover the second most significant amount of people. In comparison, blue one and two see similar results in parallel with one intersection in the afternoon period (entering). Both blue lines signify the minimum value of the betweenness centrality and exhibit a marked association with the lowest amount of pedestrians (Figure 10.1). The activity pattern across the six streets illustrates that there is a significant correlation between the centrality and human activities that take place in these selected streets in case study A: organic pattern. The highest centrality grants the highest volume of pedestrians who use the streets and share the street's edges via different activities and events as long as the edges are available for them. From the six chosen segments, staying activities have the minimum amount of people, while the oppositional activities, namely moving to denote the prevailing character of these segments. In this respect, most people tend to walk through the street rather than stay for a while.

Social activities witnessed the lowest participation value, whether between people themselves or their interaction with the street edge. Across six selected streets samples, the opportunity to emerge of the social life is quite restrained. One of the leading reasons for this is the street edge and the nature of functions. In contrast, individual activities become the more significant character of those streets, where people individually undertake different tasks and actions, for instance, walking, shopping and sitting. As a result, necessary activities can be seen as the primary motive for those who used the six selected streets, where their choices are quite limited regarding the street edges. Reducing the street function to only homogeneous uses and purposes results in the minimisation of opportunities to undertake optional activities. Furthermore, this phenomenon, to a large extent, helps a particular user and even a specific age category of people to engage (Figure 10.2).

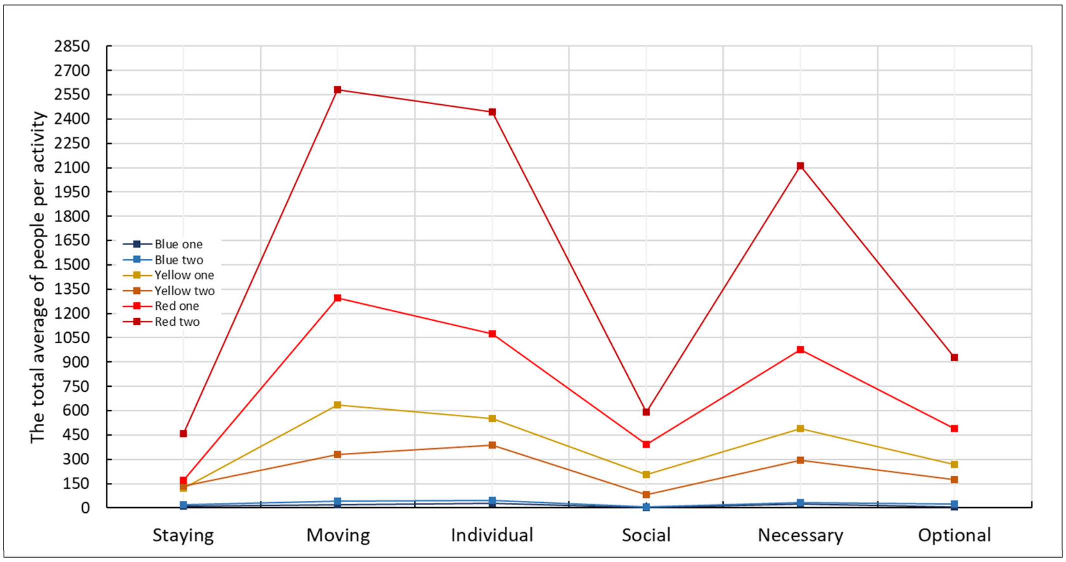


Figure 10.2. A diagram displays the weightiest correlation between the value of betweenness centrality and the activity pattern across the six selected streets that are classified according to the MCA measure. Case study A: organic pattern.

The gender pattern refers to the high quantity of males, as opposed to the females, in the six examined streets. Regardless of the number of men per selected street, they are more dominant in number for every single street (Figure 10.3). The male character of a street is identified via direct observation and camera recordings. This phenomenon, however, reflects the character of the edge and that it can shape street life regarding gender.

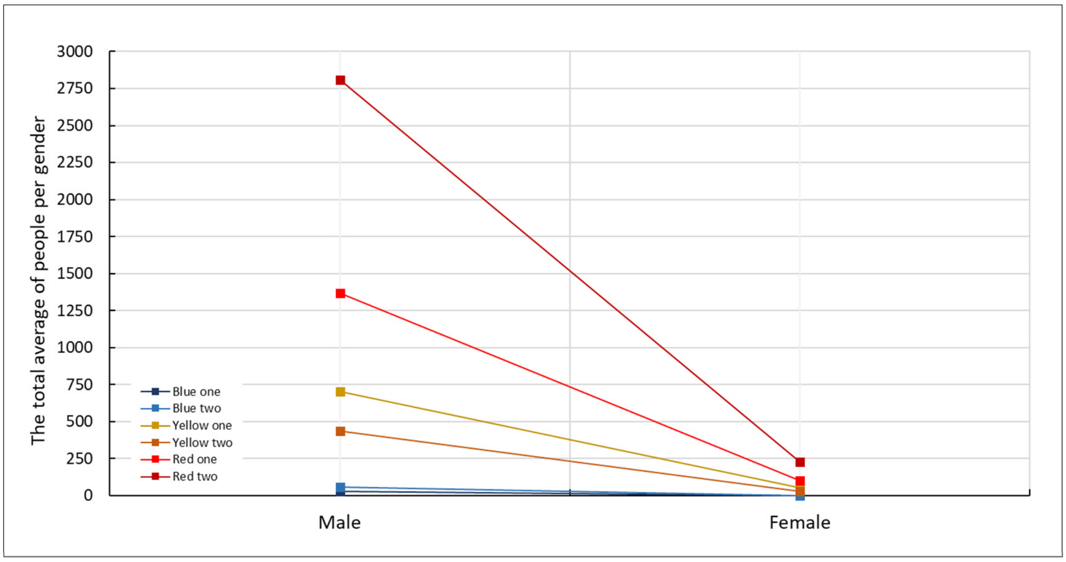


Figure 10.3. The gender pattern across the six selected streets that are classified according to the MCA measure. Case study A: organic pattern.

Furthermore, the age pattern exhibits more focus on males, whether teenager-young or adult-elder people (Figure 10.4). The street's edge determines the level of presence associated with one or two age categories. Plus, an individuals' mental map is entirely related to the type of function in a street where he or she wants to go.

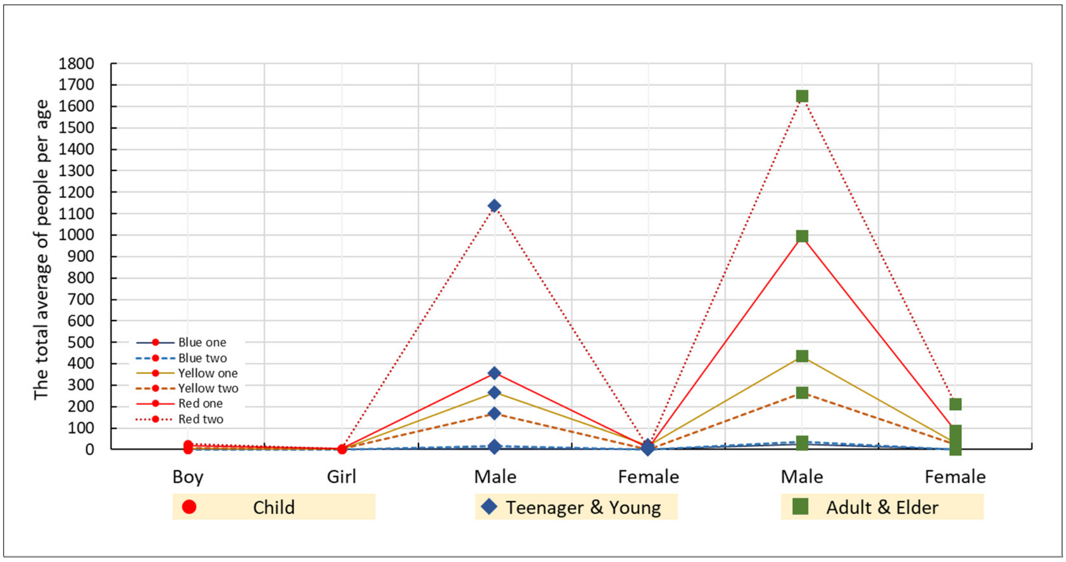


Figure 10.4. The age pattern across the six selected streets that are classified according to the MCA measure. Case study A: organic pattern.

The group pattern could be a new indicator tested in the six chosen segments both in this case and the other samples (Figures 10.5 and 10.6). The likelihood that people are clustered within specific groups relates to the extent to which the street edge allows them to rearrange themselves in a group. The diversity of group patterns in the street add more vigour to street life and could help to reshape other groups. Across the six streets in case study A, the 2P-based group can be recognised as a preferable group for those who use the street. Regarding the other groups: 3P is the second most common cluster. Also, 4P, 5P are present in some streets (Figure 10.6).

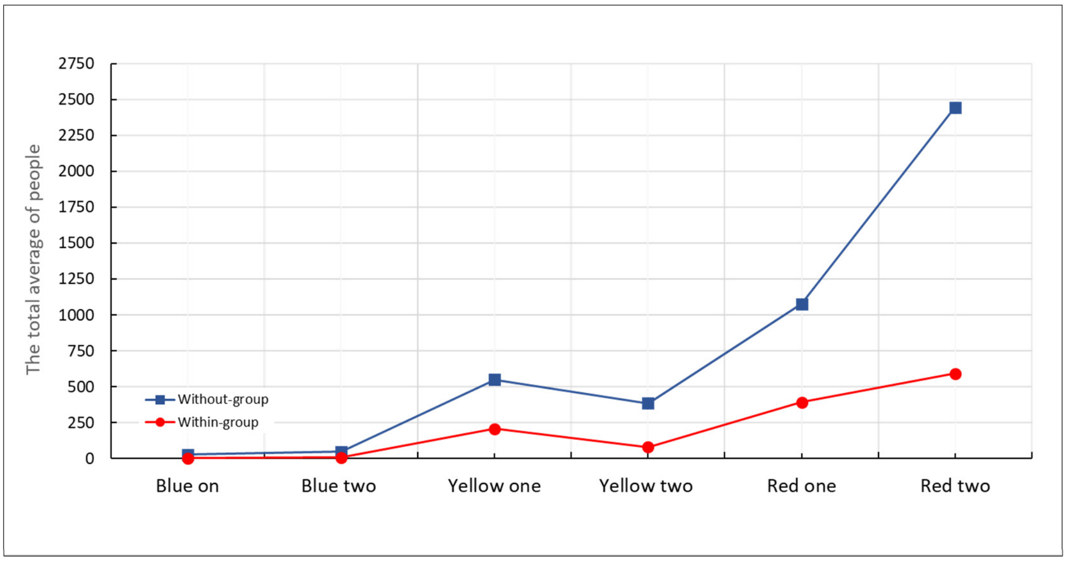


Figure 10.5. The total average of people who join the group, unlike others who come individually across the six selected streets. These are named according to the MCA measure. Case study A: organic pattern.

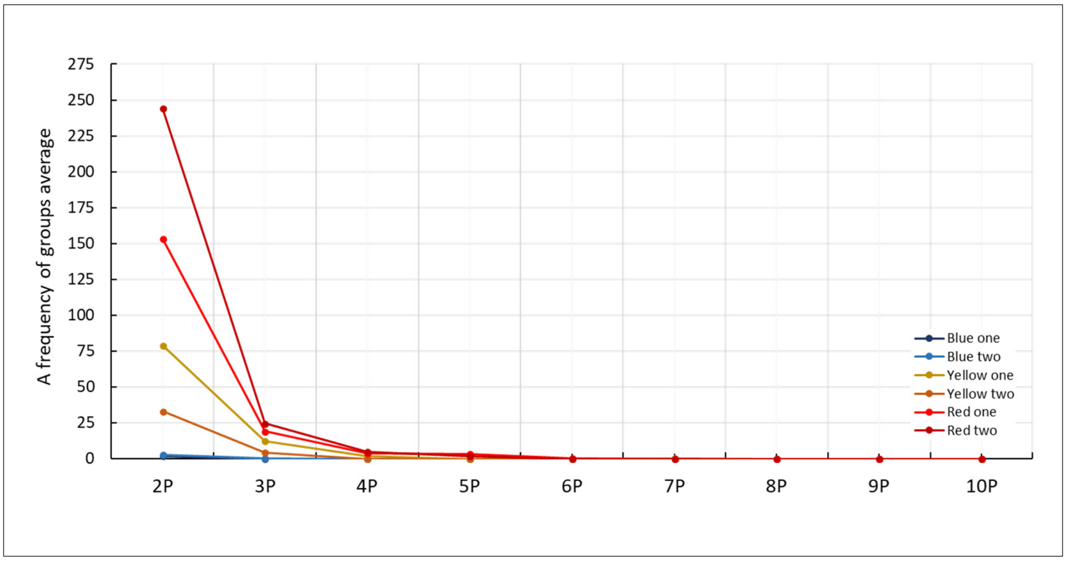


Figure 10.6. The group pattern across the six selected streets that are classified according to the MCA measure. Case study A: organic pattern.

10.2.1.2 Hybrid Pattern | B

A comparison of the six streets in case study B (hybrid pattern) reveals the variances between the selected streets. The comparison includes the association between the centrality of each single street and the pedestrian flow. Generally, the selected samples of the streets show a considerable association between their own centrality and the volume of pedestrians. For yellow (one and two), the trendline of people's movement seems to move in parallel, and their values during three periods of observation are close. The different values between yellow one and two can be distinguished in the afternoon period. The principal fluctuation occurs between two pairs of streets: blue and yellow, and between the blue streets themselves (Figure 10.7).

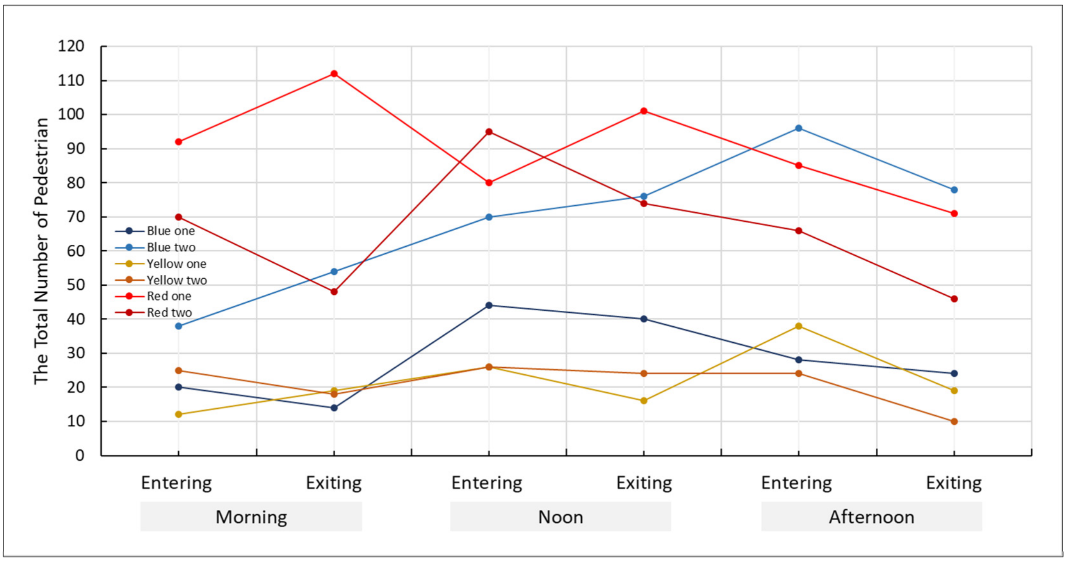


Figure 10.7. A diagram displays the most significant correlation between the value of betweenness centrality and the volume of pedestrian flow across the six selected streets that are named according to the MCA measure. Case study B: hybrid pattern.

The blue class exhibits more significant variances, whether between blue one and two or between the blue samples and the other classes (yellow and red). Although blue one has a lower centrality than the yellow samples, people's movements oscillated and were relatively close to both yellow streets. The foremost concern is for blue two street (traditional street), where the volume of people was similar to both red street one and two (modern streets), despite its centrality representing a minimum value. The highest centrality value is noted for red streets one and two; both streets recorded the greatest volume of people movement. Individually, red one street is ranked as the most numerous, which is then followed by the red two street. Their own trendlines tend to move in parallel, excluding those entering at noon (Figure 10.7).

The activity pattern across the six-selected streets in sample B concentrates more toward three activities: moving, individual, and necessary. These activities shape people's behaviour and how they deal with a specific street. During the observation, it was people often undertook additional activities other than that specified in this research. In terms of the other activities: staying, social, and optional recorded lower numbers of people compared with their opposites (Figure 10.8).

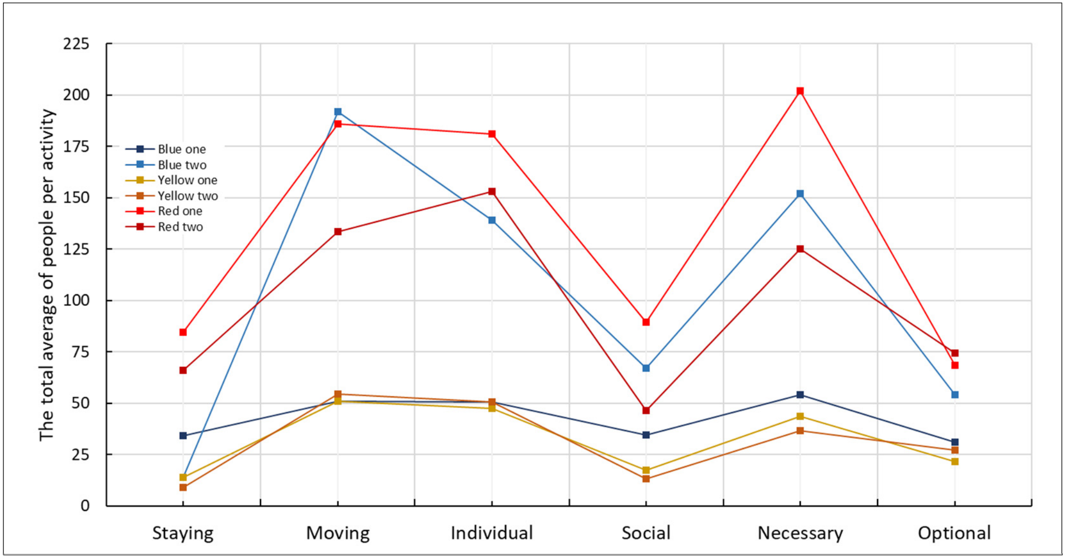


Figure 10.8. A diagram illustrates the weightiest correlation between the value of betweenness centrality and the activity pattern across the six selected streets that are classified according to the MCA measure. Case study B: hybrid pattern.

Regardless of their centrality and numbers of people recorded, the gender pattern in the six chosen segments see a greater number of males. The ability of the street to engender a high variety of opportunities for different people is the principal object in designing a street, and particularly for main streets that offer multiple uses and services. Nevertheless, the streets that are classified as the main routes have different purposes and functions; they demonstrate a minimal consideration for the gender pattern (Figure 10.9).

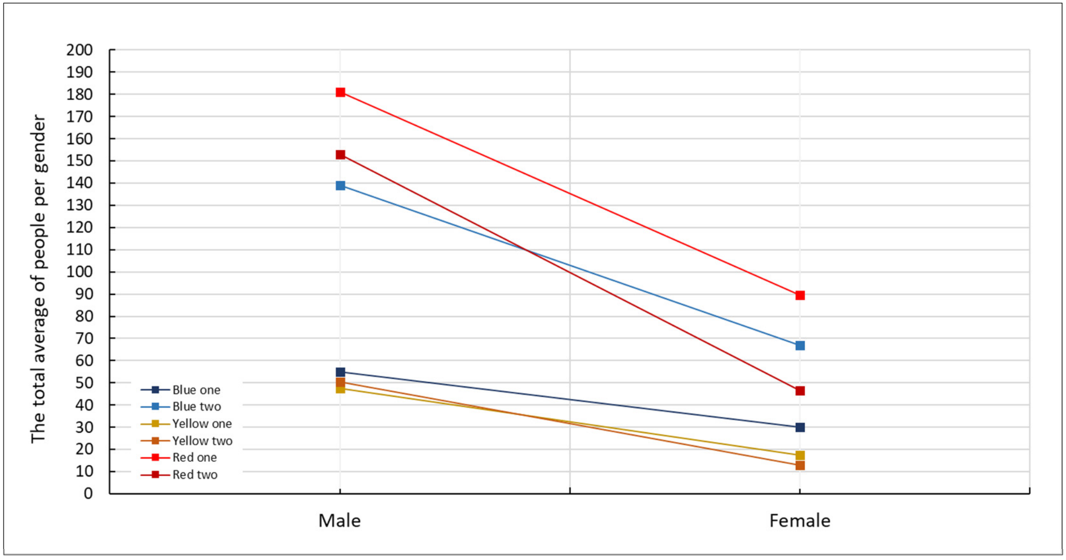


Figure 10.9. The gender pattern across the six selected streets are classified according to the MCA measure. Case study B: hybrid pattern.

The age pattern mainly responds to the volume of pedestrians and people who are perceived in each chosen street in case study B. In addition, the centrality value is the primary criterion employed to classify these streets. The age pattern in sample B differs from case study A. The child class is significant represented two streets (blue one and two), with a lower centrality value for both. These two streets belong to the traditional neighbourhoods in sample B (Figure 10.10). The dominant value of teenagers and young males is seen on red street (one and two), and then on blue street (one and two), while both yellow streets saw the fewest individuals in this age category. The same sequence occurs for a female with the lowest value compared with males. Concerning the adult-elder people, more individuals were recorded in both red streets and blue two. The last three streets: yellow (one and two) and blue one have the fewest adult-elder people, whether men or women; however, males are still higher in number than females in this category (Figure 10.10). Blue two street, with its minimum centrality, is situated in the oldest part, where its pedestrian volume is closer to that of red street that represents the maximum centrality. Red one street is in the more modern part of sample B.

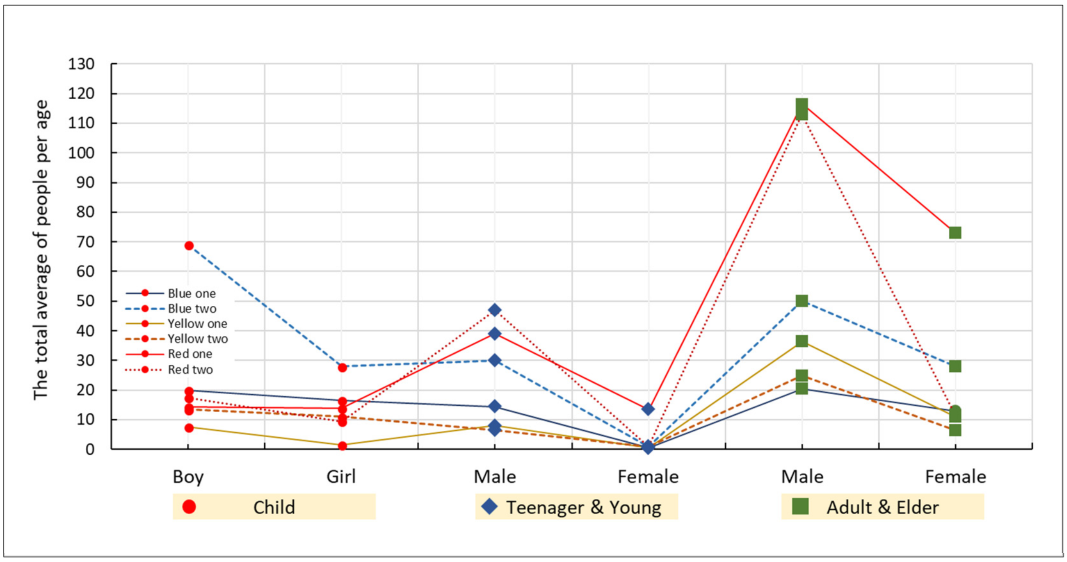


Figure 10.10. The age pattern across the six selected streets that are classified according to the MCA measure. Case study B: hybrid pattern.

The group pattern shows that people who tend to use the street individually form the greatest pedestrian influx across the six selected streets in case study B. Therefore, the size of groups was quite limited when observed in the streets. This phenomenon occurs regardless of the street's function or centrality (Figure 10.11). The person-based group falls between a 2P-based group and a 6P-based group in sample B. Of the groups observed across the street samples for case B; all six segments have the highest number of 2P-based groups. The second largest quantity is the 3P-based group, and lessens when it comes to the other sizes, such as 4P, 5P, and 6P-based group, and so on (Figure 10.12).

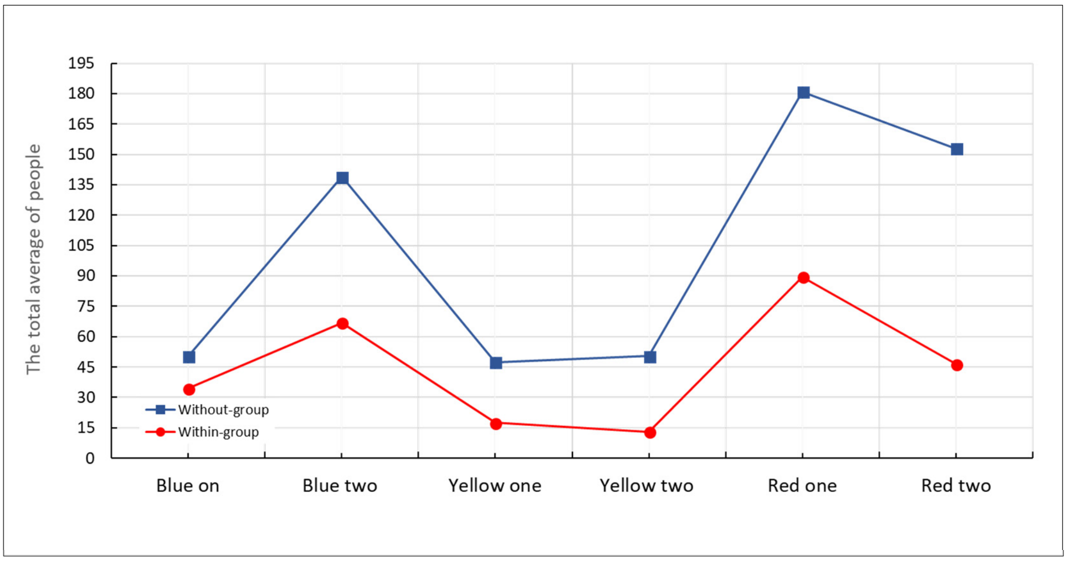


Figure 10.11. The total average of people who join the group, unlike others who come individually across the six selected streets. Case study B: hybrid pattern.

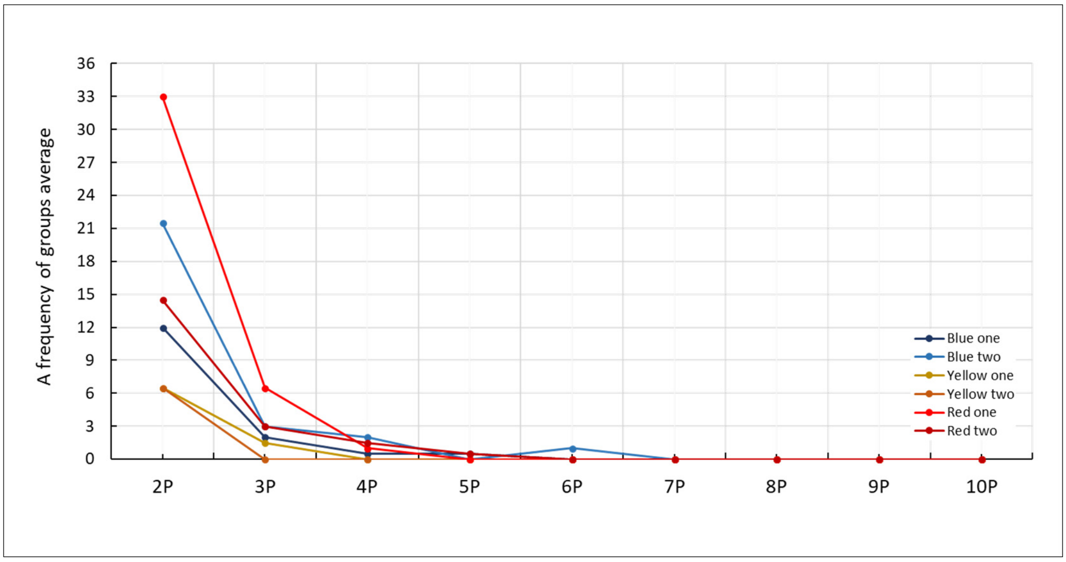


Figure 10.12. The group pattern across the six selected streets that are classified according to the MCA measure. Case study B: hybrid pattern.

10.2.1.3 Paralleled Pattern | C

In conducting a comparison amongst the six chosen streets in sample C it could be possible to capture the level of difference between the streets within a particular area, and across different areas (and configurational patterns) within the city. Furthermore, the movement pattern during three different periods of time becomes more illuminating when the results from different samples are compared, as more definitive patterns can emerge. Although the centrality values of the streets are varied, each pair shares the same value (blue, yellow, and red), and the movement of people generally seem very close, with the exception of red one and yellow two at noon. The disparity amongst the total number of pedestrians recorded across these streets potentially indicates the degree of homogeneity in this neighbourhood (Figure 10.13). More substantial movement-through can be recognised in red one; however, this street is considered the only main street in this area and differs from the others by involving limited commercial uses alongside residential spaces. This is different from the other street samples, which are solely employed for residential purposes.

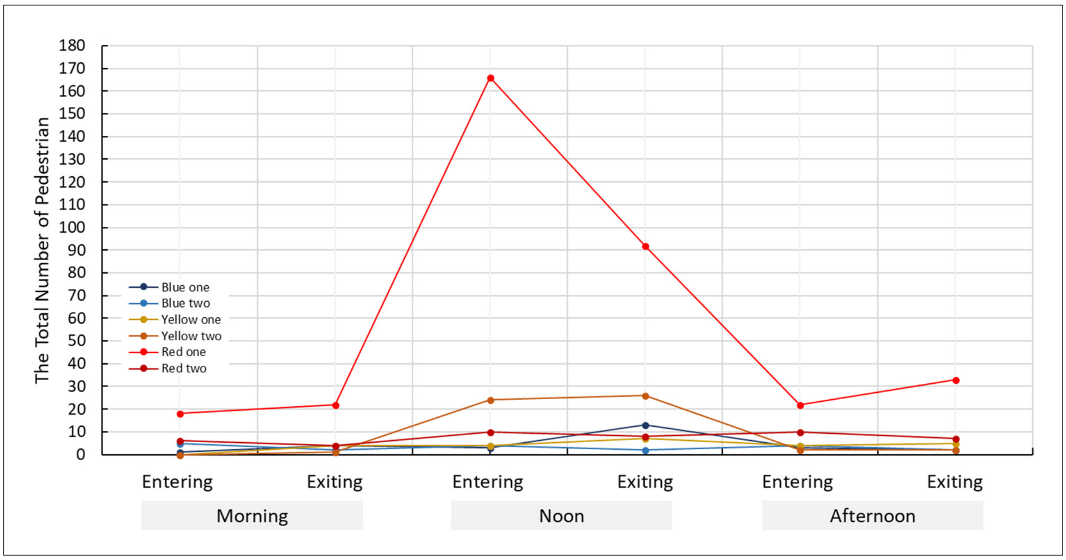


Figure 10.13. A diagram displays the most significant correlation between the value of betweenness centrality and the volume of pedestrian flow across the six selected streets that are defined according to the MCA measure. Case study C: paralleled pattern.

The activity pattern refers to the more moderate results for the level of interaction between people and the street. The street edge, however, is constituted by intermediate spaces between the public and private spaces via considerable metric depth. To some extent, this reduces the volume of interaction between the two realms. Moreover, the intermediate space pulls activity into the semi-private space that stands apart from the street. Therefore, a great level of activities occurs throughout red one street whilst very few were observed in both red two and yellow two (Figure 10.14).

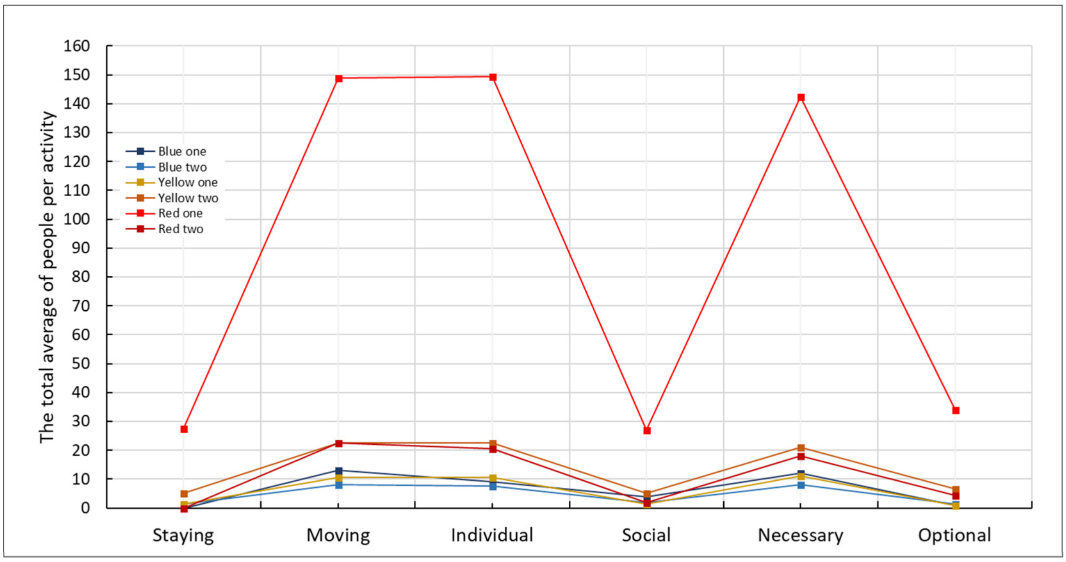


Figure 10.14. A diagram illustrates the weightiest correlation between the value of betweenness centrality and the activity pattern across the six selected streets that are classified according to the MCA measure. Case study C: paralleled pattern.

In considering the kind of activity, three patterns - moving, individual, and necessary - primarily formulate people's behaviour while present on the street. The remaining activities - staying, social, and optional – were observed far less. This could be due to the uses of the street edge where, even within red one street (which is the main street), the edge is still raw and potentially struggles to capture people. The gender pattern throughout most examined streets shows that more males are present than female, with the exception of yellow two and blue two (Figure 10.15). This result reflects the results for the other streets in samples A and B. It might be argued that there is no filter for people's movement to distinguish between male and female. The fact is that the street via its edge's function, and the degree of interlock between private and public spaces helps to form the volume of people besides their gender. This critical point also applies to the level of variety for age. The number of people moving through the sampled streets is fewer than those observed within both A and B.

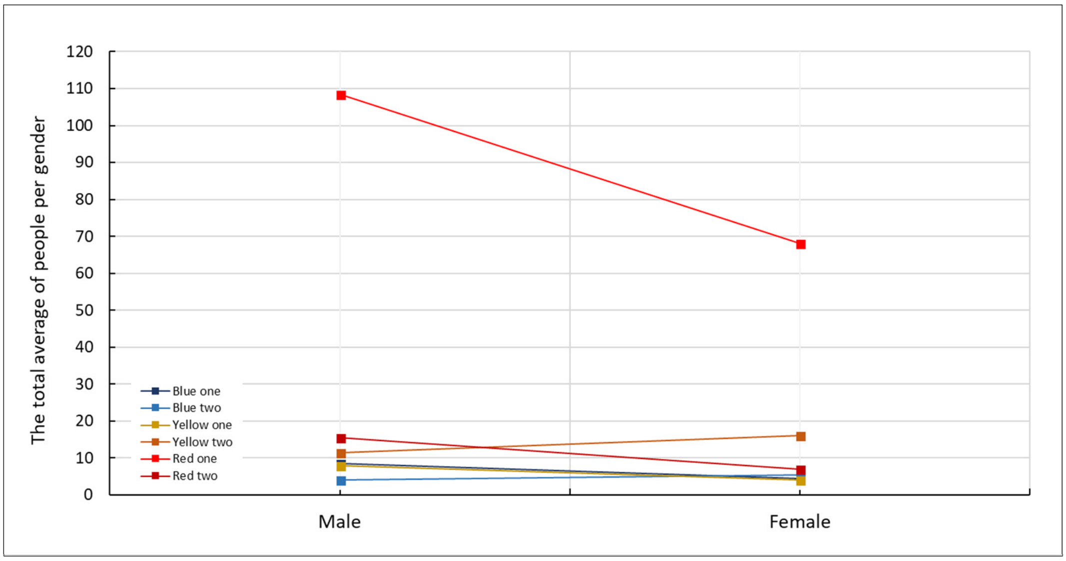


Figure 10.15. The gender pattern across the six selected streets that are identified according to MCA test. Case study C | paralleled pattern.

The age pattern in case C shows more a significant presence amongst the child category within the red one and yellow two streets. Smaller numbers of people across both other age categories were observed in this case (Figure 10.16). Hence, the main street in this neighbourhood functions as a place to assemble for people from other surrounding streets. When a neighbourhood is coloured by a homogeneous function, there might be fewer opportunities for people to use a street, or they may try to create a place for them to conduct their activities to meet their needs. This was observed in sample C. Moreover, amongst houses adjoining the main street (red one), their owners are still working to change the type of use from residential to commercial or mixed. This potentially meets the prerequisite needs of people in this neighbourhood. The proportion of people who walk or sit in a group, particularly in the main street (red one), is rare (Figure 10.17). Nevertheless, throughout all streets, the 2P-based group is dominant although the 3P-based group manifested on some streets (yellow one and red one) (Figure 10.18).

In case study C, street life shows low participation, whether between individuals and the street edge or between the people themselves. The main concern about the street is that it not only enables a carrier channel for people and different types of motorised-based movement, but also provides a place to bring both people and activities together to interact and promote street life. Considering the street edge at the micro level through a diversity of uses could help to increase opportunities for, and promote the presence of, people in the street.

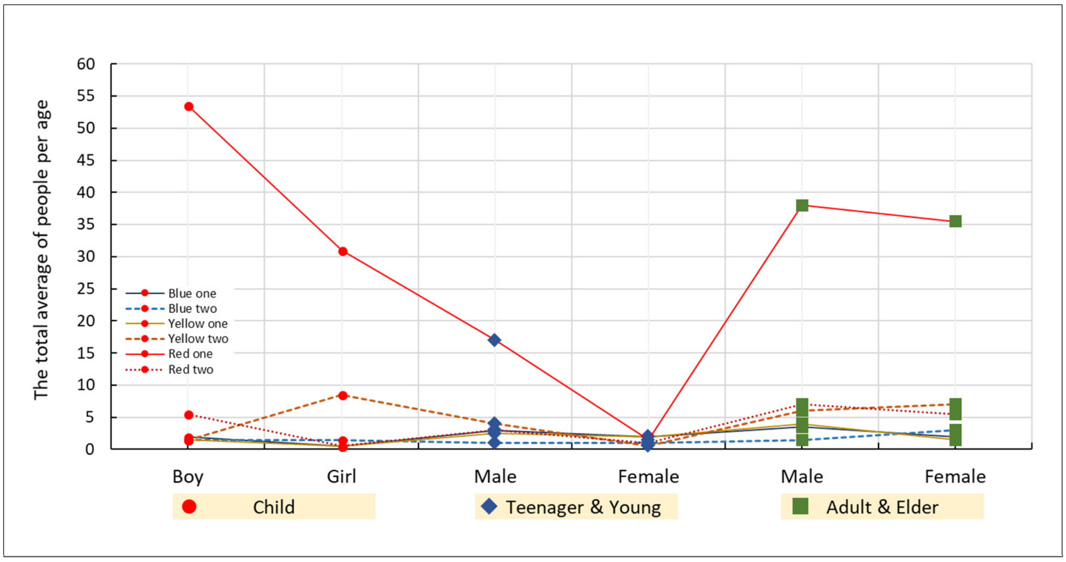


Figure 10.16. The age pattern across the six selected streets that are classified according to the MCA measure. Case study C: paralleled pattern.

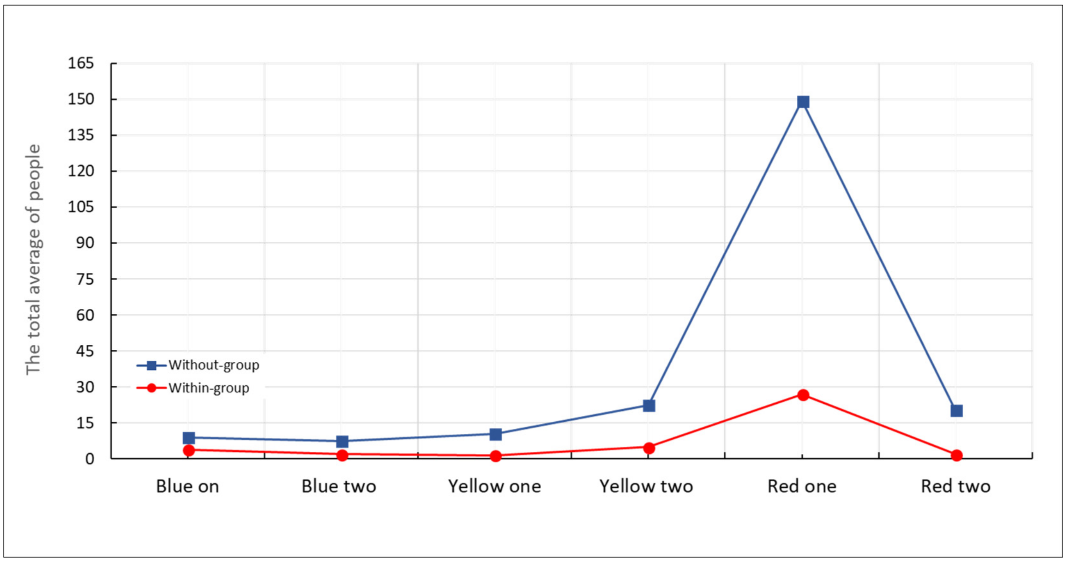


Figure 10.17. The total average of people who were observed in a group, unlike others who visited individually across the six selected streets, which are defined according to the MCA measure. Case study C: paralleled pattern.

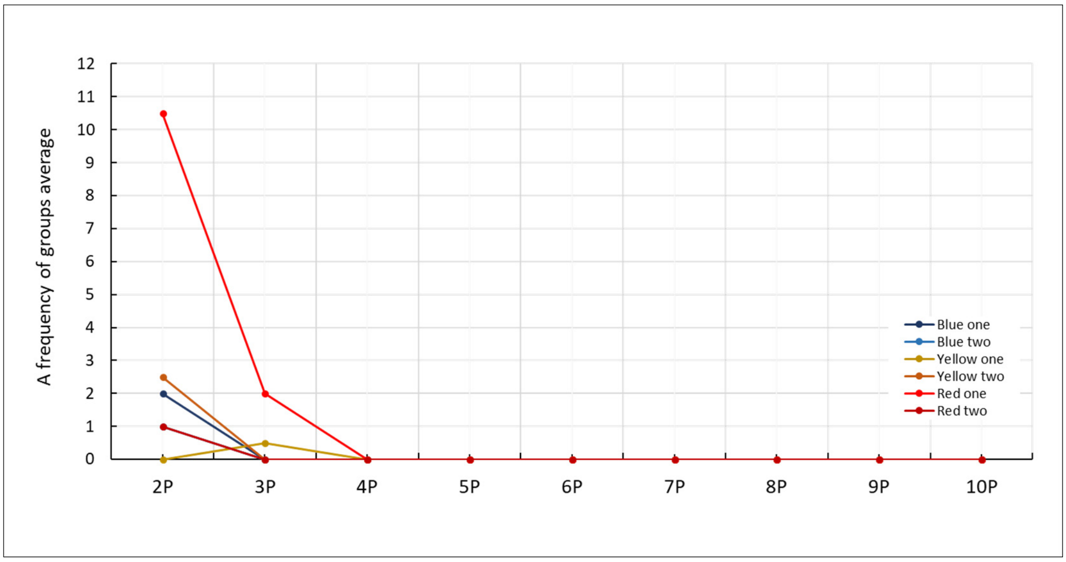


Figure 10.18. The group pattern across the six selected streets that are classified according to the MCA measure. Case study C: paralleled pattern.

10.2.1.4 Loop-grid Pattern | D

In case study D (loop-grid), six streets were tested via five fundamental patterns. These patterns play a significant role in formulating human behaviour. The selected streets are weighted after applying the MCA measure and then classified to shape three main categories according to the centrality value: low (blue), medium (yellow), and high (red). The high centrality routes are represented by red one and two, and they cover a high volume of pedestrians; meanwhile, the medium and low centralities reflect the fewest people using the street. The numbers and for both blue and yellow classes are generally close, with the exception of yellow one street during the midday period. The difference in the numbers for the red streets and both pairs of yellow and blue are evident (Figure 10.19).

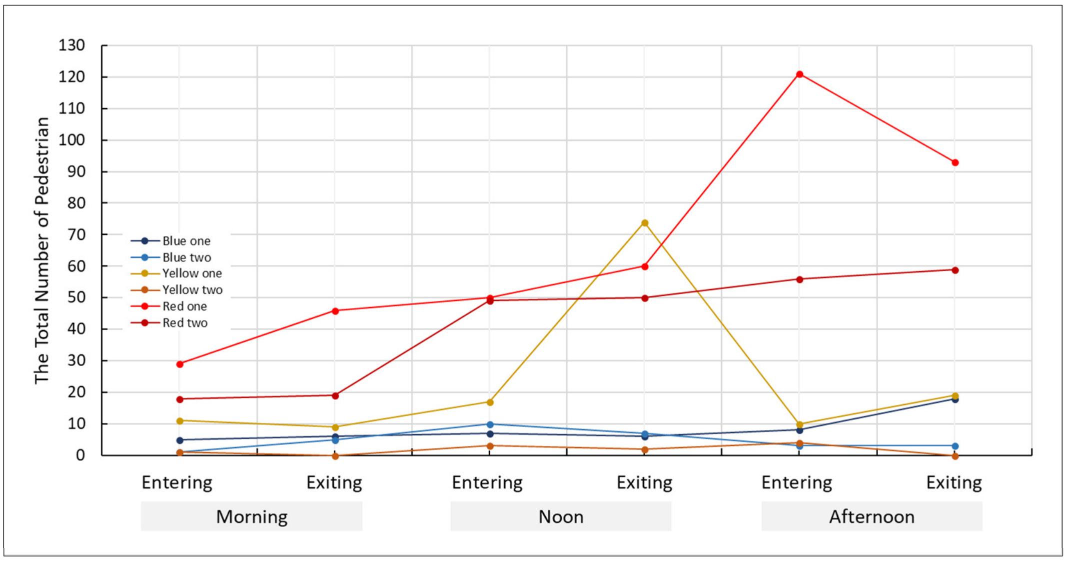


Figure 10.19. A diagram displays the most significant correlation between the betweenness centrality value and the volume of pedestrian flow across the six selected streets that are defined according to the MCA measure. Case study D: loop-grid pattern.

The activity pattern across the six streets denote that three activities, staying, social, and optional, engage fewer people. These activities never developed sufficiently to attract more people from those who use the street, whether in sample D or the previous cases. Concerning the three opposite activities: moving, individual, and necessary, people are likely to perform them widely (Figure 10.20).

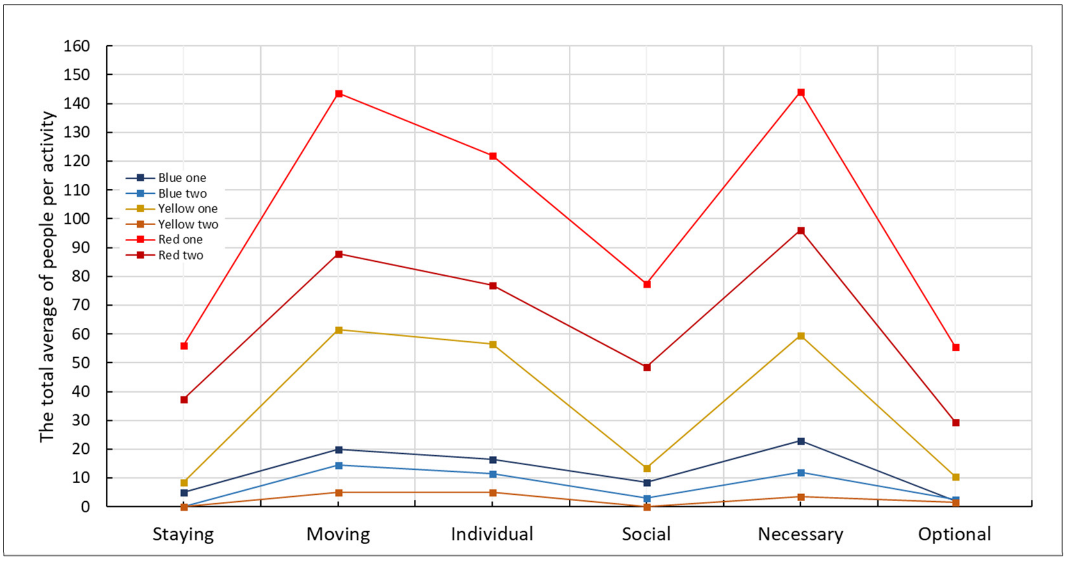


Figure 10.20. A diagram illustrates the weightiest correlation between the value of the betweenness centrality and the activity pattern across the six selected streets that are classified according to the MCA measure. Case study D: loop-grid pattern.

Nevertheless, the centrality emerges as a critical dimension to manage the street and the ways in which to improve a specific street. The low centrality could be addressed by improving the street edge, which could, in turn, reduce the disparity between different streets. Furthermore, the centrality is a fundamental measure to provide an initial diagnosis about street life and its quality in a certain urban area. In this regard, the greatest centrality enables a significant opportunity to promote street life. Furthermore, the lowest centrality needs to create closer integration with other streets that have a high or medium centrality.

In terms of the higher number of males in comparison to females, the gender pattern, in this case, does not differ from the other cases (Figure 10.21). The minimal presence of women on the street might occur for different reasons; however, the street's edge could be one of the leading factors that control the level of participation of women in street life. The age pattern illustrates a low diversity throughout the six examined streets in sample D.

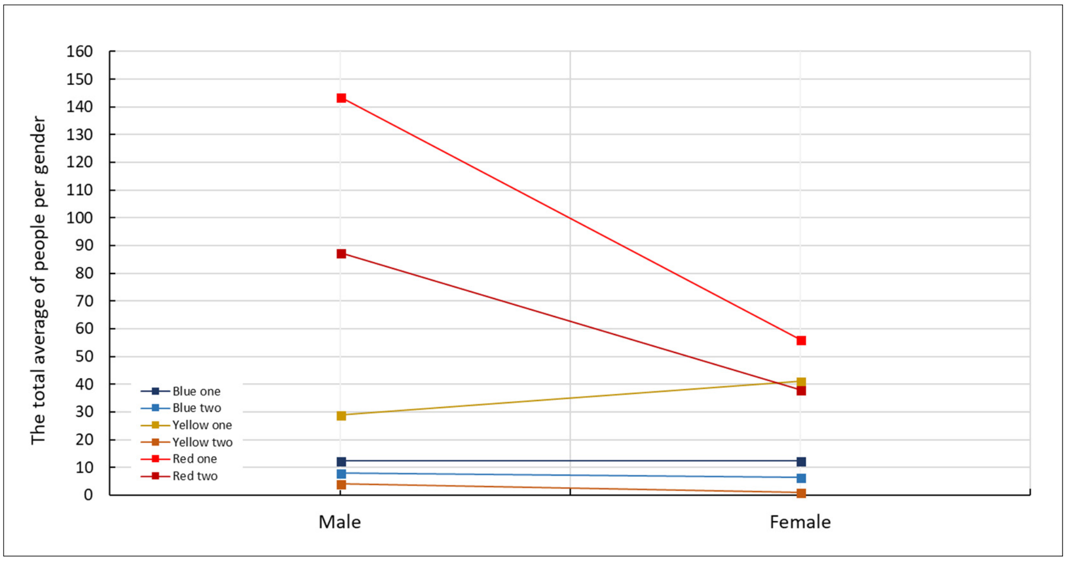


Figure 10.21. The gender pattern across the six selected streets that are classified according to MCA measure. Case study D | loop-grid pattern.

Nevertheless, there is a high number of male gender for both teenager-young and adult-elder men. The child category has the lowest quantity of both males and females across the streets (Figure 10.22). Encouraging the engagement of different aged people leads to an increase, not only in the street life itself, but also in an upsurge of the quality of the edges and the interactions between two different realms; private and public.

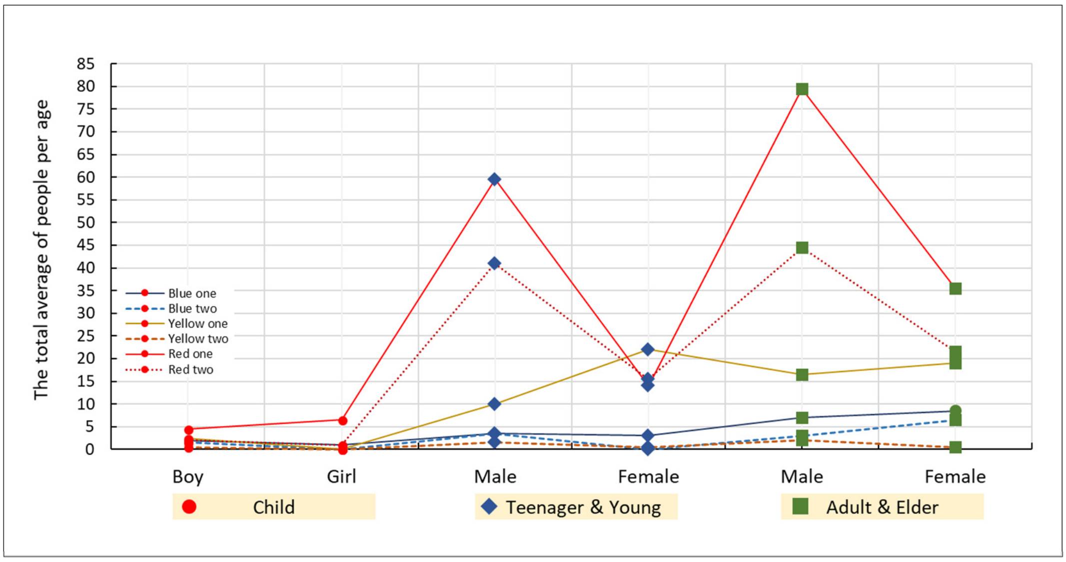


Figure 10.22. The age pattern across the six selected streets that are classified according to the MCA measure. Case study D: loop-grid pattern.

The presence of groups is limited, both in this sample and in the earlier cases. According to observation, people tend to undertake activities individually, which reduces the chance to engender various social interactions. The group pattern, in this context, is likely to be a significant factor in shaping street life and a key to invite other people to participate in street life (Figure 10.23).

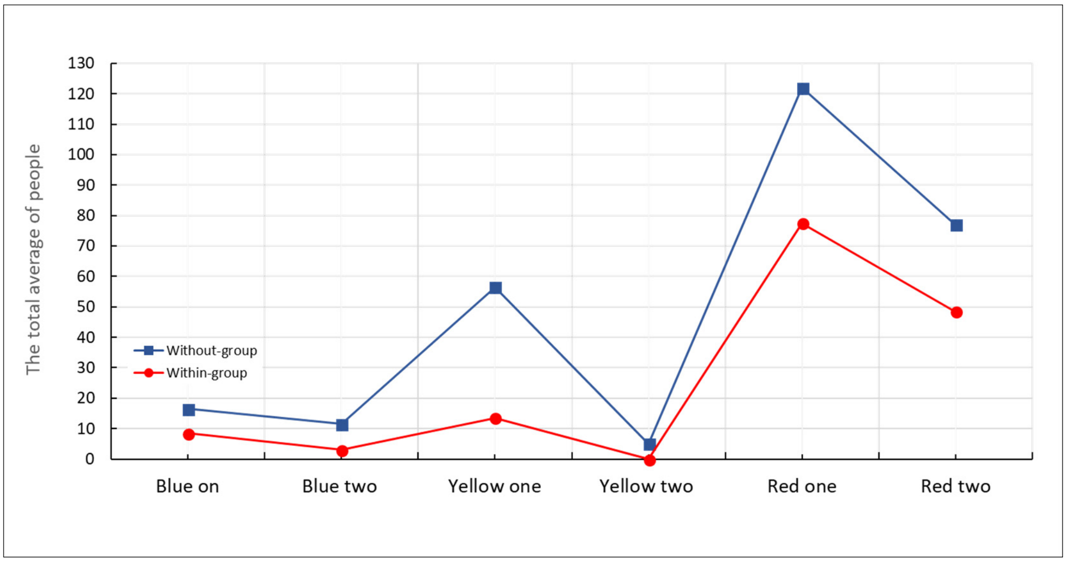


Figure 10.23. The total average of people joining the group, unlike others who come individually across the six selected streets that are named according to the MCA measure. Case study D: loop-grid pattern.

The data identified that the 2P-based group was the most common format across the six samples, whilst the 3P-based group was observed on red streets one and two, and yellow one street. Meanwhile, the 4P-based group was only identified in both red streets. In red one street, there were two larger groups; 4P and 5P-based group (Figure 10.24).

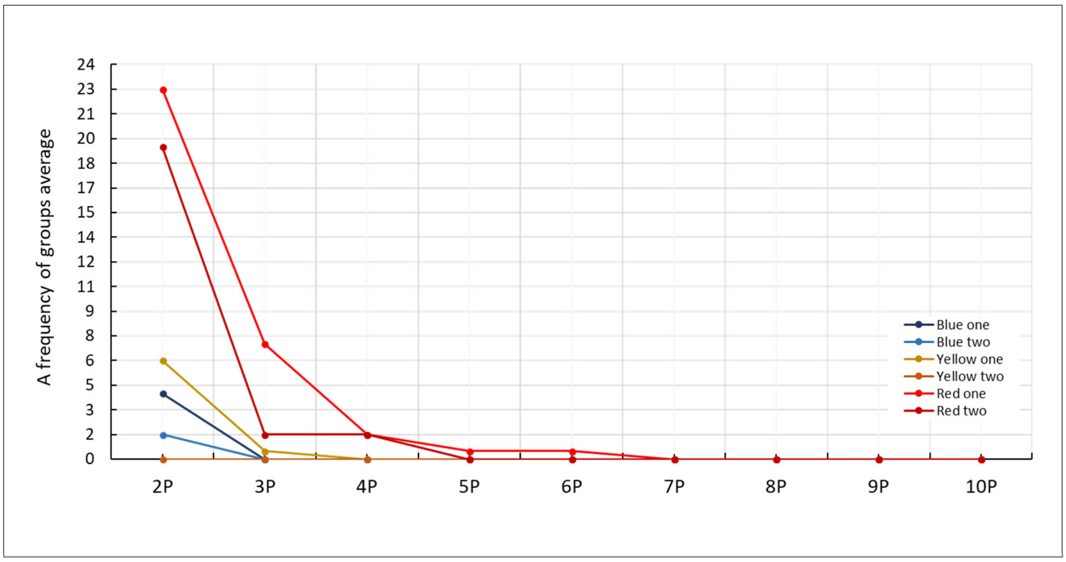


Figure 10.24. The group pattern across the six selected streets are classified according to the MCA measure. Case study D: loop-grid pattern.

10.2.2 Comparing Across the Four Case Studies

10.2.2.1 Movement Pattern

From the low centrality value (betweenness: 0.0000 – 0.0002, blue), case study B reveals a significant quantity of people used the street; case A saw the second highest quantity. Regarding cases C and D, the number of people observed in the selected streets declined to a minimal amount (Figure 10.25).

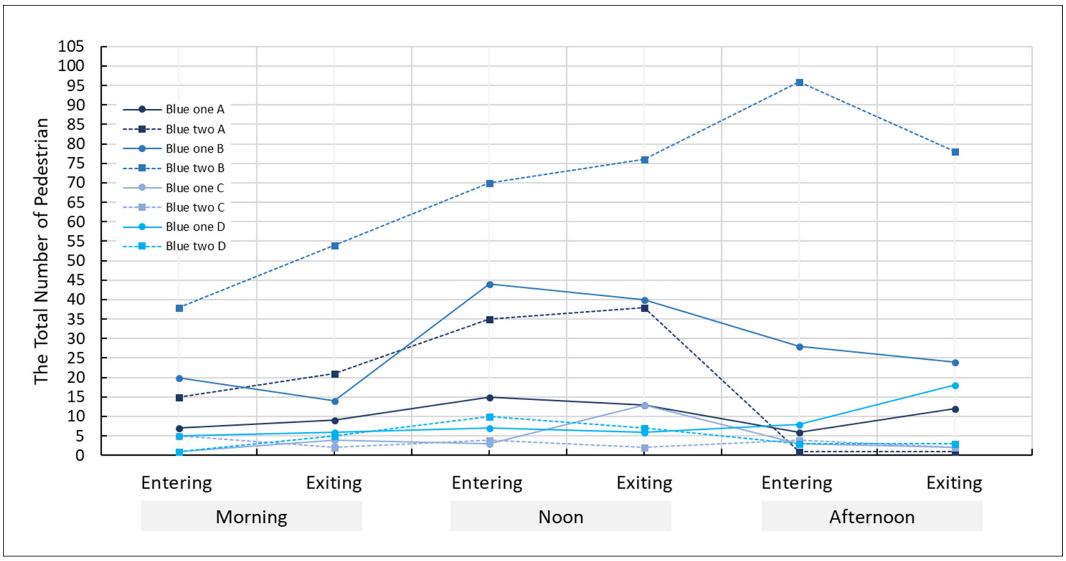


Figure 10.25. Movement pattern through the low centrality (betweenness: 0.0000 – 0.0002, blue) across the four cases A (organic), B (hybrid), C (paralleled), and D (loop-grid pattern).

The medium centrality value (betweenness: 0.0002 – 0017, yellow) shows that case study A is dominant regarding the number of people moving-in and moving-through the designated six streets. The remaining case studies tend to be close. A centrality value can be acknowledged as a fundamental factor in monitoring and analysing the difference and disparity in the movement pattern of people through the street (Figure 10.26).

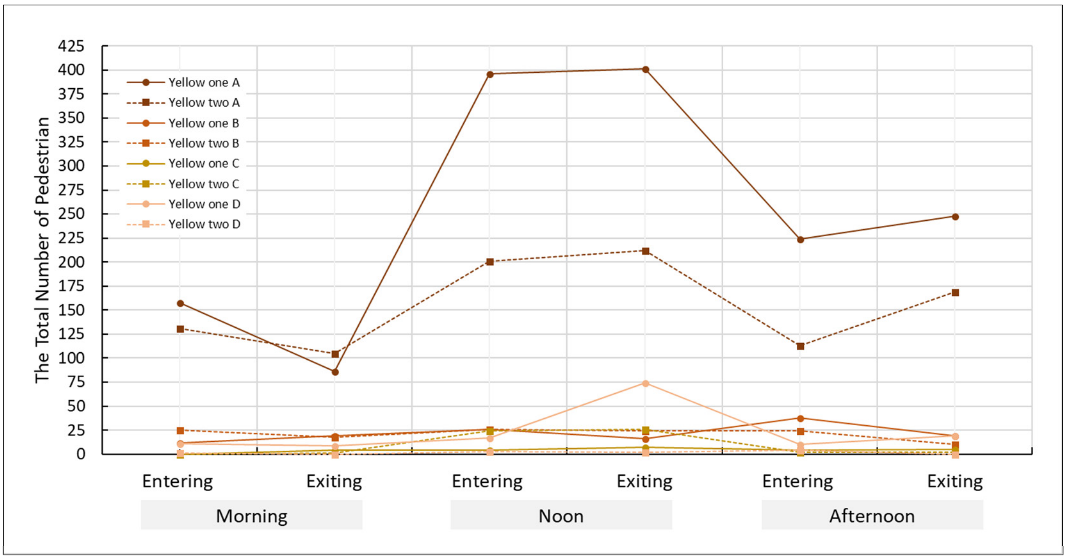


Figure 10.26. Movement pattern through the medium centrality (betweenness: 0.0002 – 0017, yellow) across the four cases A (organic), B (hybrid), C (paralleled), and D (loop-grid pattern).

For the high centrality (betweenness: 0.0017 – 1397, red), like the medium centrality value, sample A reached the highest quantity of persons compared with the other cases. The fluctuation of the pedestrian flow affected not only the volume of movement but also related aspects of street life. Hence, the centrality, which is based on the Multiple Centrality Assessment (MCA), reveals an association between the different values and the ability of the street to be experienced more and occupied by people (Figure 10.27).

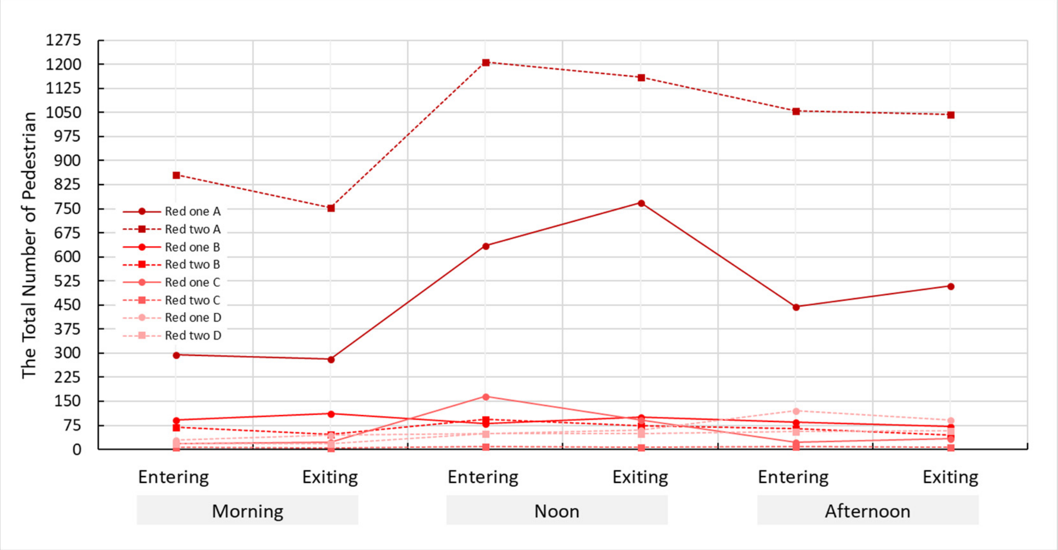


Figure 10.27. Movement pattern through the high centrality (betweenness: 0.0017 – 1397, red) across the four cases.

10.2.2.2 Activity Pattern

This pattern considers three opposite pairs of activities: (staying versus moving, individual versus social, and necessary versus optional). The blue centrality class across the four samples refers to the act of moving, which is more common than staying. Furthermore, social activities show a far weaker response than individual activities. Regarding the necessary activity, this pattern is the main motive for people’s movement through the examined street, while the optional activities are quite limited (Figure 10.28).

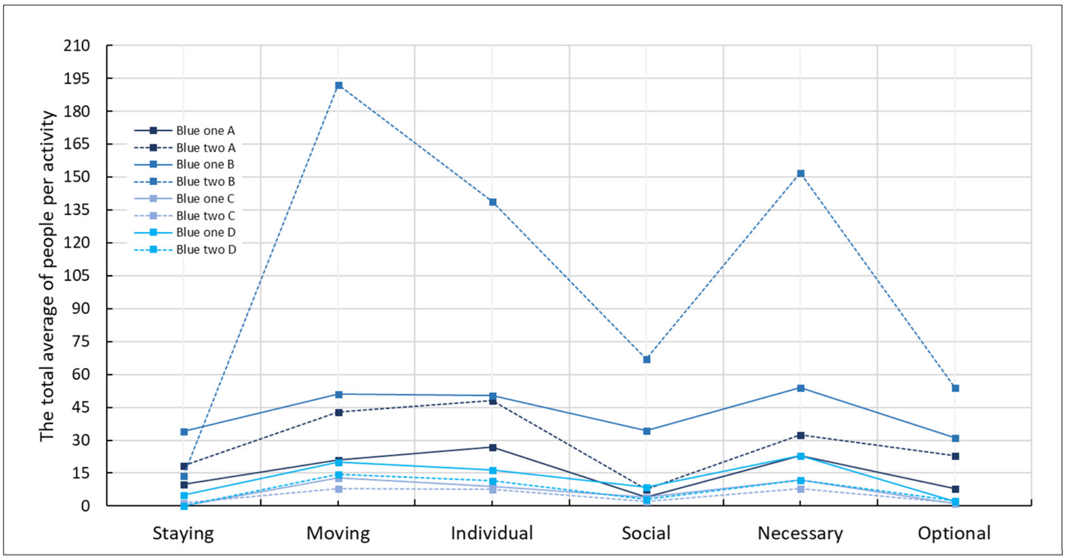


Figure 10.28. Activity pattern through the low centrality (betweenness: 0.0000 – 0.0002, blue) across the four cases.

The concentration on the three dominant activities (moving, individual, and necessary) as opposed to their less common pairs suggests not only a low centrality but also involves the medium and high centralities (Figure 10.29 and 10.30). The less common activities (staying, social, and optional) appear as such across the four samples regardless of the centrality value of the street. This suggests a shortage of opportunities offered by the street edge.

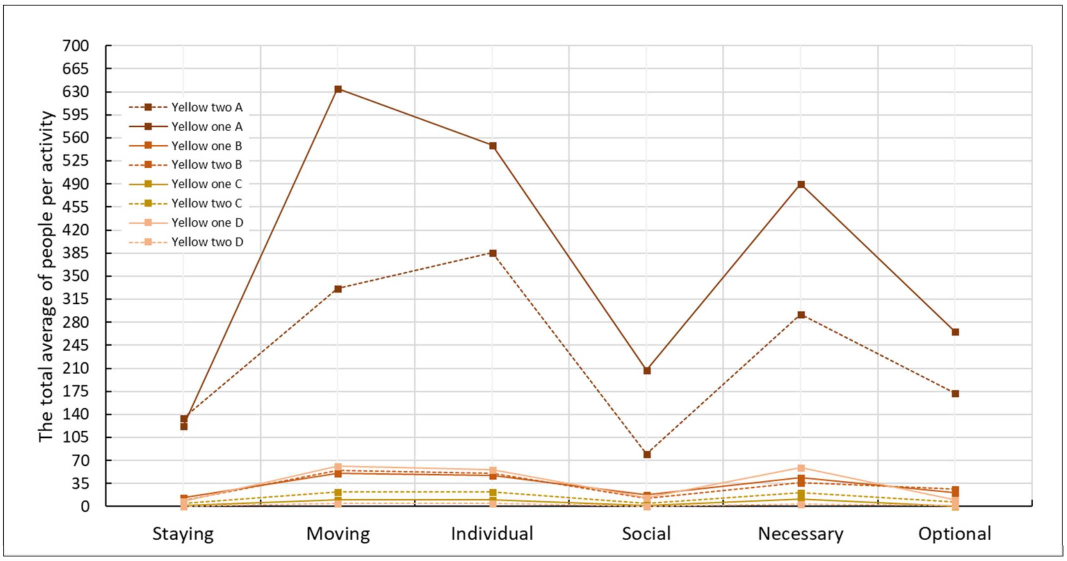


Figure 10.29. Activity pattern through the medium centrality (betweenness: 0.0002 – 0017, yellow) across the four cases.

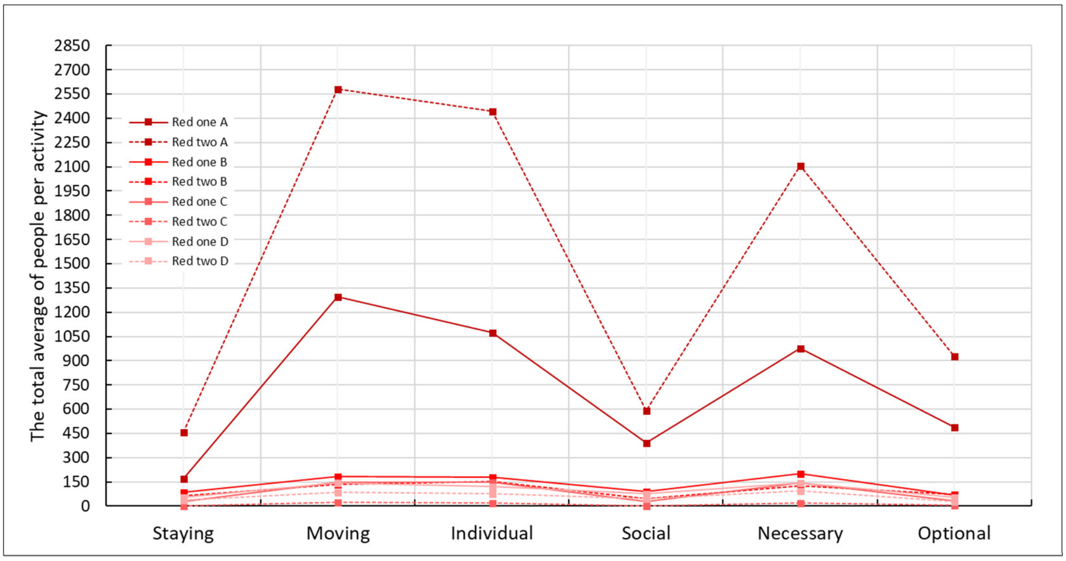


Figure 10.30. Activity pattern through the high centrality (betweenness: 0.0017 – 1397, red) across the four cases.

The ability of the street edge to shape some activities is still finite because of the functions that constitute the street edge beside the centrality value. These two factors: the centrality and the fine-purpose of the land use play a key role in formulating people's responses to street life and how they interact with street frontages and the spaces between them.

10.2.2.3 Gender Pattern

The gender pattern is an indicator to understand the primary trend of the street and how the edge could contribute passively or actively to entice different genders to take their place in the street. From the four samples, this measure noted a predominance of males over female. Thus, regarding the high centrality streets that are designed to have mixed-uses with different activities, the main gender using the streets is male. With the exception of unified uses, for example residential, one can recognise that the main streets, typified as high betweenness in this research, are weak in responding to different people's needs and desires (Figure 10.31).

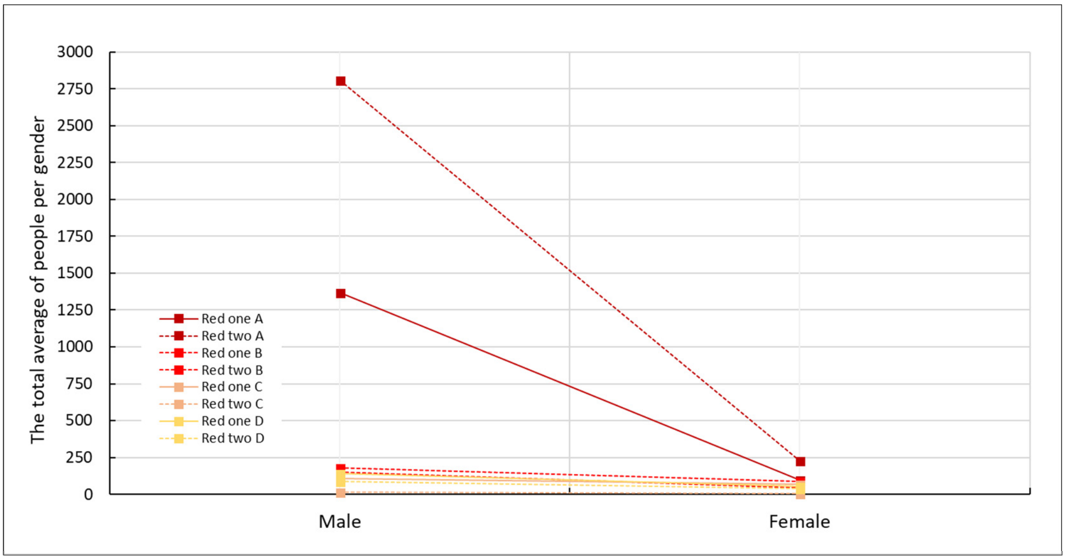


Figure 10.31. Gender pattern through the high centrality (betweenness: 0.0017 – 1397, red) across the four cases.

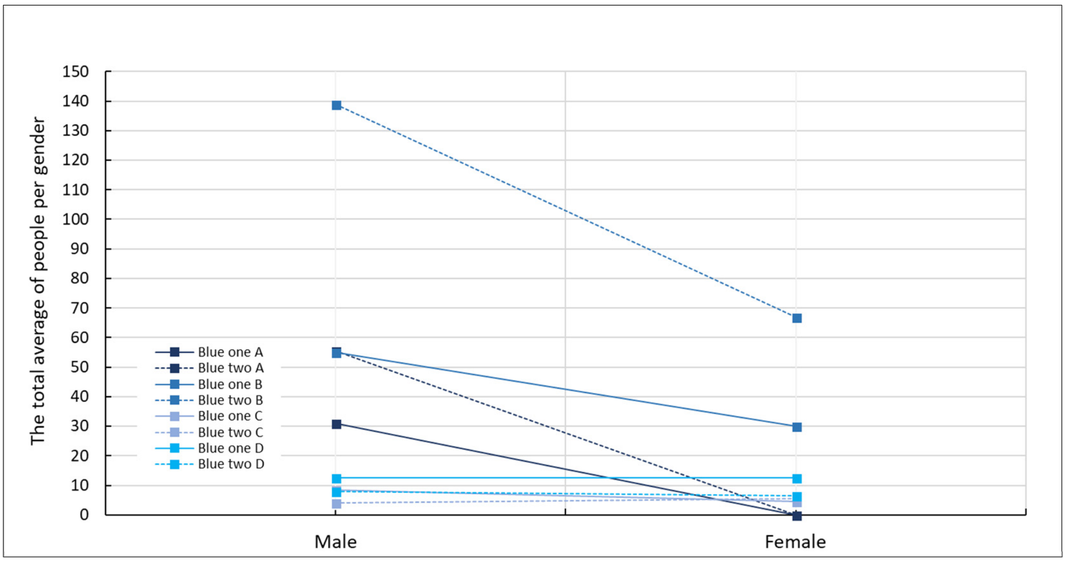


Figure 10.32. Gender pattern through the low centrality (betweenness: 0.0000 – 0.0002, blue) across the four cases.

Regarding figure 10.32, nevertheless, the low centrality in sample A that represents non-residential use shows a greater male than female presence. Also, this phenomenon was experienced through the medium betweenness streets in case study A (Figures 10.32 and 10.33). Therefore, the street edge engenders, not only in different activities, but it is also important in attracting both genders. Dealing with fine-grained land use could be the first step in promoting street life and social interaction amongst all people.

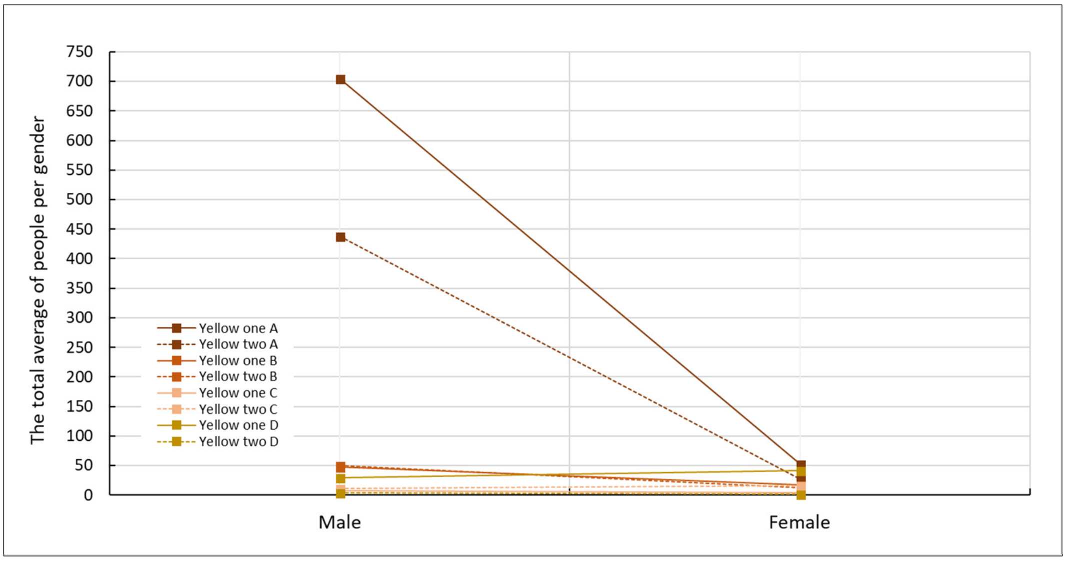


Figure 10.33. Gender pattern through the medium centrality (betweenness: 0.0002 – 0017, yellow) across the four cases.

10.2.2.4 Age Pattern

The age comparison shows the significant trend of the street edge in attracting and providing opportunities for people of certain ages who used the street during the observation period. The highest quantities of occupiers in all six examined streets belong to the two ages: teenager-young and adult-elder, while the child category recorded the lowest presence compared with the other ages (Figure 10.34).

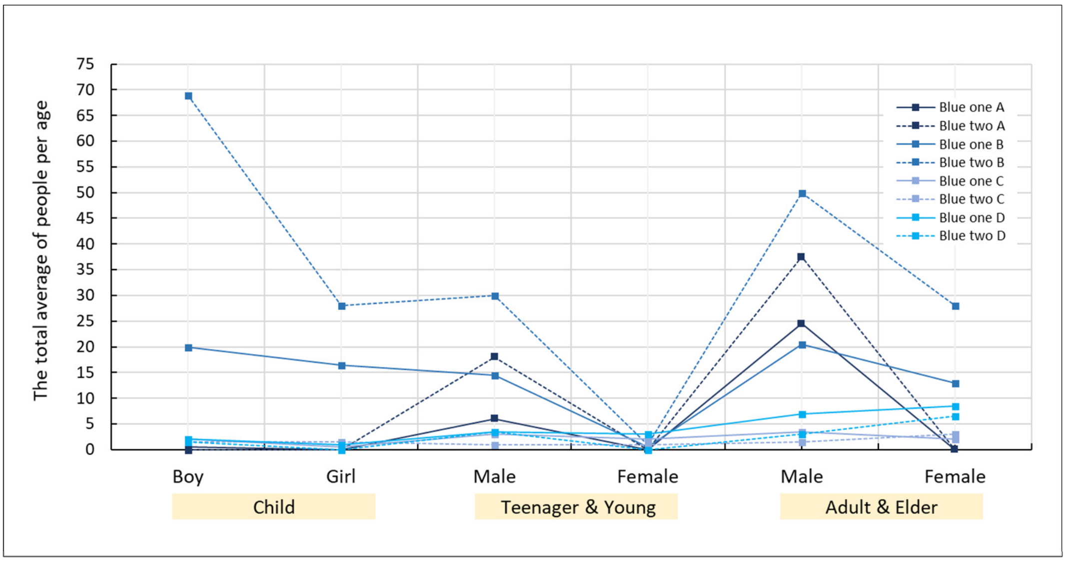


Figure 10.34. Age pattern through the low centrality (betweenness: 0.0000 – 0.0002, blue) across the four cases.

This situation excluded one case in the blue street one and two within sample B, where more children were seen (Figure 10.34). The medium centrality value (betweenness) also refers to the two current ages: teenager-young and adult-elder. The main difference is the number of people per age who distinguishes the six streets (Figure 10.35). Despite the high betweenness centrality value that involves the most significant number of people, the limited presence of children was also observed across the four selected samples (Figure 10.36).

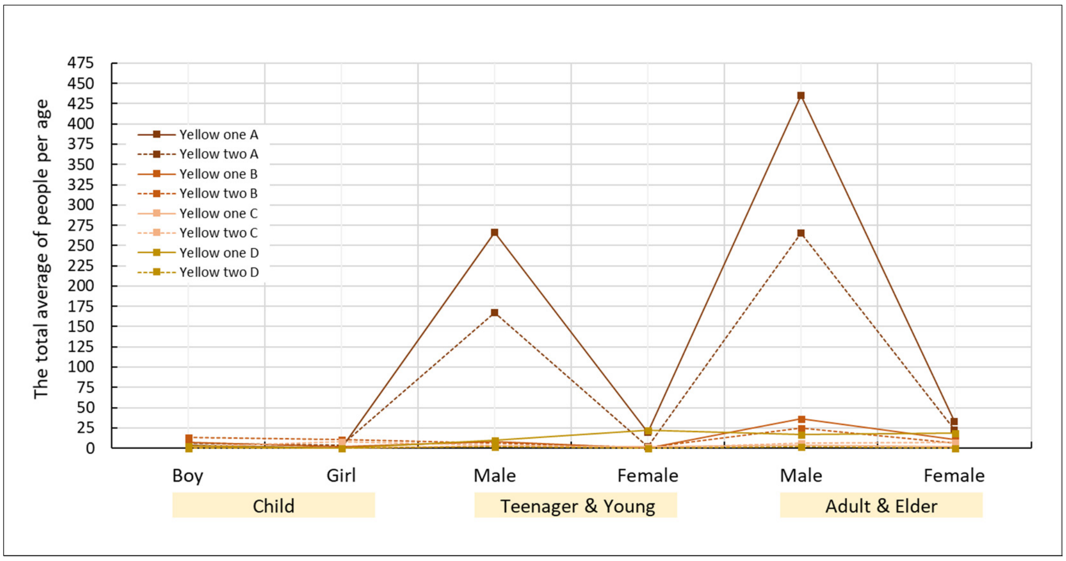


Figure 10.35. Age pattern through the medium centrality (betweenness: 0.0002 – 0017, yellow) across the four cases.

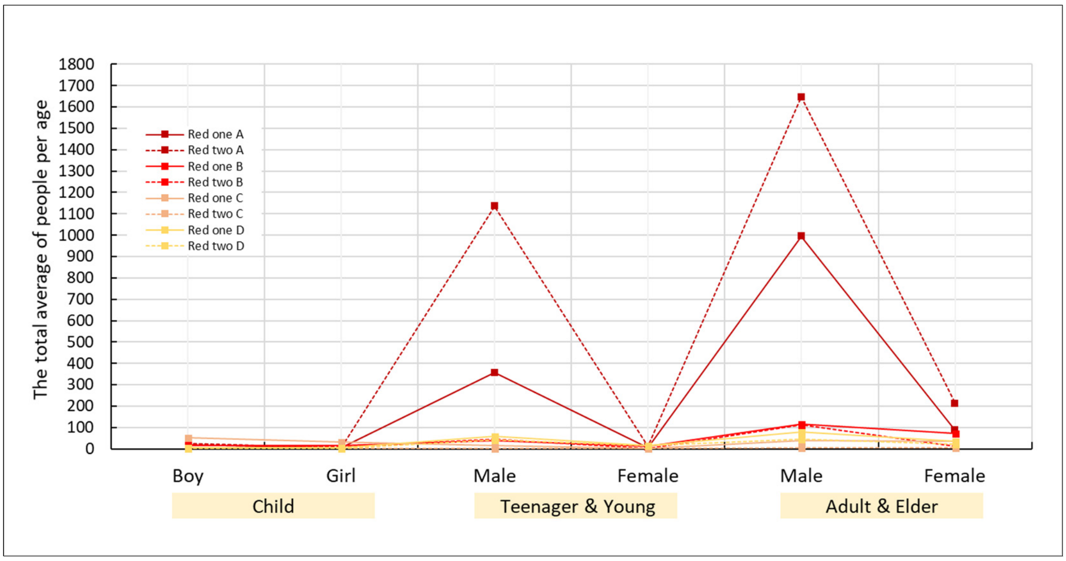


Figure 10.36. Age pattern through the high centrality (betweenness: 0.0017 – 1397, red) across the four cases.

Even though different land uses and services occupy the streets with high centrality, their responses are still limited in terms of the child-age pattern. The child pattern was tested in 24 streets, and most can be typified under two primary purposes: walking for school and moving-through the street to a specific destination. The street edge is important in attracting different aged users; thus, it might need to review its micro-level functions and activities. This consideration about the street edge for different people appears significantly in the streets with higher centralities, where there is the potential to invest in and promote the street life and social interaction amongst people of diverse ages.

10.2.2.5 Group Pattern

In this pattern, the number of people that predominated was two persons, regardless of the nature of the activity (staying-moving, individual-social, and necessary-optional). The different groups of people could regularly be classified as engaging with social interaction and tended to undertake more optional than necessary activities (Figure 10.37 and 10.38).

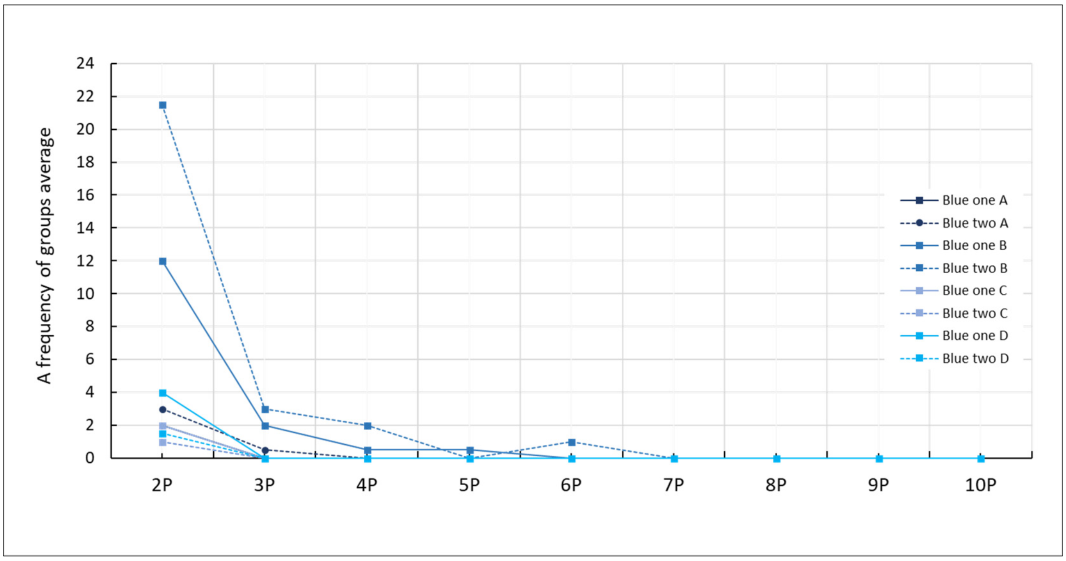


Figure 10.37. Group pattern through the low centrality (betweenness: 0.0000 – 0.0002, blue) across the four cases.

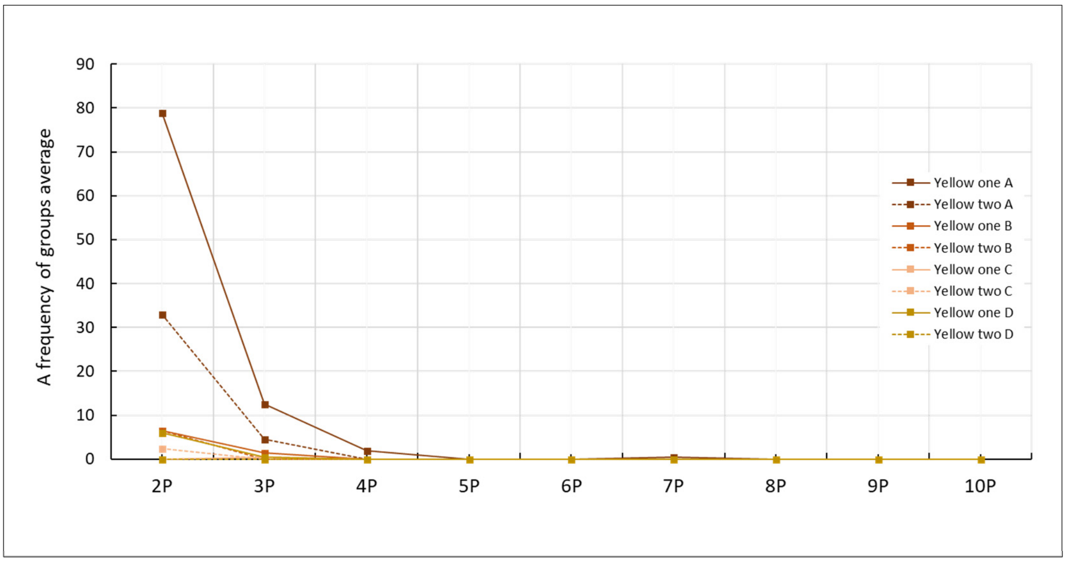


Figure 10.38. Group pattern through the medium centrality (betweenness: 0.0002 – 0017, yellow) across the four cases.

Throughout the 24 observed streets, the maximum number of persons per group is seven (Figures 10.38 and 10.39).

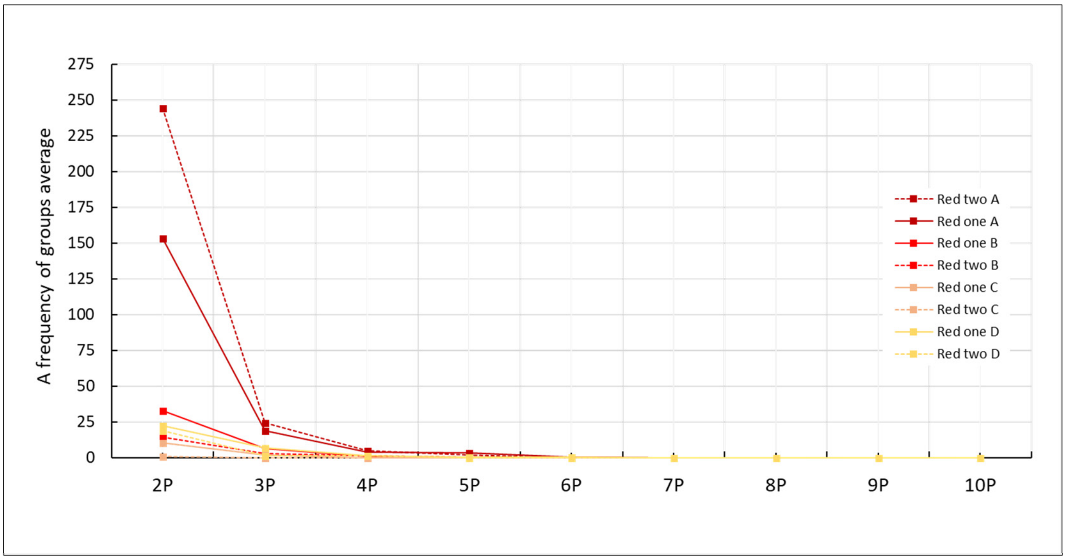


Figure 10.39. Group pattern through the high centrality (betweenness: 0.0017 – 1397, red) across the four cases.

The process of engendering the group as a social pattern in the street is positively related to the street edge itself. Two interpretations arose concerning the grouping of people; firstly, the street edge has the ability to shape people within different groups. This potential could be important considering in designing the street edge. Secondly, groups of people only move-through the street, and this is independent of the street edge and its characteristics. The first meaning is the most important consideration in reading the street edge and how that could support and promote street life. It is important to know that the street edge idiom is not separate from the street space, meaning that the edge includes both the street frontage and the adjacent area that forms the entire scope of the street. In this study, the high centrality betweenness of the selected streets is nominated as more attractive points to generate various groups than the low centrality.

10.3 Street Life (Movement) | Street Centrality | Constitutedness and Permeability

10.3.1 Comparing the Individual Case Study

10.3.1.1 Organic Pattern | A

The main relationship between pedestrian movement and the streets' constitutedness is shown in Figure 10.40. The high constitutedness value indicates the smaller number of people, notably, in blue street of the selected area. An inverse-relationship can be seen in red street where the number of pedestrians increases and the constitutedness value declines for the street edge. The yellow streets reflect the few numbers of users in comparison with red street, whereas its constitutedness also records the highest value, which is similar to blue street (Table 10.1). Regarding the permeability, and similar to the constitutedness, the permeability value contrasts with the total average of people using the blue and yellow streets (Figure 10.41). The red streets have the lowest permeability and the greatest pedestrian flow.

Table 10.1. Constitutedness, permeability and human movement. Case study A: organic pattern.

Case Study ID	Street Centrality	Total average of Pedestrian	Permeability of Street	Constitutedness of Street
A	Blue One	31	16.5403	0.87054
	Blue Two	56	20.53777	1.46698
	Yellow One	757	14.13878	0.83169
	Yellow Two	466	20.72136	1.38142
	Red One	1469	6.70263	0.39427
	Red Two	3038	7.18757	0.65342

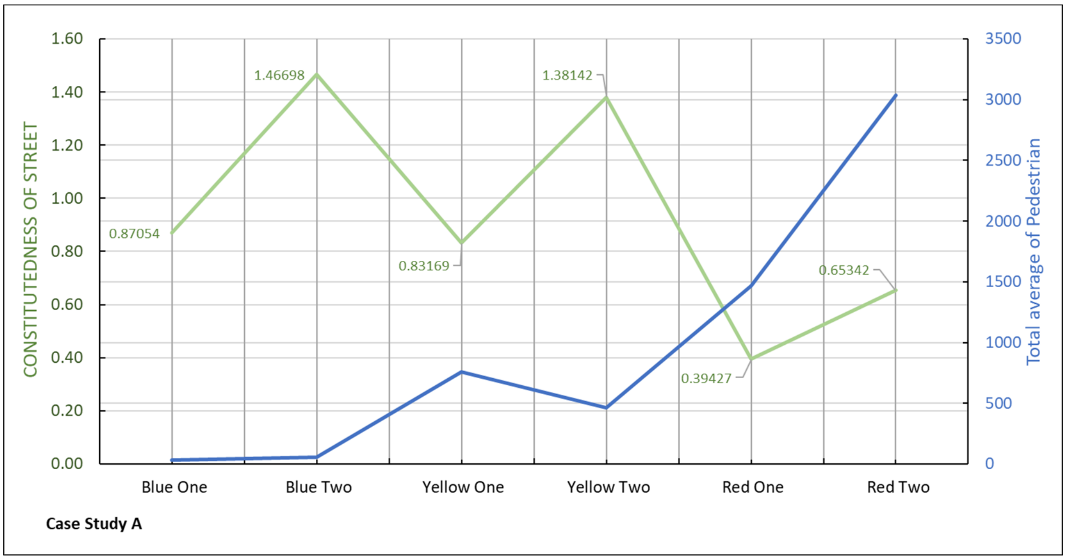


Figure 10.40. Human movement and constitutedness. Case study A: organic pattern.

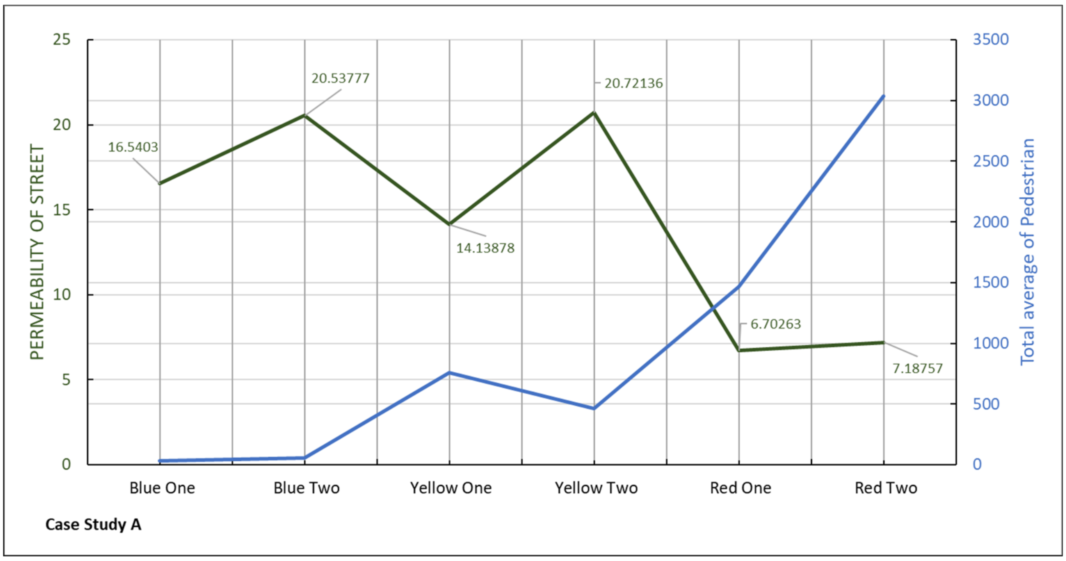


Figure 10.41. Human movement and permeability. Case study A: organic pattern.

10.3.1.2 Hybrid Pattern | B

The human movement in sample B fluctuates among the four selected streets. The constitutedness trendline record a high value on the blue streets, which declines on both the yellow and red streets. The greatest constitutedness value represents the fewest individuals on two colour streets - blues and yellows - while the red streets hold the maximum number of persons but have the minimum constitutedness value (Figure 10.42 and Table 10.2). The permeability value in sample B has the greatest value on the blue streets, which sharply declines on the yellow streets to reach the minimum amount in the red streets (Figure 10.43). In contrast to the permeability, the red streets reflect a large volume of people movement, yet this amount decreases significantly in the yellow streets and slightly decreases in the blue street (Figure 10.43). The similar trendlines for both constitutedness and permeability regarding people movement are apparent.

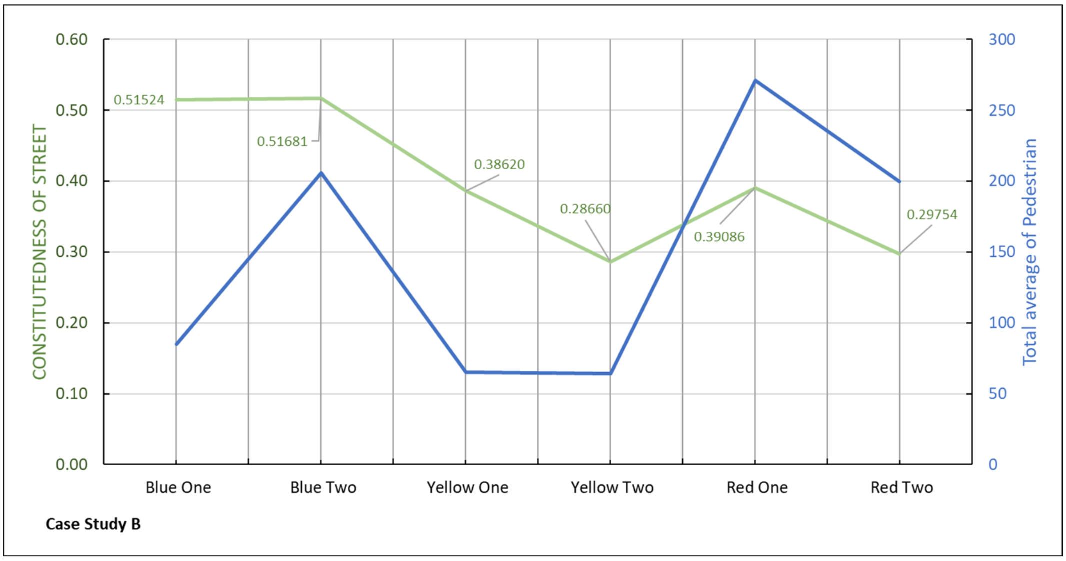


Figure 10.42. Human movement and constitutedness. Case study B: hybrid pattern.

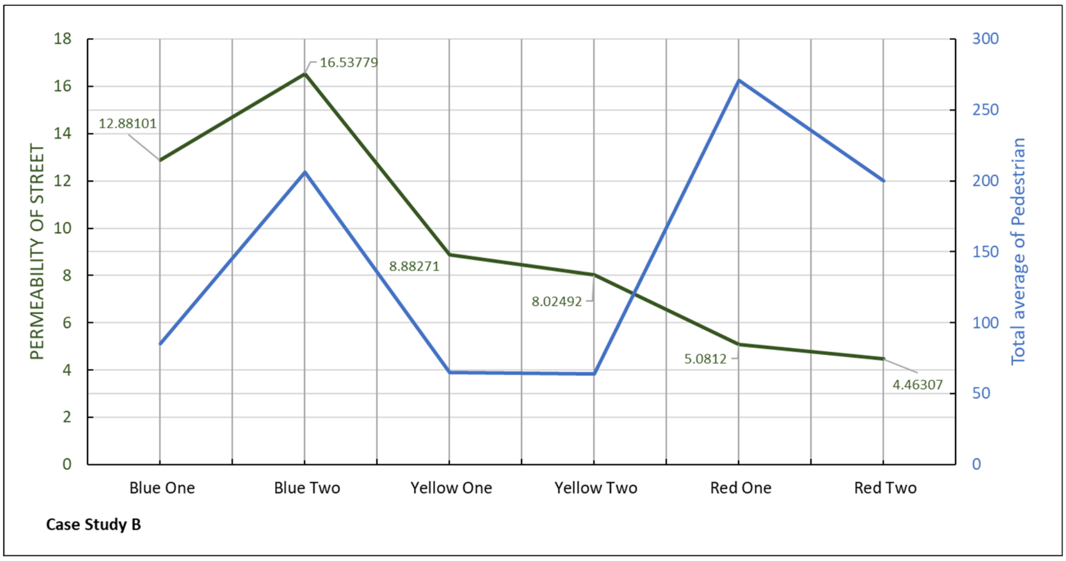


Figure 10.43. Human movement and permeability. Case study B: hybrid pattern.

Table 10.2. Constitutedness, permeability and human movement. Case study B: hybrid pattern.

Case Study ID	Street Centrality	Total average of Pedestrian	Permeability of Street	Constitutedness of Street
B	Blue One	85	12.88101	0.51524
	Blue Two	206	16.53779	0.51681
	Yellow One	65	8.88271	0.38620
	Yellow Two	64	8.02492	0.28660
	Red One	271	5.0812	0.39086
	Red Two	200	4.46307	0.29754

10.3.1.3 Paralleled Pattern | C

In case study C, the constitutedness value of the blue, yellow and red two streets are close. Red one street differs from the others as its constitutedness has the highest value (Figure 10.44 and Table 10.3). Regarding the pedestrian flow, most tested streets have approximate values, except for red one. Regarding the permeability, its maximum value manifests in blue one and red one, which is the opposite of the number of people on red one. Both the constitutedness and permeability are parallel in terms of the trendline for human movement, unlike the previous two samples A and B, (Figures 10.44 and 10.45).

Table 10.3. Constitutedness, permeability and human movement. Case study C: paralleled pattern.

Case Study ID	Street Centrality	Total average of Pedestrian	Permeability of Street	Constitutedness of Street
C	Blue One	13	2.76881	0.13844
	Blue Two	10	1.19022	0.09919
	Yellow One	13	1.5501	0.10334
	Yellow Two	28	1.48548	0.11427
	Red One	177	4.52691	0.37724
	Red Two	23	1.90575	0.12705

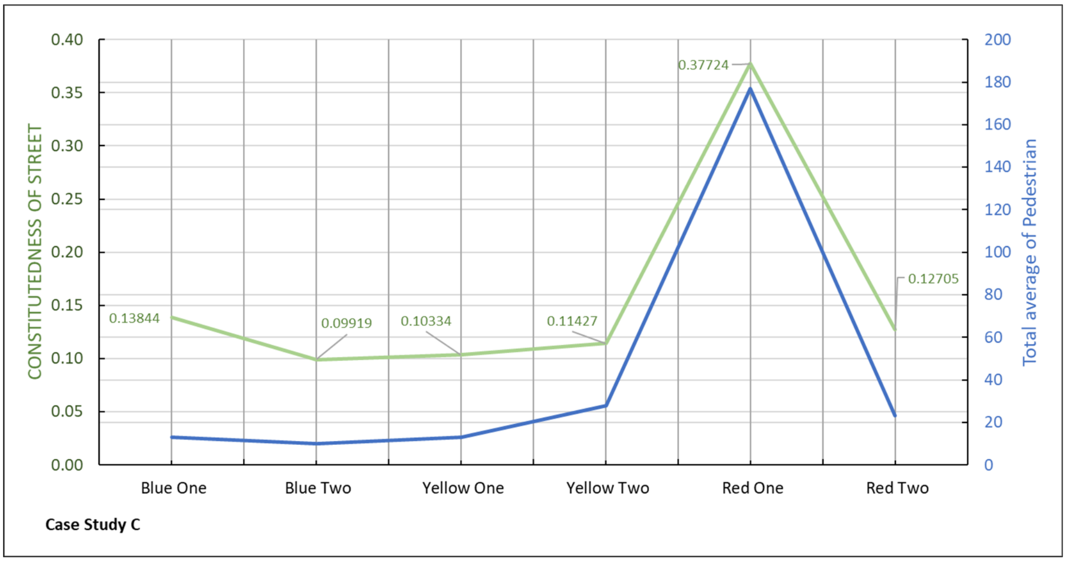


Figure 10.44. Human movement and constitutedness. Case study C: paralleled pattern.

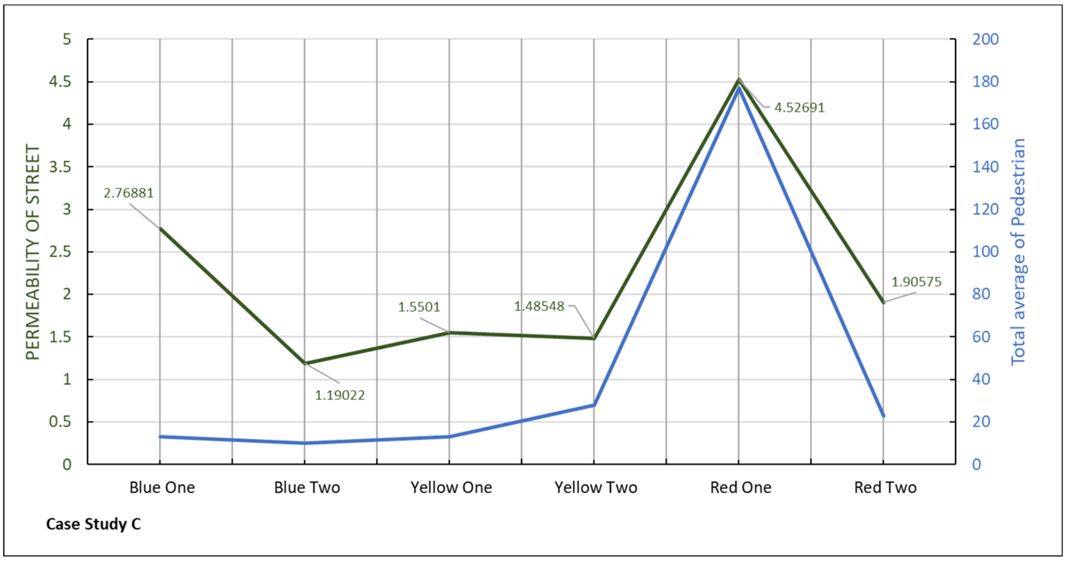


Figure 10.45. Human movement and permeability. Case study C: paralleled pattern.

10.3.1.4 Loop-grid Pattern | D

The number of people who used the blue and yellow streets was less than those who used red street one and two. Mostly, the constitutedness values were similar in terms of the individuals per street (Figure 10.46 and Table 10.4). The analogy between people movement and permeability is evident in the maximum and minimum values of all four tested streets in case study D (Figure 10.47). In this regard, the number of people responded positively to the varying values of both constitutedness and permeability; however, this situation is different in sample A (organic pattern).

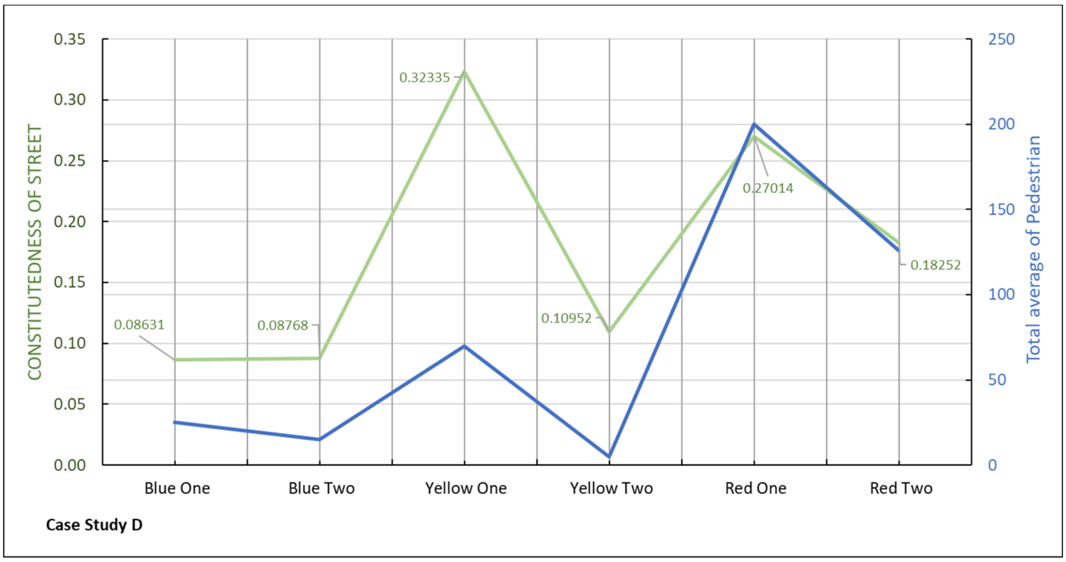


Figure 10.46. Human movement and constitutedness. Case study D: loop-grid pattern.

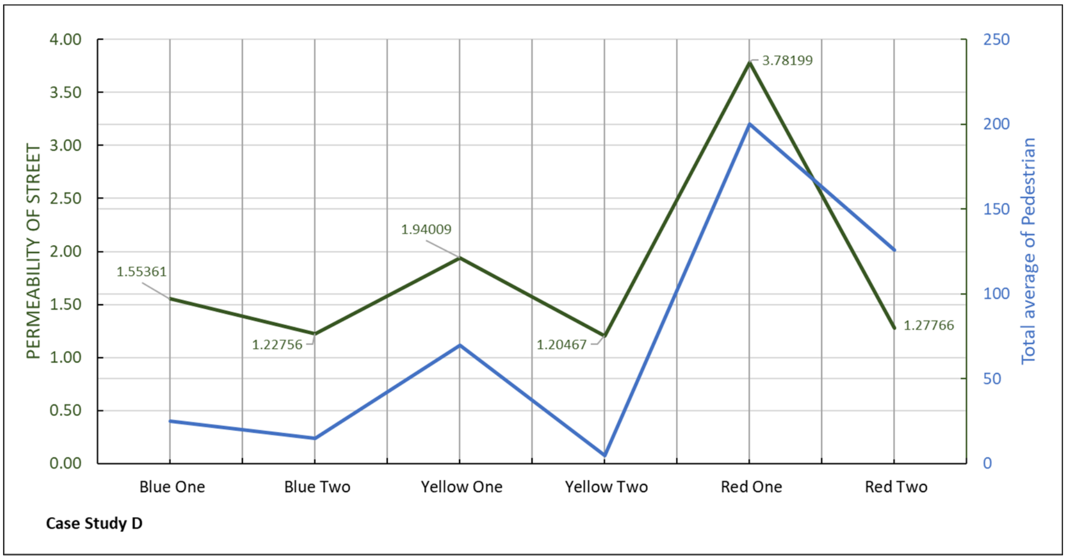


Figure 10.47. Human movement and permeability. Case study D: loop-grid pattern.

Table 10.4. Constitutedness, permeability and human movement. Case study D: loop-grid pattern.

Case Study ID	Street Centrality	Total average of Pedestrian	Permeability of Street	Constitutedness of Street
D	Blue One	25	1.55361	0.08631
	Blue Two	15	1.22756	0.08768
	Yellow One	70	1.94009	0.32335
	Yellow Two	5	1.20467	0.10952
	Red One	200	3.78199	0.27014
	Red Two	126	1.27766	0.18252

10.3.2 Comparing Across the Four Case Studies

10.3.2.1 Blue Street: One & Two

Blue street (one and two) exhibit a significant amount of pedestrian in sample B; sample A had the second highest numbers. For C and D, the total average of people who used the street was similar. Meanwhile, the constitutedness value responded analogically to the mainstream of people in cases B, C and D (Table 10.5).

Sample A shows a different reaction to the constitutedness, where a high amount of pedestrians are observed within a lower degree of constitutedness (Figure 10.48). The permeability value of the street edge also responds positively to the pedestrian flow through blue street in samples B, C and D. In the old area of sample A, people's movements react inversely to the permeability of the adjacent edge regarding the number of individuals who passed the recorded streets (Figure 10.49).

Table 10.5. Constitutedness, permeability and pedestrian flow of blue street (one & two) across the four selected areas: A, B, C and D.

Street Category	Case Study	Total average of Pedestrian (B1)	Permeability of Street (B1)	Constitutedness of Street (B1)
Blue One	Case A	31	16.5403	0.87054
	Case B	85	12.88101	0.51524
	Case C	13	2.76881	0.13844
	Case D	25	1.55361	0.08631

Street Category	Case Study	Total average of Pedestrian (B2)	Permeability of Street (B2)	Constitutedness of Street (B2)
Blue Two	Case A	56	20.53777	1.46698
	Case B	206	16.53779	0.51681
	Case C	10	1.19022	0.09919
	Case D	15	1.22756	0.08768

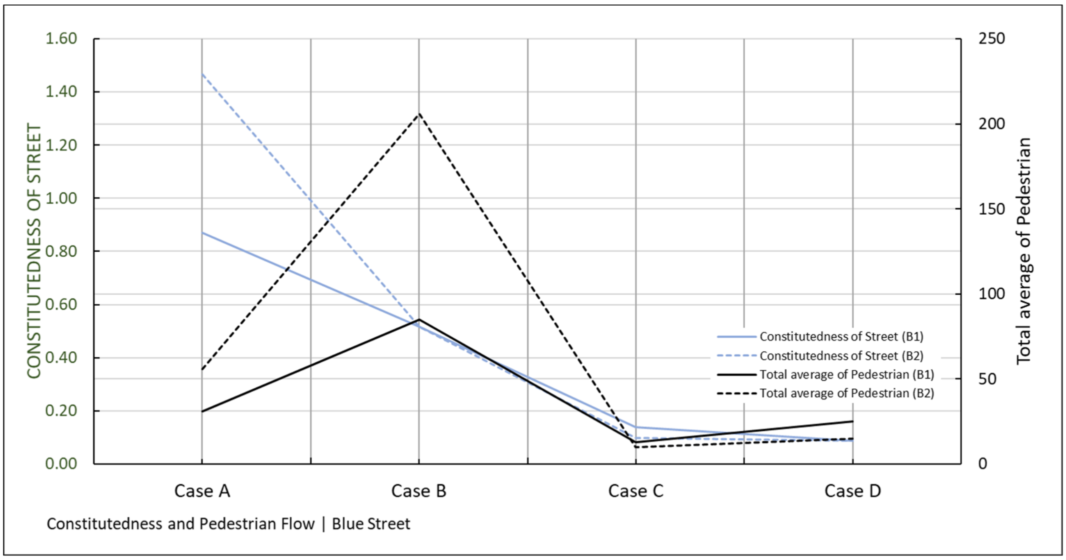


Figure 10.48. Constitutedness and pedestrian flow of blue street (one & two) across the four selected areas: A, B, C and D.

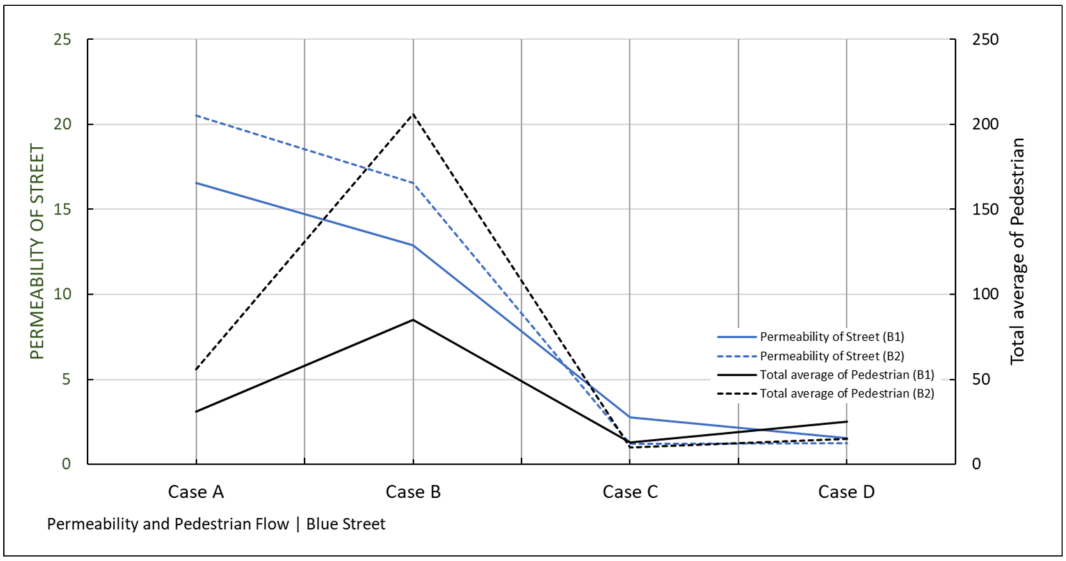


Figure 10.49. Permeability and pedestrian flow of blue street (one & two) across the four selected areas: A, B, C and D.

10.3.2.2 Yellow Street: One & Two

Yellow street reduces from the most significant flow of pedestrians in case A (organic pattern) to the lowest amount in sample D for yellow one street (Figure 10.50, Table 10.6). Regarding the constitutedness value, it also changes positively according to the trendline of people who moved through the observed streets. The relationship between the urban form in terms of its constitutedness and permeability and the natural movement of people is more evident in yellow street compared with blue. The degree of permeability degree displays a significant response between passersby and the street edge. Frequently, the high permeability value meant a maximum number of pedestrians (Figure 10.51). The micro-spatial configuration of the street edge plays a crucial role in shaping people's movement and in determining the degree of response for those who use the street.

Table 10.6. Constitutedness | permeability and pedestrian flow of yellow street (one & two) across the four selected areas: A, B, C and D.

Street Category	Case Study	Total average of Pedestrian (Y1)	Permeability of Street (Y1)	Constitutedness of Street (Y1)
Yellow One	Case A	757	14.13878	0.83169
	Case B	65	8.88271	0.38620
	Case C	13	1.5501	0.10334
	Case D	70	1.94009	0.32335

Street Category	Case Study	Total average of Pedestrian (Y2)	Permeability of Street (Y2)	Constitutedness of Street (Y2)
Yellow Two	Case A	466	20.72136	1.38142
	Case B	64	8.02492	0.28660
	Case C	28	1.48548	0.11427
	Case D	5	1.20467	0.10952

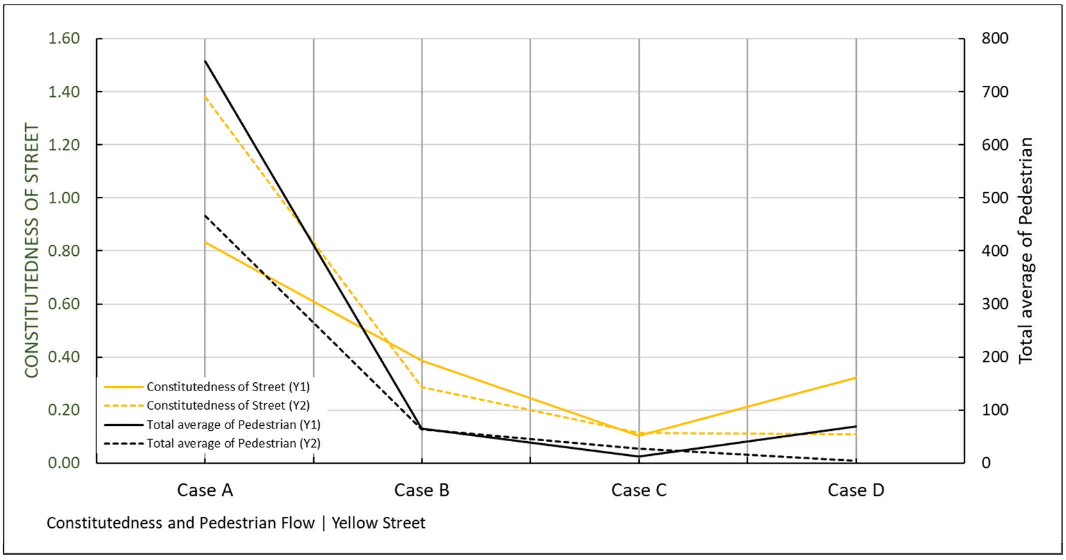


Figure 10.50. Constitutedness and pedestrian flow of yellow street (one & two) across the four selected areas: A, B, C and D.

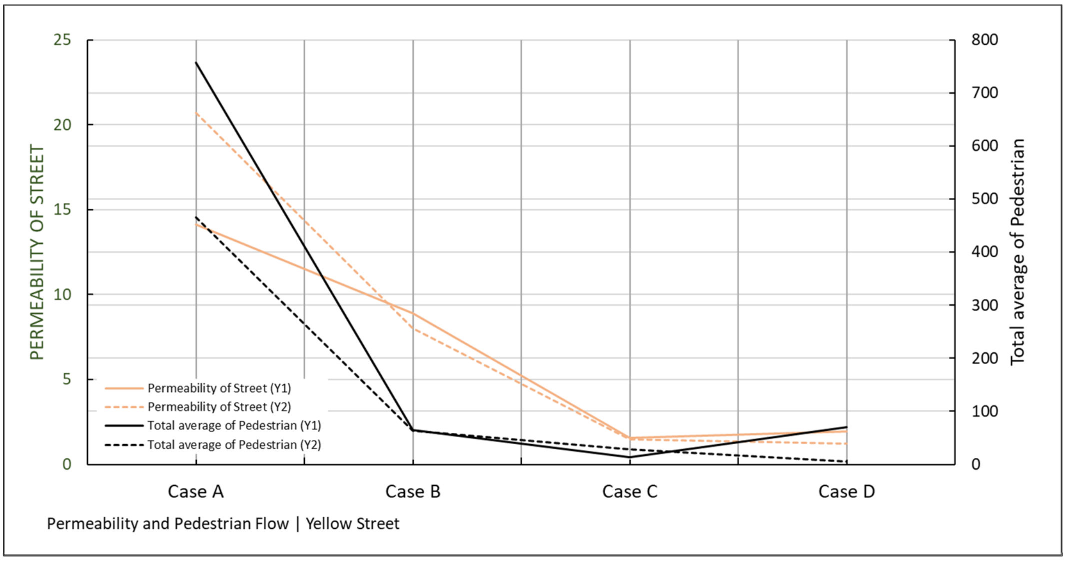


Figure 10.51. Permeability and pedestrian flow of yellow street (one & two) across the four selected areas: A, B, C and D.

10.3.2.3 Red Street: One & Two

Across the four samples, the red street represents the highest rate of people movement and the highest MCA centrality. The constitutedness value in cases A, B and C are close, except for sample D (Figure 10.52 and Table 10.7). Relating pedestrian flow to the constitutedness in red one street, the trendline tends to moves in parallel, with the exception of sample A. Regarding red two, the total average for movement and constitutedness reaches its highest value in case A and dramatically declines in the remaining cases (Figure 10.52).

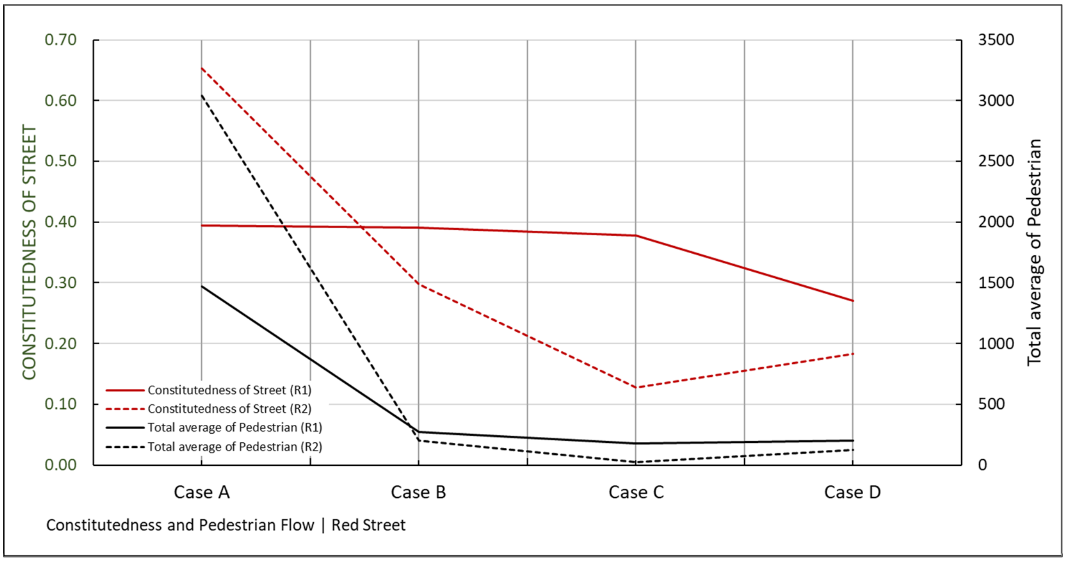


Figure 10.52. Constitutedness and pedestrian flow of red street (one & two) across the four selected areas: A, B, C and D.

Table 10.7. Constitutedness, permeability and pedestrian flow of red street (one & two) across the four selected areas: A, B, C and D.

Street Category	Case Study	Total average of Pedestrian (R1)	Permeability of Street (R1)	Constitutedness of Street (R1)
Red One	Case A	1469	6.70263	0.39427
	Case B	271	5.0812	0.39086
	Case C	177	4.52691	0.37724
	Case D	200	3.78199	0.27014

Street Category	Case Study	Total average of Pedestrian (R2)	Permeability of Street (R2)	Constitutedness of Street (R2)
Red Two	Case A	3038	7.18757	0.65342
	Case B	200	4.46307	0.29754
	Case C	23	1.90575	0.12705
	Case D	126	1.27766	0.18252

In this sense, the differences in constitutedness reflect changes in the natural movement of people who used the tested streets in the four selected urban areas. Correspondingly, the degree of permeability for red street (one and two) and the people movement, its values (permeability) exhibit a positive reaction to the change of pedestrian flow (Figure 10.53).

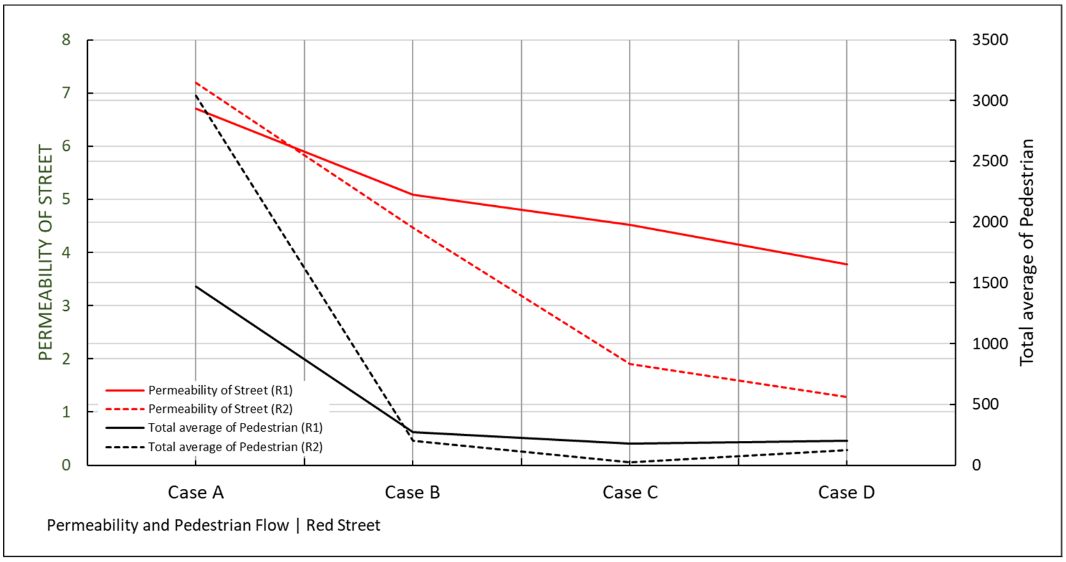


Figure 10.53. Permeability and pedestrian flow of red street (one & two) across the four selected areas: A, B, C and D.

10.4 Conclusion

Along with the constitutedness and permeability of the chosen streets, human activities (movement, activity, gender, age, and group) were observed and tested in these streets. The pedestrian flow, according to this research, entirely relates to the centrality value, where the highest betweenness reflects the most significant number of people who move-in and move-through the designated streets. The medium and low betweenness show a moderate amount of people, and this affects different people's behaviours in terms of their activities and responses to the street edge. The comparison between human movement and urban form (constitutedness, permeability) displays significant indicators. The micro characteristics of the street edge and the relationship between public and private play a vital role in formulating people's movement and their response to the adjacent edge. Constitutedness and permeability, which are derived from the micro-spatial configuration of the plot-building and street edge, have a significant impact on the natural movement of people whether for the individual case study or the comparison over the four samples: organic | A, hybrid | B, paralleled | C and loop-grid pattern | D.

The three-way correlation between humans, street centrality MCA and the urban form (constitutedness and permeability) governs both the vitality of street life and microscale social interactions. Furthermore, the urban elements (plot, block and street) are where these essential entities of the configurative fabric at the macro, local and global scale contribute effectively to shape the human movement. Hence, the split between micro and global effects is useful for analytical studies, although the entirety of people's movement is subjected to the different scales of the built environment. Regarding human movement and the urban form, the relationship between the pedestrian flow and both the constitutedness and permeability generally varied, except for case study A (organic pattern), where the people who were observed showed a positive response to the different constitutedness and permeability values.

Thus, the micro-level analysis of the built environment could influence how people use the street and how they respond to the private and public edge. Hence, the traditional pattern of the urban fabric, which was represented by sample A and partially represented in case B, yielded a positive association among three groups of analysis; street centrality (MCA | betweenness), street edge (constitutedness | permeability) and human activities. Furthermore, the modern pattern of urban tissue, exemplified by cases C and D, generated an inverse relationship among the three types of quantification of urban form (street centrality | MCA betweenness), street edge and people activities. The comparative analysis for each case study yielded significant indicators for how the relative position of the street within the whole network played a key role in formulating not only the pedestrian influx but also the street edge itself. This relative location of the link was represented by the Multiple Centrality Assessment (MCA).

Chapter Eleven

Research Conclusions

11.1 Introduction

The significant transformation in the urban structure of Baghdad had an impact on the traditional area of the city. Two directions of morphological change affected the historic neighbourhoods. The first was related to the historical parts regarding the adoption of new policies, which dealt with the oldest urban elements and the organic pattern of the street network. The new modern era intended to change spatial configurations through the different relationships between the urban ingredients, and the relationship between the private and public influenced on the street edge. The second direction comprised a genetic mutation in the underlying order between the historical part of the city and the surrounding neighbourhoods. This included two fundamental elements: street and plot. From the spontaneous approach to generating a city's components to the pre-planned model, a critical gap arose. Understanding the transformation of the urban fabric is one of the main aims of this research. Furthermore, transforming the study of the old fabric from a rigid to a vital vision is needed to enable more focus on the historical region of Baghdad.

Defining the urban elements and their interrelationships played a significant role in developing a concrete platform to understand the fine-scale influences, which ranged from the micro level to the global scale. The spontaneous generative order follows a bottom-up process in deriving the plot as the smallest urban unit. In contrast, the pre-planned system is subject to a top-down approach in producing urban elements. This notion is critical when dealing with traditional areas and considering the extent to which new policies and regulations should be formulated in a way to meet the underlying order of the historical urban area of the city. Street life and social interactions are a new trend in studying urban life and were applied to the four selected samples of Baghdad city. The way that the buildings constituted the street space and the relationship between the private and public realms contributed significantly to formulate human activities and how people respond to the adjacent edge.

Street centrality was another factor used to determine the proportional value of the link within the whole network system. The Multiple Centrality Assessment (MCA) was chosen to understand the two centrality indices - betweenness and closeness - and to recognise the main differences among four selected samples: A, B, C and D. Constitutedness and permeability are micro level measures, which were employed to examine the street edge and its association with centrality and street life in the four samples of Baghdad.

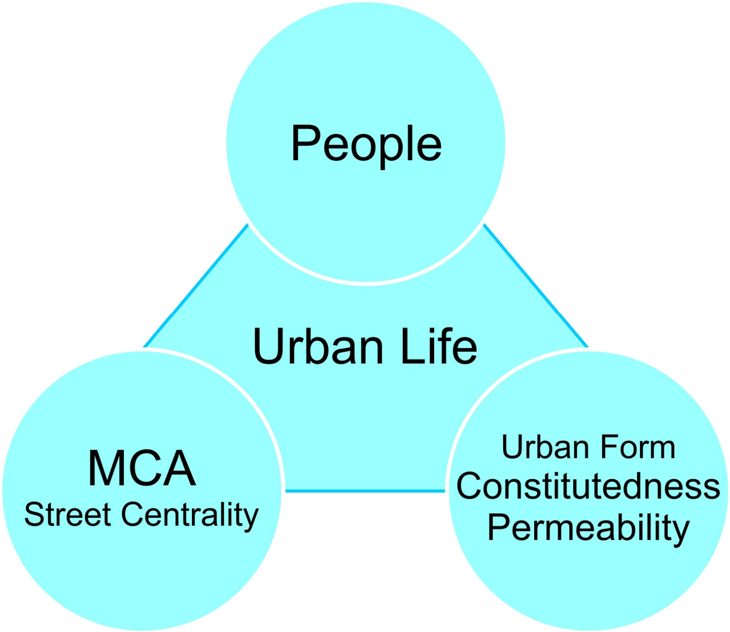


Figure 11.1. The relationship of the three attributes of the built environment. Source: Drawn by the author.

11.2 Research Objectives and Significance of the Research Findings

The research objectives resulted from two fundamental sources, namely the research problem (primary and secondary problem) and the research questions. The first question was: *Can we detect objective differences in the urban form of the old town, compared to the newer areas?* This inquiry aimed to understand the underlying system of the old pattern of Baghdad and how it could differ from other selected samples. Thus, this study quantified the urban structure and conducted an analysis that tracked the essential rules concerning the emergence of the four different samples adopted in this study. The urban ingredients encompassed two primary elements; the first related to built units and the second dealt with the street network.

Is the old town more vital than the newer areas? The primary aim of this question was to identify the number of variables and indices that could be used to investigate the research problem (primary and secondary). The process of extracting the research variables with indices was mainly achieved from the literature review. This stage is a prerequisite step to assure the validity and reliability of the identified variables. The variables were then applied to each case study, and this enabled a meaningful comparison among the four samples. The research process map includes thirty-two-variables, which were labelled within four interfaces: link-node, human-edge, edge-edge, and human-human interface.

Can we establish a correlation between different types of urban form and their degree of vitality? The primary objective of this question is to track the significant morphological and functional changes that took place in the historical core of Baghdad and how these affected the underlying system. Along with the morphological transformation of the traditional region, street life is another considered aspect that passively or actively responds to the transformational factor of the urban structure. Regarding the new pattern of the selected neighbourhoods, which was based on the pre-planned system, the primary concern is for the morphological urban elements and people's experiences of street life.

A critical question emerged from understanding three levels - neighbourhood, street and plot-block system - including the degree of coherence among them, and how that could affect the street life. *What are precisely the features of the urban form that appear to best explain the degree of vitality?* Starting with the micro level, this was tested by the constitutedness and plot-based measure which covers both perimeter and plot size. The block-based measure is the second micro level that is addressed by the quantifiable characteristics of the block. The measure includes six variables: perimeter, size, dimension, density, area and mean area, and block to street ratio.

The block can be acknowledged as the second unit, after the plot, that constitutes the street edge. The plot is the generative and organising element of the urban block, and one of its responsibilities is to link the block to the adjacent street and the whole neighbourhood network. Hence, people first tend to be attracted by the plot-edge as long as the building has the opportunity to invite them. Furthermore, the plot-edge is a prominent subtle border that determines the relationship between the private and public domain and how this reciprocity of roles between the two realms governs people's behaviours. The block-edge is a contingent urban unit that derives from a series of contiguous plots. The main characteristics of such a plot morphologically and functionally help to create the urban block and define its properties. The fundamental urban transformation of the plot pattern across the four selected samples exhibits significant changes in the block pattern regarding the six variables examined within the study. The fine scale of the street edge first comes from the plot-building and then from the block, where any advance in this miniature element leads to a change in the block's characteristics.

The four samples (A - organic, B - hybrid, C - paralleled, and D - loop-grid pattern) were examined in terms of their ability to promote the street edge and the social life that arises from the plot. The matter in this regard is not only to change the plot shape or increase its quantity - while this consideration can be seen as the constant property of the plot - but to consider the constitutedness with intervisibility and permeability. Three opposite pairs of the human activities (necessary/optional, individual/social and staying/moving) have been tested in twenty-four streets at a rate of six streets per case study. The shared denominator between the constitutedness, intervisibility, permeability and human activity is the centrality value of the selected streets. The centrality and its indices can be labelled as a significant factor in the association between the street centrality value and the related variables. This evaluation of street patterns could be the first step in diagnosing the different centrality of streets and how this might correlate with other street analysis factors.

The potentiality of the urban structure to generate different patterns of movement relies on its ingredients, which are organised within a distinct spatial configuration. Connectivity, accessibility and the resilience of moving through the street network from one place to another, are some of the more critical indicators when appraising the performance of a street network. In this respect, eight variables were examined to assess the street network, namely: intersection density, street density, link to node ratio, internal node connectivity, external point connectivity, grid pattern ratio, pedestrian route direction, ped-shed and effective walking area. The response of the four-case studies to the connectivity and accessibility according to these variables varied. A significant challenge experienced in the historical pattern of Baghdad is to manage the relationship between the complicated organic street network system the efforts of the urban development plans. An understanding is needed of the underlying order of the traditional area at the micro level and the interrelationship between its ingredients (plot, block, street edge). Over time the historical pattern followed a spontaneous process that was based on a bottom-up approach in engendering the urban elements. Meanwhile, urban development projects sought to adopt a pre-planned system that relied upon a top-down method in order to modify the oldest parts at different levels of the urban elements.

Although the study has adopted two main problems that led to four critical questions and research objectives, other aspects have been addressed in this research, such as land use. This dimension is not separate from the different aspects of this study but rather directly connected to the street edge and to social life. According to this study, an understanding of the quantification of land use in the selected urban area should be driven by fine-functional uses at the micro level of the plot (building), block and street edge. People in the street closely tend to experience small units or sequential series of buildings, and these units enable street users to conduct a type of communication between the perceiver (people) and perceived (street edge).

11.3 Urban Form and Urban Life

Multiple Centrality Assessment

This may be the first attempt to generate a metric network map of the chosen area of Baghdad. This step was significant in understanding the historical part of the city, and was achieved by using software based on the MCA analysis. A considerable number of scholars, particularly in Iraq, still avoid considering this type of traditional area due to its street pattern as a whole setting. A Multiple Centrality Assessment (MCA) was applied to globally and locally measure the street network in the four samples. The MCA analysis not only measured the centrality of the streets but also helped to define the aptitude of the street for future advancement and development. Furthermore, the MCA measure featured significantly when examining the oldest street pattern in the historical part of Baghdad (case study A). Despite the complications of the network system in this area, for the MCA, significant centrality indicators (betweenness and closeness) were recorded. These indicators can be invested in to sustain the traditional region as an integral urban context, and to consider the conservation of individual historical features. The MCA enables researchers and developers to determine, for instance, the low centrality value of a street and how it could be improved through the adoption of other measures, such as constitutedness and permeability; this particularly related to the historical neighbourhood of Baghdad.

The MCA could be one of the main assertions underpinning the treatment of the second problem of the study, namely, how to understand the historical value, not only from individual monuments, but also from the urban fabric and street network, and to comprehend the interrelationship of the Link-Node Interface of the selected area including the historic region of Baghdad. The different street centrality values, in terms of betweenness and closeness among the four selected areas, led to a significant conclusion. Therefore, the MCA was utilised to investigate the degree of connectivity and accessibility of the street system and its contribution to the ranking of the greatest centrality parts of the network. From the comparison, case A (organic pattern) had the most significant number of links and nodes and the highest centrality value (betweenness and closeness); furthermore, it experienced the greatest degree of accessibility and connectivity. In comparison, the number of links and nodes in case B (hybrid pattern) was less than for A; that also gave it less connectivity and accessibility than for case A and within the whole system. The same finding was noted in both samples C (paralleled pattern) and D (loop-grid pattern). Hence, a principal aim was to understand the importance of the centrality of the network, including how it ascertains the value of each single link in the system and helps to strengthen the connectivity and accessibility of the current system, which in turn contributes to the intensification of urban life.

Plot | Block | Street Life

The plot has been classified as the Human-Edge Interface in this research. The plotline that constitutes the street edge has become one of the paramount long-term impacts and tends to persist relatively unchanged. Consequently, plots essentially have an effect on the future form and historical processes of a city. From another perspective, the plot pattern offers more resilience along with the street network in constituting the street edge. In this study, the plot has been tested by two indicators, namely the perimeter and size. From the comparison, the modern pattern, which was represented by sample C (paralleled) and D (loop-grid), yielded the highest perimeter value with the lowest degree of connectivity and accessibility. Cases A (organic) and B (hybrid) have lower perimeter values and that effectively increases their accessibility and connectivity within the urban context.

The size (area of the plot) was another indicator that was examined to capture the differences among the chosen samples. It illustrates an essential transformation from the traditional area of case A to the modern pattern of D, moving through cases B and C. These two variables (perimeter and size) were particularly critical in forming the block and street edge. Moreover, the plot in this research has been considered the first milestone in formulating the constitutedness and permeability when it has three variables: metric depth, storey, and a number of units per storey. The block in this study has been examined under seven variables, namely: perimeter, size, dimension, density, block area to the study area ratio, mean area, and block to street ratio. Nevertheless, both samples A (organic pattern) and B (hybrid pattern) have the smallest plot perimeter, but the largest block boundary compared with C (paralleled pattern) and D (loop-grid pattern). This was due to the comparatively irregular shape of the urban fabric within samples A and B. The spontaneous organisation of the urban form could encompass either the highest number of plots or multi-street edges or sometimes both, such as in the traditional area in case study A.

The block size is another critical variable within this study as there is no direct correlation between the size of a particular block and the number of plots within it; for example, this was the case with sample B (hybrid pattern). However, increasing the block size works to decrease the connectivity and accessibility of the urban form by reducing the street network in a certain area, such as in case study C (paralleled pattern) and D (loop-grid pattern); this could lead to the restriction of street life. Along with perimeter and size, the dimension (number of edges per block) was a distinguished indicator among the chosen samples. Even though case study C (paralleled) comprised the most significant block sizes, most consisted of only four edges. In comparison, in sample A (organic), there were more than four edges per block, which sometimes numbered fifteen sides or more. Increasing the number of edges per block plays a significant role in shaping the street system and gives a more interactive relationship between users and the adjacent edge; this phenomenon has been experienced within the traditional urban fabric, not only in the current study of Baghdad but also in most historic parts of cities. Moreover, the length of the edge differs where a certain block includes more than four sides and has a high diversity of length, such as in sample A (organic). It is rare to observe these block characteristics in the modern pattern, such as case D (loop-grid).

Permeability and connectivity are significantly related to the density, block area to study area ratio, mean area, and block to street ratio. Accordingly, case A (organic) has the largest number of blocks whilst sample C (paralleled) has the smallest number. Expanding the number of blocks in a particular area decreases the quantity of the streets and in turn the permeability and connectedness of the chosen sample, and its accessibility for people. Paradoxically, from the street observations, samples A and B witnessed more permeable and accessible movement in comparison with cases C and D, which had the lowest number of blocks. In this sense, the density might not be the only indicator to measure the connectivity and accessibility of the urban context. Therefore, the current study adopted several variables that were tested by other scholars.

The block area to the study area ratio indicator was quite close to the block density, where a low ratio refers to the high permeability and connectivity of a certain area and vice versa. Consequently, sample A (organic) has the highest ratio and less connectivity, but the six selected streets exhibited a high volume of pedestrians. This ratio was identical in case study B (hybrid), but not in samples C (paralleled) and D (loop-grid) in terms of people’s movements and the degree of connectivity and permeability. The mean block area (MBA) factor reflected different responses where both cases A and B had the lowest MBA with a high response to street life; in comparison, samples C and D had a low influence on people's movement with the most significant mean block area (MBA) value. In terms of the block to street ratio, the values for samples A, B and C were close to each other, but differed significantly from case D. There was an inverse relationship between the connectivity | permeability and block to street ratio. In this regard, from the field observations, both samples A and B reflected an exciting street life despite the high block | street rate, which signified less connectivity and permeability. This consideration was entirely the opposite in sample D and slightly true of sample C.

Connectivity and Accessibility | Street Life

Regarding the research process map, the street and its variables fall under the Human-Edge Interface. Starting with the intersection density, this provides a simple indicator to determine the connectivity value where a higher the number of intersections means a smaller average block in a selected area, thus meaning that the neighbourhood is more permeable and accessible, and urban life is likely to be positively affected. This value exhibited a positive relationship with street life where sample A (organic) included the highest number of intersections, followed by B (hybrid), C (paralleled) and D (loop-grid).

Street density considers three categories; length, area and number of streets. One of the main considerations was that there was no direct correlation between the quantity of street and their area when comparing between the different samples. In this regard, case study A (organic) had the highest number of streets with the lowest total area of streets after case C. Meanwhile, sample D (loop-grid) had the lowest number of links, but the largest total street area. Hence, there is an interrelationship between the number of streets and their total length in a particular neighbourhood, such as in samples A (high value) and D (low value). Therefore, increasing the number of links raises the total length and maximises the accessibility and permeability of a neighbourhood, regardless of the street area itself.

The link to node ratio refers to the simple equation used to determine the level of connectivity and permeability. Both samples A and B had the lowest ratio compared with C and D, which had the maximum ratio. Accordingly, A and B were less connected than C and D; however, the reality presented different findings in terms of the street life experience. Samples A and B witnessed a high spectrum of people movement and street life compared with samples C and D. Moreover, the internal node connectivity is closely related to the number of cul-de-sacs.

Increasing the quantity of cul-de-sacs means decreasing the connectivity and permeability which could impact urban life. Although sample A had the highest number of cul-de-sacs, this did not affect the permeability and connectivity when noting the urban life experienced in this neighbourhood. Furthermore, sample D had no cul-de-sacs, which suggested high connectivity and permeability, but it was noted that this provided a more modest street life and social interaction.

Theoretically, these four samples were extracted from their urban surroundings, and that assumed there were external points located at the boundary of each that worked to connect these samples to the whole area. The level of connectivity and permeability noticeably depends on the quantity of the ingress | egress points. In this sense, the organic (A) and hybrid (B) patterns are highly permeable and accessible compared with the paralleled (C) and loop-gird (D) patterns. Accordingly, more street life and social interactions have evidently been experienced in both samples A and B than in C and D.

The grid pattern ratio is restricted by the number of blocks which have 4-way corners. Maximising the 4-way intersections is an indicator of connectivity and permeability of the urban fabric. The loop-grid (D) pattern had only one block with 4-way corners, and that made it less connected and permeable than the other samples. Based on the GPR, the organic pattern (A) represented a more limited fabric in terms of the available links, although a realistic observation gave contradictory evidence that also pictured a notable sense of street life and social interaction. Paralleled pattern (C) had the highest ratio of GPR_{strong}, and that suggested high connectivity and permeability; however, the sample was still restricted in terms of people movement. Hence, a balanced reading of the urban fabric is required, as some samples have the inherent ability to improve urban livelihoods by enhancing street life and social interactions. They include several indicators that allow greater accessibility and permeability for people movement, such as for samples C and D.

Moreover, organic pattern (A) had the highest value for the pedestrian route factor (PRF); it included a more complex street network which was shaped by zigzag routes. However, this study found that sample A produced the lowest PRF value among the chosen cases. Essentially, the organic pattern followed the spontaneous organisation of the street system that emerged from a human walking distance rather than motorised-based movement, as in the paralleled (C) and loop-grid (D) patterns, and partially noted in the hybrid (B) pattern. The primary consideration is that the walking distance (human scale) could be more significant when considering connectivity, accessibility and permeability, rather than car-based measures.

The degree of connectivity, permeability and accessibility can be demonstrably seen by tracking ped-shed and the effective walking area (EWA). The organic pattern (A) responded appropriately to ped-shed and EWA, where the active area covered most of the selected sample. However, these two factors were quite modest in the loop-grid pattern (D). The paralleled pattern (C) seemed quite close to sample A (organic) for these two factors and this was followed by the hybrid pattern (B). The street system, plot size and block size, could comprise the three key dimensions that formulate the ped-shed and EWA. The nature of the network afforded benefits from the street and adjacent edges. The plot size and block dimension were the second goals concerning the number of units experienced by walkers. Originally, the spontaneous pattern (A) was designed in accordance with a human walking distance, whilst the loop-grid pattern (D) followed a pre-planned order regarding the car-based system.

The management of land use could be one of the primary considerations benefiting from the street edge and affecting street life and social interaction. A balanced distribution of human activities and their interrelationship with the street edge is required. The physical regulation of the plot and block, and the constitution of the adjacent edge is another issue that also should be examined. Concentrating more on individual land use might lead to a reduction in the ability to use the area effectively, as in samples C and D. Although the organic pattern (A) had a lower average residential area, in reality, the total number of plots belonged to purely residential and to mixed use, including residential uses. The micro-scale of the street pattern and how urban units constitute the adjacent edge was one of the critical design points. This consideration was addressed at length by adopting two factors: constitutedness and permeability. Also, the current study explored the correlation between the Multiple Centrality Assessment (MCA), constitutedness | permeability, and human activities.

Constitutedness | Permeability | Street Life

The way in which the private and public realms interact with the adjacent edge and their potential influence on each other are critical factors in constituting the street edge. The dialectic interrelationship between private and public would be expressed through micro-spatial configurations. A considerable number of attempts have been made by different scholars to capture the interrelationship between the private, public, and inbetween spaces. These spaces can be recognised as part of a building that connects with the public edge where the street forms the inbetween spaces that allow people to hold a dialogue, whether with the adjacent side (private | public) or between people themselves.

As the private edge plays a more significant role in constituting, not only the physical expression of the street but also in managing a social life, quantifying the street edge and its elements (private, inbetween and public space) was one of the principal aims of this research, and has been achieved. The literature review regarding the street and its contents (private, inbetween and public) were provided in Chapter Six, with particular reference to Baghdad city. By considering the concepts of constitutedness, permeability and intervisibility, a new approach has been achieved in this study. These three traits significantly characterise the street in terms of its ability to provide a vivid and expressive edge at different levels, particularly through its social, economic, ecological, sustainable, secure and political dimension.

Apart from the qualitative approach, this study adopted a quantitative technique in order to formulate a new equation of the constitutedness and permeability where both determine the interrelationship between the private, inbetween and public spaces. Metric depth, rather than topological depth, was one of the principal achievements of the research in measuring the street edge. The metric depth was a sensitive parameter within the constitutedness and permeability equation. Both the constitutedness and permeability yielded a significant response to the street centrality (MCA-betweenness) when considering one single sample and comparisons across the four selected neighbourhoods. The interrelationship between both the constitutedness with permeability and the centrality of betweenness led to different correlations in the various urban patterns (organic, hybrid, paralleled and loop-grid pattern).

Thus, the higher the constitutedness and permeability value, the lower the betweenness centrality value (Blue and Yellow street) and vice versa (Red street). This urban phenomenon was noted within the traditional pattern - A and partially observed in the hybrid pattern - B. In the remaining two samples (C – paralleled and D – loop-grid pattern), the value of the constitutedness and permeability responded differently to the centrality of betweenness – MCA. Generally, a higher centrality refers to a greater constitutedness and permeability, such as for Red street, while Blue street represented a minimum centrality and granted a low constitutedness and permeability. This was also experienced in both cases C and D. Meanwhile, a number of people responded positively to the centrality value. In this respect, across the four selected neighbourhoods, the higher centrality value means a higher opportunity for gathering pedestrians, and vice versa with a low centrality value (betweenness – MCA). Hence, the average flux of pedestrians entirely related to the street centrality, while this movement reflected different responses, whether in the traditional or more modern areas, in terms of the constitutedness and permeability.

11.4 Research Significance and Contribution to Knowledge

The significance of research has increased since the fundamental morphological transformations and the emergence of different spatial configurative patterns of neighbourhoods including how that could affect the street life. The long process of generating urban elements represented by plot, block, and street in the historical core of Baghdad differs from the modern models when designing new neighbourhoods. The urban vocabulary of the spontaneous order that created traditional environments is unlike those applied to the pre-planned system. Distinguishing the old pattern from the new is, to a large extent, essential in order to understand the nature and characteristics of each. The degree of connectivity, whether between urban elements or people and built environment, ultimately relies on the street pattern as an asset in the appearance of the city. Different street patterns play a key role, not only in shaping different methods of communication and enabling accessibility, but also in managing people's behaviours at various levels.

This study has conducted a comparison of the association between street centrality and the constitutedness with intervisibility and permeability. In addition, the activity pattern which was divided into three basic opposite pairs (necessary-optional, individual-social, and staying-moving) was examined, firstly through the MCA and secondly in accordance with the constitutedness and permeability value of the six selected streets for each case. Hence, the Multiple Centrality Assessment helped to establish a unified platform, not only for the centrality indices of the street but also to grasp the different correlations between the centrality itself and the other aspects of urban studies, namely activity and constitutedness. Although a number of variables in this study have already been adopted and used by other scholars, the significant contribution of this research is the combination of diverse variables to disclose the connectivity and accessibility of the street network. Quantifying the urban form's characteristics regarding the plot, block and street, and the interrelationship between them is addressed in detail in this study. The application of the street quantification variables was achieved in two ways: firstly, each case study dealt with the variables separately to determine the difference and disparity between them. Later, as the second step, a comparison was conducted amongst the four selected samples.

The comparison referred to the significant outcomes that distinguished the oldest part of the city (case study A - organic pattern) and the other samples: B - hybrid, C - paralleled, and D - loop-grid pattern). Aside from this overall comparison, each case study showed a different response to the connectivity and accessibility variables where there was a different street pattern for each. The comparison helped to raise the importance of the historical pattern and its underlying spontaneous order and how that could enrich the awareness of the value of those areas. Constitutedness, intervisibility and permeability have significantly advanced in this study to examine the street edge. The new variables derived from the characteristics of the street edge were added to formulate the equation of the constitutedness with intervisibility and permeability. The way in which a plot-building constitutes the street plays a central role in forming the whole edge as an intermediate transitional border between the two primary spaces: private and public. Applying constitutedness and permeability to the four samples revealed a substantial difference between the historical and modern patterns of the street edge. The constitutedness, in this respect, expressed the fine scale of the urban morphology. Furthermore, the main advance in this research was to use metric depth rather than topological depth in extracting the constitutedness. This gave a more sensitive reading of the private and public realms.

The research observed people who used the street and their responses to the adjacent edge typified them into five observed patterns. These patterns were: movement, activity, gender, age, and group pattern. The primary significance beyond this classification was to understand the main trend of the selected streets and how that affected both street life and social interactions. The centrality of the street (betweenness) was the first factor to calculate the pedestrian flow, and the constitutedness with permeability was the second indicator. The potentiality of the street edge along with its constitutedness and centrality, and the fine-functional use of the street units were the third considerations that needed to be considered.

11.5 Research Limitations

Two primary factors draw the boundary of the research: time and place. The time boundary related to the process of the study itself and how that determined its scope. Regarding the second factor, the current research examined the set of variables on the four selected samples located in Baghdad. Furthermore, studying the urban morphology of a certain area could be considered a third marked factor in formulating the research body. Theoretically, the research, through its processes adopted five significant steps in dealing with its problems, questions and research objectives. The scale at which the current study has been conducted is that of the first level. The second was the classification of the built environment and the main criteria used to morphologically categorise the four selected samples in this study. The third step was to determine the leading indicators and then to formulate a set of variables, which were employed to evaluate every sample. Furthermore, comparison and analysis of the indicators were conducted in two directions: within the case study itself and between the selected samples, which formed the fourth step. The final step was to examine street life and to conduct an ethnographic observation under the specific level of the indicators and variables. These five steps formed the entire scope of the research and this lead to a reduction and exclusion of some aspects that could be related directly or secondarily to the current research.

A Multiple Centrality Assessment (MCA) involved the study of four cases; these were determined by 400 metre-radius which covered four different patterns of urban context: organic, hybrid, paralleled, loop-grid. These cases shared the same network; this helped to apply the MCA measure in a way that enabled accurate results for the centrality indices (betweenness and closeness). Furthermore, the boundary that encompasses the four samples extended beyond the border of each case study to reduce the edge effect upon the centrality analysis results. Subjecting the whole street network of Baghdad to the Multiple Centrality Assessment could lead to more significant indicators, especially for the relationship between the central region of the city and the other surrounding neighbourhoods.

The street character in this research included three levels of analysis: plot-block, street, and land use. There was the potential to involve other aspects of the built environment (for instance, a visual analysis of the street edge regarding its qualitative dimension) or include other street characteristic variables in examining the street edge (for example, architectural details and maintenance level), or to go further in studying the administration of the land use pattern in detail along with the spatial configuration of the urban elements. Constitutedness, intervisibility and permeability form the street and shape the interaction between people and the adjacent edge. These three rules need to be applied to more streets within different patterns to verify the related findings reported in this current research. Moreover, there is a need to correlate these three dimensions with, for example, socioeconomic factors and with the fine-functional uses of the street edge. This could help to understand street life.

The field study of street life is based on the ethnographic observation that relies on how people behave in a specific environmental setting. The behavioural patterns of observed people and their different responses to the street edge were reported by using two digital cameras with recorded data from the selected streets. This method, however, does not allow the observer to interact with people or interrupt them. Another method could have been applied that enabled people to share their behaviours and street life, and this would give more reliable observation data; for example, structured interviews or questionnaires. Furthermore, the ethnographic observation conducted in this study covered three different periods of time: morning, noon, and afternoon. For future research, there is an opportunity to increase the observation time to include the night as well.

11.6 Trends for Future Research

From the limitations of the study and through its research processes, some proposals for future research could be suggested and discussed to enable a comprehensive understanding of urban life and urban elements. The interrelationship between the built environment and human behaviour is secure as long as the urban ingredients manage the responses of the people who benefit from them. The reciprocal relationship between dependent factors and independent elements need to understand the different levels of the urban structure that ranged from the plot-building to the global scale of the spatial network. The hierarchical integration of the urban elements within a spatial configurative pattern helps to create an integral pattern of urban life. People habitually respond to the fine scale of the built units at the street level that constitutes its edge. The centrality value governs the street and its relative role within the whole network system in a city.

The importance of the historical pattern of the street network in the oldest part of Baghdad needs to be analysed and studied in detail through the Multiple Centrality Assessment (MCA). The centrality measure helps to track every link in this complicated organic network, and this contributes to knowledge, not only through understanding the contemporary value of a street but also by exploring the historical advantage of a street that emerged within the spontaneous order. Sustaining the traditional region always focuses on individual features, and, whilst this approach is essential, the whole historical context must also be a critical issue in planning sustainable procedures, particularly in Baghdad. There is a need to use the qualitative approach to analyse the characteristics of the built environment as another significant dimension in evaluating the urban elements; for example, the maintenance and esthetic aspects of the perceived environment. The qualification of urban components with quantifiable factors is an ideal aim to strengthen urban life.

Constitutedness with intervisibility and permeability shape the character of the street edge. These three measures play a crucial role in determining the relationship between private and public spaces where the edge is a subtle intermediate surface that monitors this relationship. Beside constitutedness, other urban aspects could be investigated regarding socioeconomic and social-spatial patterns and socio-cultural dimension. The focus on human activity in this study has been achieved through ethnographic observation in a field survey which focused on three opposite pairs of activities: staying/moving, individual/ social, and necessary/optional. Other people's attitudes can be examined regarding the number of those who sit or stand when they use public space or the street edge. The purpose of using space is varied, and the responses to the street edge and how people interact with each other also are likely to be fruitful for further investigation.

A fine-functional use (FFU) of the space, rather than land use, in studying the urban life at the street level need to be examined from different perspectives. Thus, the following areas need more study: the relationship of the plot size to the fine-functional use, regulation and its role in formulating the FFU, people's needs and desires and how they could be correlated with the FFU. The fine-functional use is not a separate part of land use, but rather a way to understand the relationship between the policy of land use, how that affects the purpose of the street edge, and how people might satisfactorily benefit from this edge.

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Appendices

Appendix One

Street Observation Forms

An enlarged sample of street observation form

Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
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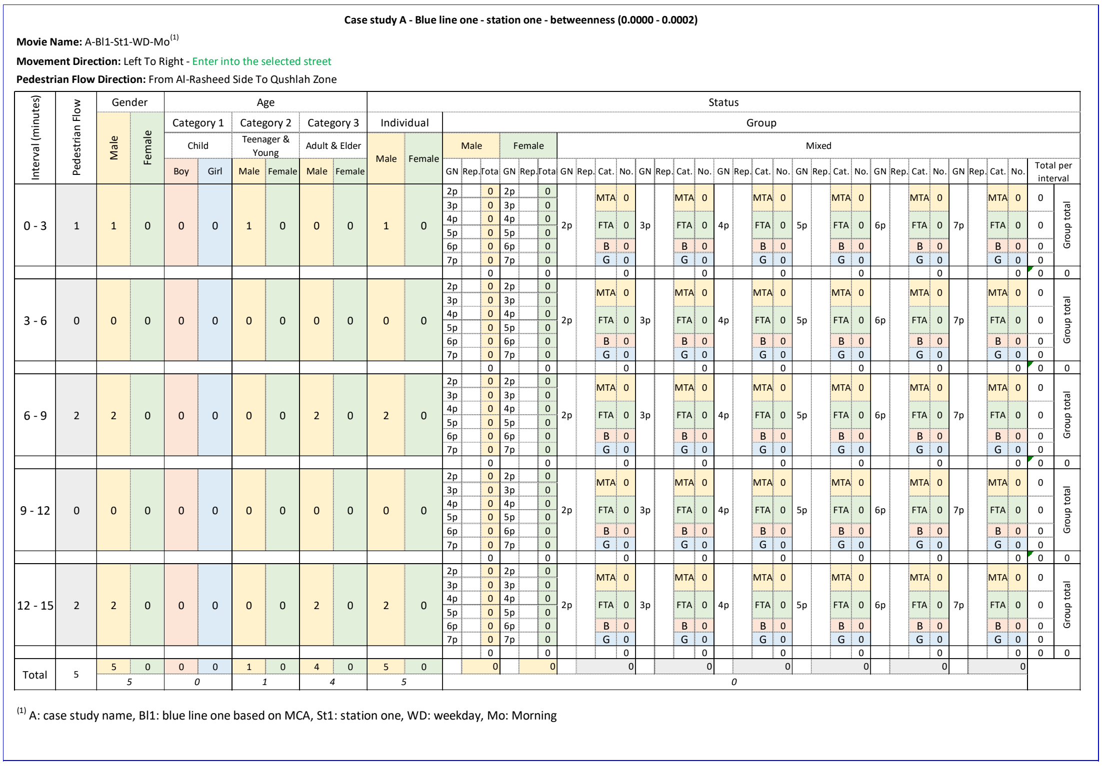
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	5	0	0	0	1	0	4	0	5	0			0			0				0				0				0				0				0				0		
		5		*0*		*1*		*4*		*5*		*0*																															

[1] A: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, Mo: Morning

Street observation forms of case study A: Organic pattern



Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
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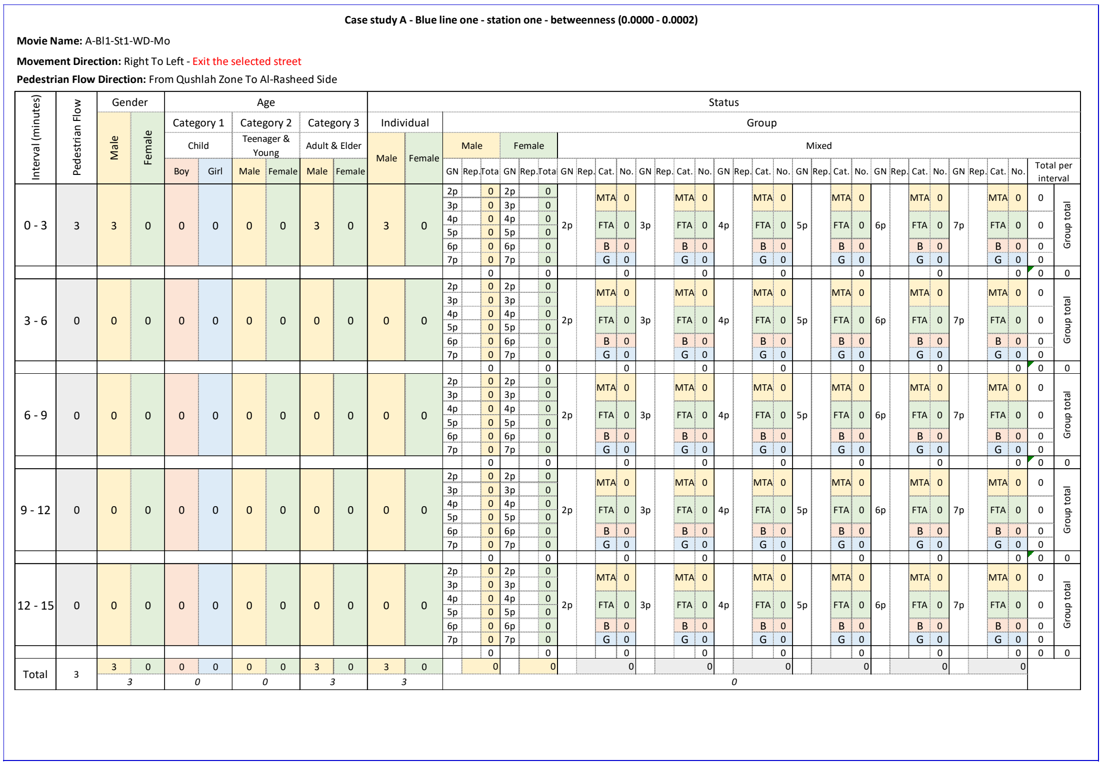
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	5	0	0	0	1	0	4	0	5	0			0			0				0				0				0				0				0				0		
		5		*0*		*1*		*4*		*5*		*0*																															

(1) A: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, Mo: Morning



Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Qushlah Zone To Al-Rasheed Side

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
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												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	3	0	0	0	0	0	3	0	3	0			0			0				0				0				0				0				0				0		
		3		*0*		*0*		*3*		*3*		*0*																															

Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-No[(1)]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	5	5	0	0	0	0	0	5	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	9	0	0	0	0	0	9	0	9	0			0			0				0				0				0				0				0				0		
		9		*0*		*0*		*9*		*9*		*0*																															

[(1)] A: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, No: noon

Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Qushlah Zone To Al-Rasheed Side

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	9	0	0	0	3	0	6	0	9	0			0			0				0				0				0				0				0				0		
		9		*0*		*3*		*6*		*9*		*0*																															

Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder				Male			Female			Mixed																									
		Male	Female	Boy	Girl	Male	Female	Male	Female	Male	Female	GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

(1) A: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study A - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Qushlah Zone To Al-Rasheed Side

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder				Male			Female			Mixed																									
		Male	Female	Boy	Girl	Male	Female	Male	Female	Male	Female	GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	0	1	0	0	0	3	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	4	0	0	0	1	0	3	0	0	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
Total	8	7	0	1	0	1	0	6	0	4	0			4			0				0				0				0				0				0				0		
		7		*1*		*1*		*6*		*4*		*4*																															

Case study A - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St2-WD-Mo[(1)]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Qushlah Zone To Al-Rasheed Side

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

[(1)] A: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study A - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	2	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	6	0	0	0	2	0	4	0	6	0			0			0				0				0				0				0				0				0		
		6		*0*		*2*		*4*		*6*		*0*																															

Case study A - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Qushlah Zone To Al-Rasheed Side

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	6	0	0	0	0	0	6	0	6	0			0			0				0				0				0				0				0				0		
		6		*0*		*0*		*6*		*6*		*0*																															

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(1) A: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, No: noon

Case study A - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	4	0	0	0	3	0	1	0	4	0			0			0				0				0				0				0				0				0		
		4		*0*		*3*		*1*		*4*		*0*																															

Case study A - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St2-WD-An[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Qushlah Zone To Al-Rasheed Side

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	0	0	2	0	0	0	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	4	0	0	0	0	0	4	0	2	0			2			0				0				0				0				0				0				0		
		4		0		0		4		2		2																															

[1] A: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study A - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl1-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Side To Qushlah Zone

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	3	0	0	0	0	0	3	0	1	0	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	4	0	0	0	0	0	4	0	2	0			2			0				0				0				0				0				0				0		
		4		0		0		4		2		2																															

Case study A - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Qiblaniah Mosque To Safafeer Suq Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	6	0	0	0	3	0	3	0	4	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	15	15	0	0	0	6	0	9	0	13	0			2			0				0				0				0				0				0				0		
		15		*0*		*6*		*9*		*13*		*2*																															

(1) A: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, Mo: Morning

Case study A - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Qiblaniah Mosque Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	5	5	0	0	0	2	0	3	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	9	0	0	0	2	0	7	0	9	0			0			0				0				0				0				0				0				0		
		9		*0*		*2*		*7*		*9*		*0*																															

Case study A - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Qiblaniah Mosque To Safafeer Suq Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	6	6	0	0	0	0	0	6	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				0				0				0				0				0				0	0	3
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	6	6	0	0	0	3	0	3	0	4	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	4	4	0	0	0	2	0	2	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	20	20	0	0	0	5	0	15	0	15	0			5			0				0				0				0				0				0				0		
		20		*0*		*5*		*15*		*15*		*5*																															

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(1) A: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, No: noon

Case study A - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Qiblaniah Mosque Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	5	5	0	0	0	1	0	4	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	6	6	0	0	0	3	0	3	0	4	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
Total	16	16	0	0	0	4	0	12	0	14	0			2			0				0				0				0				0				0				0		
		16		*0*		*4*		*12*		*14*		*2*																															

Case study A - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Qiblaniah Mosque To Safafeer Suq Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	1	0	0	0	1	0		0			0			0				0				0				0				0				0				
		1		*0*		*1*		*0*		*1*		*0*																															

(1) A: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study A - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Qiblaniah Mosque Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	1	0	0	0	1	0		0			0			0				0				0				0				0				0				
		1		*0*		*1*		*0*		*1*		*0*																															

Case study A - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Qiblaniah Mosque Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
		Male	Female	Category 1		Category 2		Category 3		Individual		Group					
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	4	4	0	0	0	1	0	3	0	4	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
Total	6	6	0	0	0	2	0	4	0	6	0			0			0
		6		*0*		*2*		*4*		*6*		*0*					

Interval (minutes)	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
Total				0				0				0				0				0				0		

(1) A: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study A - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Qiblaniah Mosque To Safafeer Suq Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
		Male	Female	Category 1		Category 2		Category 3		Individual		Group					
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
Total	6	6	0	0	0	2	0	4	0	6	0			0			0
		6		*0*		*2*		*4*		*6*		*0*					

Interval (minutes)	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
Total				0				0				0				0				0				0		

Case study A - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St2-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Qiblaniah Mosque Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	5	5	0	0	0	2	0	3	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	5	5	0	0	0	2	0	3	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	5	5	0	0	0	2	0	3	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
Total	18	18	0	0	0	6	0	12	0	14	0			4			0				0				0				0				0				0				0		
		18		*0*		*6*		*12*		*14*		*4*																															

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[1] A: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, No: noon

Case study A - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Qiblaniah Mosque To Safafeer Suq Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	8	8	0	0	0	2	0	6	0	8	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	3	0	0	0	3	0	0	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	5	5	0	0	0	2	0	3	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	19	19	0	0	0	7	0	12	0	17	0			2			0				0				0				0				0				0				0		
		19		*0*		*7*		*12*		*17*		*2*																															

Case study A - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St2-WD-An[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Qiblaniah Mosque Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

[(1)] A: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, An: afternoon

Case study A - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: A-Bl2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Qiblaniah Mosque To Safafeer Suq Through Blue Alley

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study A - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St1-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Sarai Suq Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	1	0	0	1	0	2	1	3	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	5	5	0	0	0	0	0	5	0	5	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	4	0	0	0	1	0	3	0	4	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	4	0	0	0	2	0	2	0	4	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	3	2	1	0	0	0	0	2	1	2	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	20	18	2	0	0	4	0	14	2	18	2			0			0				0				0				0				0				0				0		
		20		0		4		16		20		0																															

[1] A: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study A - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Sarai Suq To Al-Rasheed Street Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	10	9	1	0	0	3	0	6	1	7	1	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	3	2	1	0	0	1	0	1	1	2	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	9	8	1	0	0	2	1	6	0	8	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	7	7	0	0	0	5	0	2	0	7	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	5	4	1	0	0	3	0	1	1	4	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	34	30	4	0	0	14	1	16	3	28	4			2			0				0				0				0				0				0				0		
		34		0		15		19		32		2																															

Case study A - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St1-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Sarai Suq Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	25	25	0	0	0	14	0	11	0	13	0	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			0				0				0				0				0				0				0	0	12
3 - 6	35	31	4	0	0	15	3	16	1	17	0	2p	5	10	2p	1	2	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														13			2				0				3				0				0				0				0	3	18
6 - 9	26	24	2	0	0	9	1	15	1	14	0	2p	4	8	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				4				0				0				0				0				0	4	12
9 - 12	33	32	1	0	0	13	0	19	1	22	-1	2p	4	8	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				4				0				0				0				0				0	4	12
12 - 15	32	26	6	0	0	7	4	19	2	21	1	2p	1	2	2p	1	2	2p		MTA	0	3p	2	MTA	3	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				6				0				0				0				0	6	10
Total	151	138	13	0	0	58	8	80	5	87	0		43			4			8				9				0				0				0				0				
		151		0		66		85		87		64																															

(1) A: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study A - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Sarai Suq To Al-Rasheed Street Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	37	35	2	0	0	12	2	23	0	23	0	2p	4	8	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														11			0				0				3				0				0				0				0	3	14
3 - 6	22	22	0	0	0	5	0	17	0	20	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	27	27	0	0	0	10	0	17	0	19	0	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
9 - 12	23	23	0	0	0	6	0	17	0	19	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
12 - 15	29	22	7	0	0	5	0	17	7	11	1	2p	3	6	2p	2	4	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			4				4				0				0				0				0				0	4	17
Total	138	129	9	0	0	38	2	91	7	92	1		34			4			4				3				0				0				0				0				
		138		0		40		98		93		45																															

Case study A - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Sarai Suq Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	9	9	0	0	0	3	0	6	0	7	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	13	12	1	0	0	3	0	9	1	6	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
6 - 9	16	14	2	0	0	5	0	9	2	10	2	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
9 - 12	8	8	0	0	0	4	0	4	0	6	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	8	8	0	0	0	2	0	6	0	2	0	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
Total	54	51	3	0	0	17	0	34	3	31	3		20			0			0				0				0				0				0				0				
		54		*0*		*17*		*37*		*34*		*20*																															

(1) A: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study A - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Sarai Suq To Al-Rasheed Street Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	23	16	7	0	0	4	7	12	0	14	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p	1	7			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			7				0				0				0				0				0				0	0	9
3 - 6	6	6	0	0	0	1	0	5	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	13	13	0	0	0	11	0	2	0	2	0	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														11			0				0				0				0				0				0				0	0	11
9 - 12	16	16	0	0	0	8	0	8	0	14	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	10	9	1	0	0	7	1	2	0	4	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
Total	68	60	8	0	0	31	8	29	0	40	1		20			7			0				0				0				0				0				0				
		68		*0*		*39*		*29*		*41*		*27*																															

Case study A - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St2-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Sarai Suq Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	28	28	0	0	0	15	0	13	0	22	0	2p	3	6	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
3 - 6	27	27	0	0	0	4	0	23	0	17	0	2p	3	6	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p	1	4	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			0				0				0				0				0				0				0	0	10
6 - 9	31	29	2	0	0	15	0	14	2	25	0	2p	2	4	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				0				0				0				0				0				0	0	6
9 - 12	18	17	1	0	0	9	0	8	1	15	1	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	20	19	1	0	0	8	0	11	1	17	1	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
Total	124	120	4	0	0	51	0	69	4	96	2			24			2				0				0				0				0				0				0		
		124		0		51		73		98		26																															

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[1] A: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study A - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Sarai Suq To Al-Rasheed Street Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	10	10	0	0	0	6	0	4	0	8	0	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	9	9	0	0	0	8	0	1	0	6	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p	1	3	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				0				0				0				0				0				0	0	3
6 - 9	20	20	0	0	0	5	0	15	0	18	0	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	9	9	0	0	0	5	0	4	0	9	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	18	18	0	0	0	8	0	10	0	14	0	2p	2	4	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
Total	66	66	0	0	0	32	0	34	0	55	0			11			0				0				0				0				0				0				0		
		66		0		32		34		55		11																															

Case study A - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Sarai Suq Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	41	37	4	0	0	13	0	24	4	29	2	2p	3	6	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				4				0				0				0				0				0	4	10
3 - 6	52	48	4	0	0	23	2	25	2	30	2	2p	6	12	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														18			2				0				0				0				0				0				0	0	20
6 - 9	60	49	10	1	0	14	2	35	8	41	2	2p	2	4	2p	2	4	2p	3	MTA	3	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	4	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			4				6				3				0				0				0				0	9	17
9 - 12	56	53	3	0	0	13	0	40	3	38	2	2p	7	14	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			0				2				0				0				0				0				0	2	16
12 - 15	49	46	1	2	0	15	0	31	1	28	1	2p	6	12	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														18			0				2				0				0				0				0				0	2	20
Total	258	233	22	3	0	78	4	155	18	166	9		60			6			14				3				0				0				0				0				
		255		3		82		173		175		83																															

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(1) A: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study A - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Sarai Suq To Al-Rasheed Street Through Al-Mutanabbi Street

3	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	45	37	7	1	0	12	3	25	4	32	3	2p	2	4	2p		0	2p	1	MTA	1	3p		MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	3			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	1			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				2				0				4				0				0				0	6	10
3 - 6	58	49	9	0	0	22	4	27	5	42	3	2p	3	6	2p	1	2	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			5				2				0				0				0				0				0	2	13
6 - 9	47	44	1	2	0	16	0	28	1	36	1	2p	3	6	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				4				0				0				0				0				0	4	10
9 - 12	65	59	5	0	1	13	2	46	3	41	3	2p	8	16	2p		0	2p	1	MTA	1	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														16			0				2				3				0				0				0				0	5	21
12 - 15	35	35	0	0	0	15	0	20	0	26	0	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			0				0				0				0				0				0				0	0	9
Total	250	224	22	3	1	78	9	146	13	177	10		41			5			10				3				4				0				0				0				
		246		4		87		159		187		63																															

Case study A - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Sarai Suq To Al-Rasheed Street Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	36	36	0	0	0	16	0	20	0	26	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			0				0				0				0				0				0				0	0	10
3 - 6	29	29	0	0	0	7	0	22	0	25	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
6 - 9	47	38	9	0	0	10	5	28	4	34	2	2p	2	4	2p	2	4	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			7				0				0				0				0				0				0	0	11
9 - 12	43	43	0	0	0	19	0	24	0	31	0	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			0				0				0				0				0				0				0	0	12
12 - 15	39	37	2	0	0	13	0	24	2	31	2	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
Total	194	183	11	0	0	65	5	118	6	147	4			36			7				0				0				0				0				0				0		
		194		*0*		*70*		*124*		*151*		*43*																															

(1) A: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study A - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Sarai Suq Through Al-Mutanabbi Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	32	30	2	0	0	12	1	18	1	25	2	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
3 - 6	34	32	1	1	0	16	0	16	1	28	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
6 - 9	29	28	1	0	0	17	1	11	0	18	1	2p	5	10	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			0				0				0				0				0				0				0	0	10
9 - 12	30	30	0	0	0	8	0	22	0	26	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
12 - 15	31	30	1	0	0	13	0	17	1	24	1	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
Total	156	150	5	1	0	66	2	84	3	121	5			30			0				0				0				0				0				0				0		
		155		*1*		*68*		*87*		*126*		*30*																															

Case study A - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Danial Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	5	0	0	0	3	0	2	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	7	5	2	0	0	2	0	3	2	5	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	10	10	0	0	0	3	0	7	0	8	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	8	8	0	0	0	3	0	5	0	8	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	10	10	0	0	0	3	0	7	0	10	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	40	38	2	0	0	14	0	24	2	36	0			2			2				0				0				0				0				0				0		
		40		*0*		*14*		*26*		*36*		*4*																															

(1) A: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, Mo: Morning

Case study A - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Danial Suq To Safafeer Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	8	8	0	0	0	5	0	3	0	8	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	9	9	0	0	0	4	0	5	0	9	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	10	10	0	0	0	4	0	6	0	10	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	11	11	0	0	0	0	0	11	0	11	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	9	8	1	0	0	3	0	5	1	6	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
Total	47	46	1	0	0	16	0	30	1	44	1			2			0				0				0				0				0				0				0		
		47		*0*		*16*		*31*		*45*		*2*																															

Case study A - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St1-WD-No[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Danial Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
				Category 1		Category 2		Category 3		Individual	
				Child		Teenager & Young		Adult & Elder			
		Male	Female	Boy	Girl	Male	Female	Male	Female	Male	Female
0 - 3	10	10	0	0	0	4	0	6	0	8	0
3 - 6	17	15	1	1	0	5	0	10	1	14	1
6 - 9	15	13	0	2	0	7	0	6	0	15	0
9 - 12	17	14	2	1	0	10	0	4	2	14	0
12 - 15	19	16	2	1	0	8	0	8	2	8	0
Total	78	68	5	5	0	34	0	34	5	59	1
		73		*5*		*34*		*39*		*60*	

Interval (minutes)	Status					
	Group					
	Male			Female		
	GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	2p	1	2	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			2			0
3 - 6	2p	1	2	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			2			0
6 - 9	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
9 - 12	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
12 - 15	2p	4	8	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			8			0
Total			12			0

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
			B	0			B	1			B	0			B	0			B	0			B	0	1	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				3				0				0				0				0	3	3
12 - 15	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
			B	0			B	1			B	0			B	0			B	0			B	0	1	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				3				0				0				0				0	3	11
Total				0				6				0				0				0				0		
	18																									

[(1)] A: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, No: noon

Case study A - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Danial Suq To Safafeer Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
				Category 1		Category 2		Category 3		Individual	
				Child		Teenager & Young		Adult & Elder			
		Male	Female	Boy	Girl	Male	Female	Male	Female	Male	Female
0 - 3	14	14	0	0	0	3	0	11	0	14	0
3 - 6	15	14	1	0	0	5	1	9	0	13	0
6 - 9	9	9	0	0	0	2	0	7	0	9	0
9 - 12	17	14	2	1	0	11	0	3	2	7	0
12 - 15	12	12	0	0	0	6	0	6	0	10	0
Total	67	63	3	1	0	27	1	36	2	53	0
		66		*1*		*28*		*38*		*53*	

Interval (minutes)	Status					
	Group					
	Male			Female		
	GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
3 - 6	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
6 - 9	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
9 - 12	2p	2	4	2p		0
	3p	1	3	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			7			0
12 - 15	2p	1	2	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			2			0
Total			9			0

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				2				0				0				0				0				0	2	2
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
			B	0			B	1			B	0			B	0			B	0			B	0	1	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				3				0				0				0				0	3	10
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
Total				2				3				0				0				0				0		
	14																									

Case study A - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Danial Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	6	0	0	0	3	0	3	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	4	2	2	0	0	1	0	1	2	2	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	8	7	0	1	0	4	0	3	0	8	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	6	6	0	0	0	4	0	2	0	4	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	8	8	0	0	0	3	0	5	0	8	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	32	29	2	1	0	15	0	14	2	28	0			2			2				0				0				0				0				0				0		
		31		*1*		*15*		*16*		*28*		*4*																															

(1) A: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study A - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Danial Suq To Safafeer Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	11	10	1	0	0	2	0	8	1	8	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	5	5	0	0	0	1	0	4	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	6	6	0	0	0	1	0	5	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	15	12	3	0	0	2	0	10	3	10	1	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
12 - 15	5	4	0	1	0	2	0	2	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	42	37	4	1	0	8	0	29	4	34	2			4			2				0				0				0				0				0				0		
		41		*1*		*8*		*33*		*36*		*6*																															

Case study A - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Rasheed Street Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	13	13	0	0	0	7	0	6	0	11	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	12	11	1	0	0	4	0	7	1	9	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	11	11	0	0	0	5	0	6	0	11	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	11	11	0	0	0	5	0	6	0	9	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	18	17	1	0	0	3	0	14	1	17	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	65	63	2	0	0	24	0	39	2	57	2		6			0			0				0				0				0				0				0				
		65		0		24		41		59		6																															

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(1) A: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, Mo: Morning

Case study A - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Safafeer Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	11	11	0	0	0	5	0	6	0	11	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	12	12	0	0	0	5	0	7	0	8	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
6 - 9	21	20	1	0	0	5	0	15	1	16	1	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
9 - 12	24	22	1	1	0	9	0	13	1	19	1	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
12 - 15	16	16	0	0	0	7	0	9	0	14	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
Total	84	81	2	1	0	31	0	50	2	68	2		14			0			0				0				0				0				0				0				
		83		1		31		52		70		14																															

Case study A - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Rasheed Street Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	31	29	2	0	0	10	0	19	2	27	2	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	22	21	1	0	0	7	0	14	1	20	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	22	22	0	0	0	4	0	18	0	20	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	28	27	0	1	0	9	0	18	0	22	0	2p	2	4	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				2				0				0				0				0				0	2	6
12 - 15	31	27	4	0	0	12	0	15	4	23	1	2p	1	2	2p		0	2p	1	MTA	1	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				3				0				0				0				0	5	7
Total	134	126	7	1	0	42	0	84	7	112	3			10			0				6				3				0				0				0				0		
		133		*1*		*42*		*91*		*115*		*19*																															

(1) A: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study A - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Safafeer Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	22	22	0	0	0	7	0	15	0	20	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	31	28	2	1	0	10	0	18	2	22	2	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				2				0				0				0				0				0	2	7
6 - 9	25	22	3	0	0	6	0	16	3	18	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			3				0				0				0				0				0				0	0	7
9 - 12	39	34	4	1	0	15	1	19	3	28	1	2p	3	6	2p	1	2	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			2				2				0				0				0				0				0	2	10
12 - 15	17	14	3	0	0	8	0	6	3	13	1	2p		0	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				3				0				0				0				0	3	3
Total	134	120	12	2	0	46	1	74	11	101	4			17			5				4				3				0				0				0				0		
		132		*2*		*47*		*85*		*105*		*29*																															

Case study A - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Safafeer Suq To Al-Rasheed Street Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	27	27	0	0	0	7	0	20	0	23	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
3 - 6	37	29	0	0	8	0	0	29	0	27	8	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	28	26	2	0	0	16	0	10	2	19	1	2p	3	6	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				2				0				0				0				0				0	2	8
9 - 12	18	18	0	0	0	10	0	8	0	13	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
12 - 15	27	25	2	0	0	8	0	17	2	21	0	2p	2	4	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				0				0				0				0				0				0	0	6
Total	137	125	4	0	8	41	0	84	4	103	9			21			2				2				0				0				0				0				0		
		129		*8*		*41*		*88*		*112*		*25*																															

(1) A: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, An: afternoon

Case study A - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: A-Ye2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Safafeer Suq Through Safafeer Suq

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	15	15	0	0	0	10	0	5	0	13	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	16	14	2	0	0	9	1	5	1	10	0	2p	2	4	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				0				0				0				0				0				0	0	6
6 - 9	14	14	0	0	0	5	0	9	0	10	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
9 - 12	15	15	0	0	0	8	0	7	0	13	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	11	10	1	0	0	4	0	6	1	7	0	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
Total	71	68	3	0	0	36	1	32	2	53	0			14			2				2				0				0				0				0				0		
		71		*0*		*37*		*34*		*53*		*18*																															

Case study A - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Medan Square Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	29	29	0	0	0	12	0	17	0	21	0	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	
3 - 6	35	35	0	0	0	8	0	27	0	29	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
6 - 9	40	38	1	1	0	5	0	33	1	34	0	2p	2	4	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				2				0				0				0				0				0	2	6
9 - 12	43	40	1	2	0	6	0	34	1	34	1	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
12 - 15	41	40	1	0	0	5	0	35	1	32	1	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
Total	188	182	3	3	0	36	0	146	3	150	2			34			0				2				0				0				0				0				0		
		185		3		36		149		152		36																															

(1) A: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study A - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Medan Square To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	31	29	2	0	0	7	0	22	2	22	1	2p	3	6	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				2				0				0				0				0				0	2	8
3 - 6	35	34	1	0	0	10	0	24	1	32	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	53	48	5	0	0	9	1	39	4	36	5	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			0				0				0				0				0				0				0	0	12
9 - 12	44	42	2	0	0	4	0	38	2	35	2	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														7			0				0				0				0				0				0				0	0	7
12 - 15	34	34	0	0	0	7	0	27	0	26	0	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
Total	197	187	10	0	0	37	1	150	9	151	9			35			0				2				0				0				0				0				0		
		197		0		38		159		160		37																															

Case study A - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St1-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Medan Square Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	65	59	5	1	0	8	1	51	4	51	3	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	1	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	1			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														7			0				0				0				4				0				0				0	4	11
3 - 6	69	67	2	0	0	11	0	56	2	53	0	2p	6	12	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			0				4				0				0				0				0				0	4	16
6 - 9	62	60	2	0	0	5	0	55	2	51	1	2p	4	8	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				2				0				0				0				0				0	2	10
9 - 12	83	76	6	1	0	10	1	66	5	54	1	2p	8	16	2p	2	4	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														22			4				2				0				0				0				0				0	2	28
12 - 15	75	74	1	0	0	11	1	63	0	53	0	2p	10	20	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														20			0				2				0				0				0				0				0	2	22
Total	354	336	16	2	0	45	3	291	13	262	5			69			4				10				0				4				0				0				0		
		352		*2*		*48*		*304*		*267*		*87*																															

(1) A: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, No: noon

Case study A - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Medan Square To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	90	82	7	1	0	16	0	66	7	71	4	2p	4	8	2p	1	2	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														11			2				2				0				0				0				0				0	2	15
3 - 6	99	85	11	2	1	22	2	63	9	55	4	2p	14	28	2p	1	2	2p		MTA	0	3p	2	MTA	2	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	3			FTA	0			FTA	0			FTA	0	5	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	1			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														28			2				0				6				4				0				0				0	10	40
6 - 9	123	110	10	2	1	24	0	86	10	89	3	2p	8	16	2p	1	2	2p	2	MTA	1	3p	2	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	2			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0	5	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	2			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														19			2				4				6				0				0				0				0	10	31
9 - 12	101	91	9	1	0	22	0	69	9	68	7	2p	11	22	2p		0	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														22			0				4				0				0				0				0				0	4	26
12 - 15	107	100	6	1	0	32	0	68	6	66	4	2p	12	24	2p		0	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p	1	5	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														33			0				4				0				0				0				0				0	4	37
Total	520	468	43	7	2	116	2	352	41	349	22			113			6				14				12				4				0				0				0		
		511		*9*		*118*		*393*		*371*		*149*																															

Case study A - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St1-WD-An[1]

Movement Direction: Left To Right- Enter into the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Medan Square Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	65	61	4	0	0	28	0	33	4	36	1	2p	10	20	2p	1	2			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0	2p	1	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														24			2				2				0				0				0				0				0	2	28
3 - 6	50	45	3	2	0	14	0	31	3	37	3	2p	5	10	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			0				0				0				0				0				0				0	0	10
6 - 9	59	53	5	1	0	16	0	37	5	40	3	2p	6	12	2p		0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	2	FTA	2	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			0				4				0				0				0				0				0	4	16
9 - 12	85	71	13	1	0	15	0	56	13	48	1	2p	9	18	2p	5	10			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0	2p	2	FTA	2	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														22			10				4				0				0				0				0				0	4	36
12 - 15	58	54	4	0	0	20	0	34	4	46	2	2p	4	8	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			2				0				0				0				0				0				0	0	10
Total	317	284	29	4	0	93	0	191	29	207	10		76			14			10				0				0				0				0				0				
		313		4		93		220		217		100																															

[1] A: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study A - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Medan Square To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	59	54	4	1	0	11	1	43	3	44	1	2p	3	6	2p		0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0	2p	1	FTA	1	3p	1	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			0				2				3				0				0				0				0	5	14
3 - 6	71	61	8	2	0	17	1	44	7	53	3	2p	5	10	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			5				0				0				0				0				0				0	0	15
6 - 9	67	61	5	1	0	17	1	44	4	44	2	2p	5	10	2p		0			MTA	1			MTA	0			MTA	1			MTA	0			MTA	0			MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	1	FTA	1	3p		FTA	0	4p	1	FTA	2	5p		FTA	0	6p		FTA	0	7p		FTA	0	3	
												5p	1	5	5p		0																										
												6p		0	6p		0			B	0			B	0			B	1			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														15			0				2				0				4				0				0				0	6	21
9 - 12	56	53	3	0	0	21	0	32	3	39	3	2p	4	8	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			0				0				0				0				0				0				0	0	14
12 - 15	54	45	8	0	1	11	3	34	5	31	4	2p	3	6	2p	1	2			MTA	0			MTA	1			MTA	0			MTA	4			MTA	0			MTA	0	5	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p	1	FTA	2	4p		FTA	0	5p	1	FTA	1	6p		FTA	0	7p		FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			2				0				3				0				5				0				0	8	19
Total	307	274	28	4	1	77	6	197	22	211	13		57			7			4				6				4				5				0				0				
		302		5		83		219		224		83																															

Case study A - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St2-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Medan Square To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	24	21	1	1	1	9	0	12	1	19	1	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				2				0				0				0				0				0	2	4
3 - 6	18	18	0	0	0	7	0	11	0	18	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	28	27	0	1	0	4	0	23	0	18	0	2p	4	8	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				2				0				0				0				0				0	2	10
9 - 12	17	15	2	0	0	3	0	12	2	15	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	21	18	3	0	0	14	0	4	3	5	3	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p	1	6	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														13			0				0				0				0				0				0				0	0	13
Total	108	99	6	2	1	37	0	62	6	75	6			23			0				4				0				0				0				0				0		
		105		3		37		68		81		27																															

(1) A: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study A - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Medan Square Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	19	18	1	0	0	10	0	8	1	13	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
3 - 6	27	26	1	0	0	11	0	15	1	22	1	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
6 - 9	10	8	2	0	0	2	0	6	2	6	0	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
9 - 12	17	17	0	0	0	6	0	11	0	17	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	12	11	1	0	0	3	0	8	1	9	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
Total	85	80	5	0	0	32	0	48	5	67	3			13			2				0				0				0				0				0				0		
		85		0		32		53		70		15																															

Case study A - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Medan Square To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	52	45	5	2	0	11	0	34	5	36	1	2p	4	8	2p	1	2	2p	1	MTA	1	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	2			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			2				2				3				0				0				0				0	5	15
3 - 6	48	46	2	0	0	16	0	30	2	29	1	2p	3	6	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	2	6	3p		0																										
												4p	1	4	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														16			0				2				0				0				0				0				0	2	18
6 - 9	53	45	5	0	3	13	0	32	5	36	3	2p	3	6	2p		0	2p	1	MTA	1	3p	2	MTA	2	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	3			G	0			G	0			G	0			G	0	3	
														6			0				2				6				0				0				0				0	8	14
9 - 12	69	64	4	1	0	14	0	50	4	42	2	2p	10	20	2p		0	2p	1	MTA	1	3p	1	MTA	2	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														20			0				2				3				0				0				0				0	5	25
12 - 15	59	54	4	1	0	13	0	41	4	39	1	2p	6	12	2p	1	2	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														15			2				2				0				0				0				0				0	2	19
Total	281	254	20	4	3	67	0	187	20	182	8			65			4				10				12				0				0				0				0		
		274		7		67		207		190		91																															

(1) A: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study A - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Medan Square Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	56	52	2	0	2	9	0	43	2	41	2	2p	2	4	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	2			G	0			G	0			G	0			G	0	2	
														10			0				0				3				0				0				0				0	3	13
3 - 6	55	50	3	1	1	13	0	37	3	37	2	2p	6	12	2p		0	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														12			0				4				0				0				0				0				0	4	16
6 - 9	46	43	2	0	1	14	0	29	2	31	1	2p	4	8	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														11			0				0				3				0				0				0				0	3	14
9 - 12	61	57	4	0	0	19	1	38	3	40	3	2p	5	10	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p	1	MTA	4	6p		MTA	0	7p		MTA	0	4	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	1			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														13			0				0				0				0				5				0				0	5	18
12 - 15	31	30	1	0	0	8	0	22	1	25	0	2p	2	4	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				2				0				0				0				0				0	2	6
Total	249	232	12	1	4	63	1	169	11	174	8			50			0				6				6				0				5				0				0		
		244		5		64		180		182		67																															

Case study A - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St2-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Medan Square To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	20	19	1	0	0	8	0	11	1	19	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	27	23	3	1	0	5	0	18	3	22	1	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
6 - 9	26	26	0	0	0	9	0	17	0	18	0	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
9 - 12	30	29	1	0	0	12	0	17	1	20	0	2p	4	8	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				2				0				0				0				0				0	2	10
12 - 15	26	25	1	0	0	15	1	10	0	14	1	2p	4	8	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														11			0				0				0				0				0				0				0	0	11
Total	129	122	6	1	0	49	1	73	5	93	3			29			2				2				0				0				0				0				0		
		128		*1*		*50*		*78*		*96*		*33*																															

(1) A: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study A - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re1-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Medan Square Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	28	26	2	0	0	12	0	14	2	18	1	2p	2	4	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														7			0				2				0				0				0				0				0	2	9
3 - 6	46	41	1	4	0	17	0	24	1	29	0	2p	6	12	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														15			0				2				0				0				0				0				0	2	17
6 - 9	48	42	3	3	0	11	0	31	3	33	0	2p	4	8	2p		0	2p	2	MTA	2	3p	1	MTA	2	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	4	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				4				3				0				0				0				0	7	15
9 - 12	32	32	0	0	0	12	0	20	0	26	0	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
12 - 15	49	43	5	1	0	9	0	34	5	34	1	2p	4	8	2p	1	2	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			2				4				0				0				0				0				0	4	14
Total	203	184	11	8	0	61	0	123	11	140	2			44			2				12				3				0				0				0				0		
		195		*8*		*61*		*134*		*142*		*61*																															

Case study A - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St1-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	64	57	7	0	0	34	0	23	7	49	2	2p	3	6	2p	1	2			MTA	1			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	1	FTA	1	3p	1	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			2				2				3				0				0				0				0	5	13
3 - 6	60	59	1	0	0	24	0	35	1	51	1	2p	4	8	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
6 - 9	82	77	4	1	0	28	0	49	4	69	4	2p	3	6	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			0				0				0				0				0				0				0	0	9
9 - 12	49	48	1	0	0	24	0	24	1	42	1	2p	3	6	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
12 - 15	58	56	2	0	0	30	0	26	2	45	2	2p	4	8	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														11			0				0				0				0				0				0				0	0	11
Total	313	297	15	1	0	140	0	157	15	256	10			40			2				2				3				0				0				0				0		
		312		*1*		*140*		*172*		*266*		*47*																															

[1] A: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study A - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Rasheed Street Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	117	102	12	3	0	56	0	46	12	95	10	2p	5	10	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			2				0				0				0				0				0				0	0	12
3 - 6	135	126	9	0	0	34	0	92	9	113	3	2p	6	12	2p	1	2			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0	2p	1	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			5				2				0				0				0				0				0	2	19
6 - 9	93	86	7	0	0	32	0	54	7	75	3	2p	3	6	2p		0			MTA	3			MTA	2			MTA	0			MTA	0			MTA	0			MTA	0	5	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	3	FTA	3	3p	1	FTA	1	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				6				3				0				0				0				0	9	15
9 - 12	127	117	9	1	0	44	0	73	9	84	6	2p	12	24	2p		0			MTA	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	2	Group total
												3p	1	3	3p		0																										
												4p	1	4	4p		0	2p	3	FTA	3	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														31			0				6				0				0				0				0				0	6	37
12 - 15	106	96	8	2	0	48	0	48	8	76	7	2p	8	16	2p		0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0	2p	2	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														19			0				4				0				0				0				0				0	4	23
Total	578	527	45	6	0	214	0	313	45	443	29			78			7				18				3				0				0				0				0		
		572		*6*		*214*		*358*		*472*		*106*																															

Case study A - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	120	111	9	0	0	40	0	71	9	97	2	2p	7	14	2p	2	4	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			7				0				0				0				0				0				0	0	21
3 - 6	142	131	11	0	0	42	0	89	11	107	8	2p	10	20	2p	1	2	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														23			2				2				0				0				0				0				0	2	27
6 - 9	123	111	12	0	0	37	0	74	12	92	4	2p	8	16	2p	1	2	2p	3	MTA	3	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														16			5				6				0				0				0				0				0	6	27
9 - 12	97	92	4	1	0	25	0	67	4	65	2	2p	13	26	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														26			0				4				0				0				0				0				0	4	30
12 - 15	119	110	9	0	0	28	0	82	9	95	4	2p	7	14	2p	2	4	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			4				2				0				0				0				0				0	2	20
Total	601	555	45	1	0	172	0	383	45	456	20			93			18				14				0				0				0				0				0		
		600		*1*		*172*		*428*		*476*		*125*																															

(1) A: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, No: noon

The interval (12-15) derive from the average of four intervals above where there was a technical issue in camera

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Case study A - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Rasheed Street Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	129	117	7	4	1	44	0	73	7	79	2	2p	9	18	2p		0	2p	3	MTA	3	3p	2	MTA	3	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	6	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	2			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0	5	
												5p	2	10	5p		0																										
												6p		0	6p		0			B	0			B	2			B	2			B	0			B	0			B	0	4	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														32			0				6				6				4				0				0				0	16	48
3 - 6	117	105	9	2	1	35	0	70	9	80	6	2p	9	18	2p		0	2p	2	MTA	2	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	2			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														24			0				4				3				0				0				0				0	7	31
6 - 9	107	98	9	0	0	26	0	72	9	74	4	2p	6	12	2p		0	2p	2	MTA	2	3p	2	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p	1	3	3p		0																										
												4p	1	4	4p		0			FTA	2			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0	5	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	2			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														19			0				4				6				0				0				0				0	10	29
9 - 12	130	121	8	1	0	34	0	87	8	100	0	2p	8	16	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p	1	MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p	1	4	4p		0			FTA	1			FTA	0			FTA	0			FTA	4			FTA	0			FTA	0	5	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	1			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														20			3				2				0				0				5				0				0	7	30
12 - 15	118	110	8	0	0	28	0	82	8	94	6	2p	7	14	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			0				4				0				0				0				0				0	4	18
Total	601	551	41	7	2	167	0	384	41	427	18			109			3				20				15				4				5				0				0		
		592		*9*		*167*		*425*		*445*		*156*																															

The interval (12-15) derive from the average of four intervals above where there was a technical issue in camera

Case study A - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																							
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	162	143	17	2	0	37	4	106	13	115	7	2p	11	22	2p	1	2	2p	2	MTA	2	3p	2	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p	1	3	3p	1	3																										
												4p		0	4p		0			FTA	2			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	2			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														25			5				4				6				0				0				0				0	10	40
3 - 6	152	142	10	0	0	34	3	108	7	127	3	2p	7	14	2p	3	6	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			6				2				0				0				0				0				0	2	22
6 - 9	161	148	13	0	0	55	0	93	13	112	9	2p	18	36	2p	2	4	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														36			4				0				0				0				0				0				0	0	40
9 - 12	152	139	13	0	0	53	0	86	13	105	7	2p	13	26	2p	2	4	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														32			4				4				0				0				0				0				0	4	40
12 - 15	181	164	16	0	1	52	1	112	15	124	5	2p	17	34	2p	2	4	2p	4	MTA	3	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p	1	3	3p	1	3																										
												4p		0	4p		0			FTA	4			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														37			7				8				0				0				0				0				0	8	52
Total	808	736	69	2	1	231	8	505	61	583	31			144			26				18				6				0				0				0				0		
		805		*3*		*239*		*566*		*614*		*194*																															

(1) A: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study A - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Rasheed Street Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																							
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	60	53	6	1	0	20	0	33	6	48	1	2p	2	4	2p	1	2	2p	1	MTA	1	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				2				3				0				0				0				0	5	11
3 - 6	46	40	5	0	1	19	0	21	5	32	4	2p	2	4	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														8			0				2				0				0				0				0				0	2	10
6 - 9	49	43	4	1	1	18	0	25	4	28	1	2p	6	12	2p		0	2p	4	MTA	3	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														12			0				8				0				0				0				0				0	8	20
9 - 12	55	54	1	0	0	22	0	32	1	45	1	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			0				0				0				0				0				0				0	0	9
12 - 15	42	41	1	0	0	29	0	12	1	31	1	2p	5	10	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			0				0				0				0				0				0				0	0	10
Total	252	231	17	2	2	108	0	123	17	184	8			43			2				12				3				0				0				0				0		
		248		*4*		*108*		*140*		*192*		*60*																															

Case study A - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Rasheed Street Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																							
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	74	67	7	0	0	39	1	28	6	61	3	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p	1	3																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			3				2				0				0				0				0				0	2	10
3 - 6	67	61	6	0	0	37	0	24	6	59	6	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	99	93	5	1	0	45	0	48	5	77	2	2p	6	12	2p		0	2p	4	MTA	4	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	4	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			0				8				0				0				0				0				0	8	20
9 - 12	100	94	5	1	0	46	0	48	5	79	4	2p	6	12	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														15			0				2				0				0				0				0				0	2	17
12 - 15	100	90	8	2	0	42	3	48	5	74	3	2p	7	14	2p	1	2	2p	2	MTA	2	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			2				4				3				0				0				0				0	7	23
Total	440	405	31	4	0	209	4	196	27	350	18			48			5				16				3				0				0				0				0		
		436		4		213		223		368		72																															

(1) A: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study A - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																							
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	67	61	5	1	0	33	0	28	5	54	4	2p	2	4	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														7			0				2				0				0				0				0				0	2	9
3 - 6	57	57	0	0	0	37	0	20	0	48	0	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														9			0				0				0				0				0				0				0	0	9
6 - 9	51	50	1	0	0	27	0	23	1	44	1	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
9 - 12	47	44	2	1	0	27	0	17	2	41	2	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
12 - 15	56	53	1	2	0	31	0	22	1	49	1	2p	3	6	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
Total	278	265	9	4	0	155	0	110	9	236	8			30			0				4				0				0				0				0				0		
		274		4		155		119		244		34																															

Case study A - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St2-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Rasheed Street Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	130	119	8	3	0	57	0	62	8	103	6	2p	4	8	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p	1	5	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														17			0				4				0				0				0				0				0	4	21
3 - 6	107	102	4	1	0	33	0	69	4	86	2	2p	7	14	2p		0	2p	1	MTA	1	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			0				2				3				0				0				0				0	5	19
6 - 9	107	94	10	3	0	45	1	49	9	85	4	2p	4	8	2p	1	2	2p	2	MTA	1	3p		MTA	0	4p	1	MTA	2	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			2				4				0				4				0				0				0	8	18
9 - 12	118	113	4	1	0	53	0	60	4	110	4	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
12 - 15	97	82	13	2	0	35	2	47	11	77	7	2p	2	4	2p	1	2	2p	2	MTA	2	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	Mixed total	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0		
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0		
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0		
														4			2				4				3				0				0				0				0	7	13
Total	559	510	39	10	0	223	3	287	36	461	23			47			4				14				6				4				0				0				0		
		549		*10*		*226*		*323*		*484*		*75*																															

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[1] A: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, No: noon

Case study A - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	121	104	16	1	0	46	3	58	13	89	6	2p	7	14	2p	4	8	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			8				4				0				0				0				0				0	4	26
3 - 6	115	102	8	4	1	47	0	55	8	88	3	2p	7	14	2p	1	2	2p	1	MTA	1	3p	2	MTA	2	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	2			G	0			G	0			G	0			G	0	2	
														14			2				2				6				0				0				0				0	8	24
6 - 9	126	114	12	0	0	46	0	68	12	101	9	2p	6	12	2p	1	2	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														12			2				2				0				0				0				0				0	2	16
9 - 12	111	94	17	0	0	38	1	56	16	89	10	2p	2	4	2p	3	6	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			6				2				0				0				0				0				0	2	12
12 - 15	134	121	10	3	0	50	0	71	10	107	5	2p	7	14	2p	1	2	2p		MTA	0	3p	2	MTA	2	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														14			2				0				6				0				0				0				0	6	22
Total	607	535	63	8	1	227	4	308	59	474	33			58			20				10				12				0				0				0				0		
		598		*9*		*231*		*367*		*507*		*100*																															

Case study A - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: A-Re2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Russafi Statue To Al-Rasheed Street Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	54	51	2	1	0	30	0	21	2	48	1	2p	1	2	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				3				0				0				0				0	3	5
3 - 6	54	54	0	0	0	30	0	24	0	50	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
6 - 9	45	40	4	1	0	13	0	27	4	33	2	2p	3	6	2p		0	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				4				0				0				0				0				0	4	10
9 - 12	38	33	4	0	1	14	1	19	3	31	3	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				2				0				0				0				0				0	2	4
12 - 15	44	43	1	0	0	19	0	24	1	27	1	2p	5	10	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														16			0				0				0				0				0				0				0	0	16
Total	235	221	11	2	1	106	1	115	10	189	7			30			0				6				3				0				0				0				0		
		232		*3*		*107*		*125*		*196*		*39*																															

(1) A: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study A - Red line two - station two - betweenness (0.0017 - 0.1397)

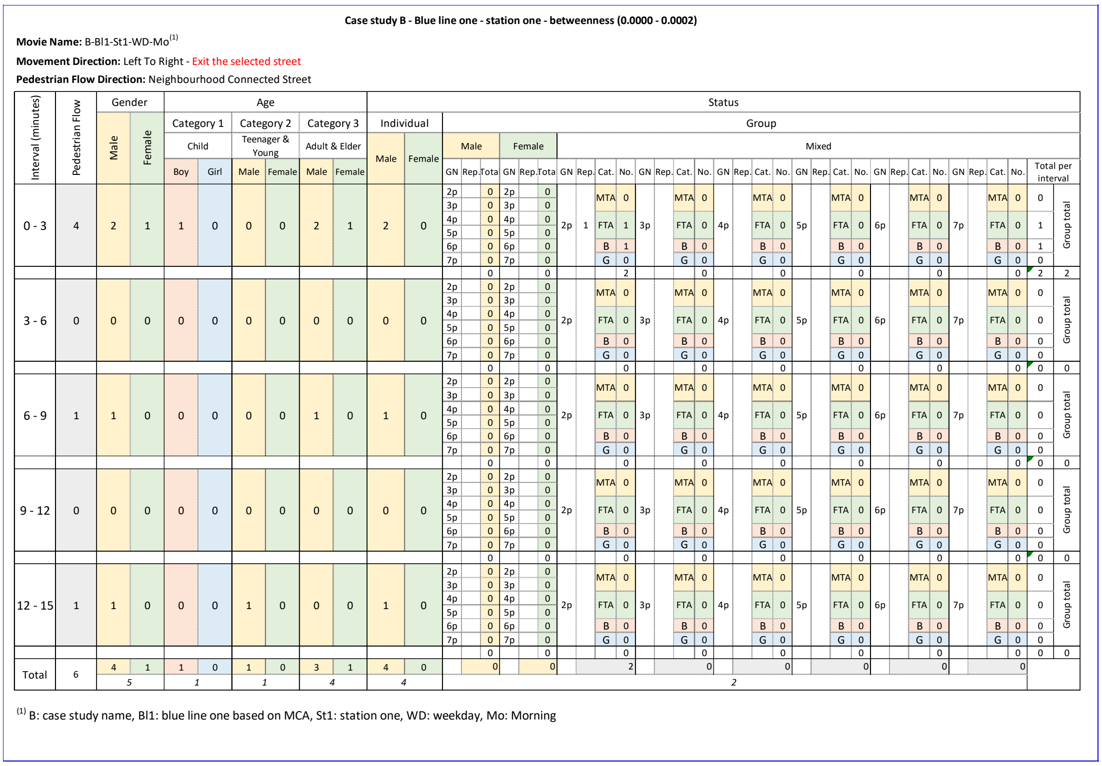
Movie Name: A-Re2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Rasheed Street To Al-Russafi Statue Through Al-Rasheed Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	160	139	16	4	1	59	2	80	14	111	5	2p	14	28	2p	1	2	2p	2	MTA	1	3p	1	MTA	0	4p	1	MTA	1	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	2			FTA	1			FTA	1			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	1			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	2			G	1			G	0			G	0			G	0	3	
														28			5				4				3				4				0				0				0	11	44
3 - 6	146	134	12	0	0	60	1	74	11	110	6	2p	12	24	2p	3	6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														24			6				0				0				0				0				0				0	0	30
6 - 9	146	139	7	0	0	64	0	75	7	117	7	2p	11	22	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														22			0				0				0				0				0				0				0	0	22
9 - 12	164	150	12	1	1	70	0	80	12	117	9	2p	13	26	2p	1	2	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														32			2				4				0				0				0				0				0	4	38
12 - 15	187	170	16	1	0	66	0	104	16	140	4	2p	11	22	2p	3	6	2p	4	MTA	4	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	4	Group total
												3p		0	3p	1	3																										
												4p	1	4	4p		0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														26			9				8				0				0				0				0				0	8	43
Total	803	732	63	6	2	319	3	413	60	595	31			132			22				16				3				4				0				0				0		
		795		*8*		*322*		*473*		*626*		*177*																															

Street observation forms of case study B: Hybrid pattern



Case study B - Blue line one - station one - betweenness (0.0000 - 0.0002)

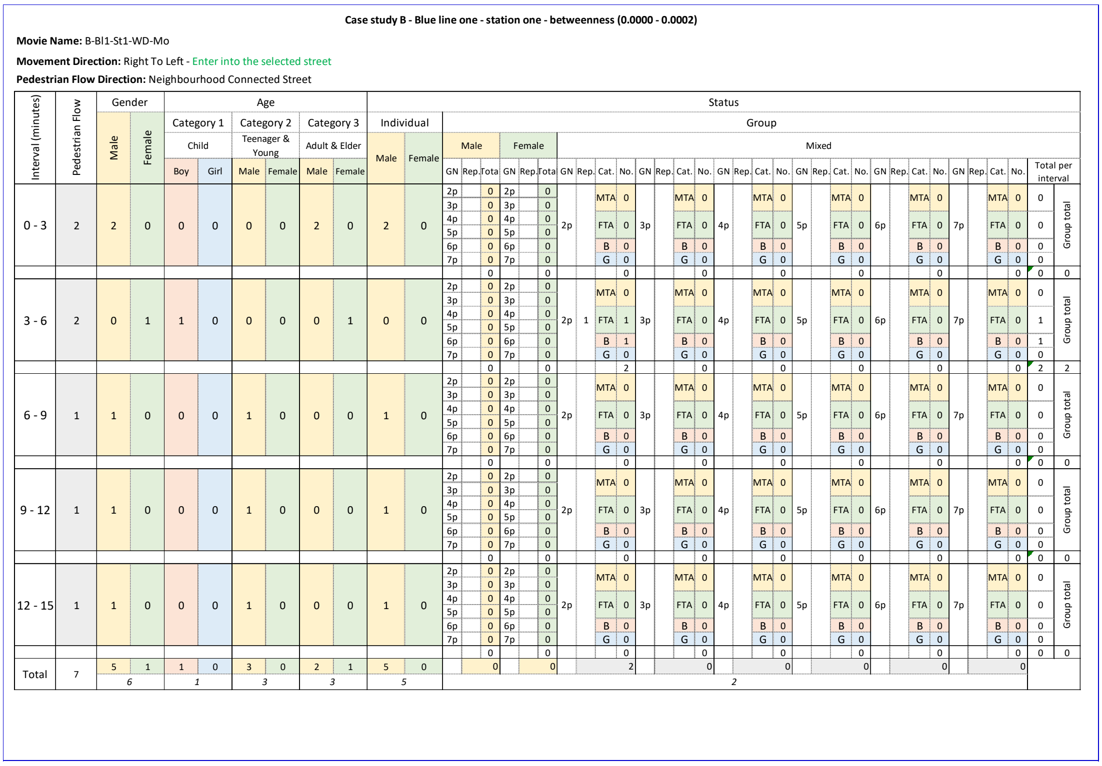
Movie Name: B-Bl1-St1-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	2	1	1	0	0	0	2	1	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	4	1	1	0	1	0	3	1	4	0			0			0				2				0				0				0				0				0		
		5		*1*		*1*		*4*		*4*		*2*																															

[1] B: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, Mo: Morning



Case study B - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	0	1	1	0	0	0	0	1	0	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	5	1	1	0	3	0	2	1	5	0			0			0				2				0				0				0				0				0		
		6		*1*		*3*		*3*		*5*		*2*																															

Case study B - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St1-WD-No[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	1	2	0	3	0	0	1	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	1	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	2			G	0			G	0			G	0	2	
														0			0				0				0				4				0				0				0	4	4
3 - 6	7	4	0	3	0	2	0	2	0	5	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	2	1	0	1	0	1	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	17	8	2	4	3	4	0	4	2	9	2			0			0				2				0				4				0				0				0		
		10		7		4		6		11		6																															

[(1)] B: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study B - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	9	3	1	3	2	0	0	3	1	3	2	2p		0	2p		0	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				4				0				0				0				0				0	4	4
3 - 6	3	2	1	0	0	2	0	0	1	0	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	7	3	1	2	1	1	0	2	1	4	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
9 - 12	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	22	10	3	6	3	4	0	6	3	10	4			2			0				6				0				0				0				0				0		
		13		9		4		9		14		8																															

Case study B - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	0	0	1	2	1	0	-1	0	1	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				2				0				0				0				0				0	2	2
12 - 15	4	2	0	1	1	2	0	0	0	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	10	4	0	3	3	4	0	0	0	7	1			0			0				2				0				0				0				0				0		
		4		*6*		*4*		*0*		*8*		*2*																															

(1) B: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study B - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	0	1	0	3	0	0	0	2	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	5	3	0	0	2	1	0	2	0	1	0	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														2			0				2				0				0				0				0				0	2	4
12 - 15	3	2	0	0	1	0	0	2	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	15	11	0	1	3	4	0	7	0	8	1			4			0				2				0				0				0				0				0		
		11		*4*		*4*		*7*		*9*		*6*																															

Case study B - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
				Category 1		Category 2		Category 3		Individual		Group					
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	3	1	0	1	1	0	0	1	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	2	0	1	0	1	0	0	0	1	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
12 - 15	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
Total	8	2	2	2	2	0	0	2	2	2	1			0			0
		4		*4*		*0*		*4*		*3*							

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	1			B	0			B	0			B	0			B	0	1	
			G	0			G	1			G	0			G	0			G	0			G	0	1	
				0				3				0				0				0				0	3	3
6 - 9	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	1			G	0			G	0			G	0			G	0			G	0	1	
				2				0				0				0				0				0	2	2
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
Total				2				3				0				0				0				0		
	5																									

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[1] B: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, Mo: Morning

Case study B - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
				Category 1		Category 2		Category 3		Individual		Group					
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
9 - 12	7	4	2	0	1	1	0	3	2	1	2	2p	1	2	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			0
12 - 15	5	0	4	0	1	0	0	0	4	0	-1	2p		0	2p		0
												3p		0	3p	1	3
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			3
Total	13	5	6	0	2	1	0	4	6	2	1			2			3
		11		*2*		*1*		*10*		*3*							

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	1			G	0			G	0			G	0			G	0			G	0	1	
				2				0				0				0				0				0	2	4
12 - 15	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	1			G	0			G	0			G	0			G	0	1	
				0				3				0				0				0				0	3	6
Total				2				3				0				0				0				0		
	10																									

Case study B - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	9	3	3	1	2	2	0	1	3	4	3	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
3 - 6	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	2	1	0	0	2	0	0	1	0	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	3	2	0	1	0	0	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	7	1	0	1	5	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p	1	MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	5			G	0			G	0	5	
														0			0				0				0				0				5				0				0	5	5
Total	23	8	4	4	7	4	0	4	4	10	4			2			0				2				0				0				5				0				0		
		12		11		4		8		14		9																															

(1) B: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study B - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	10	2	3	3	2	0	1	2	2	3	0	2p		0	2p		0	2p	2	MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	1			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				4				3				0				0				0				0	7	7
3 - 6	4	0	2	2	0	0	0	0	2	0	2	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	6	1	1	2	2	0	0	1	1	2	0	2p		0	2p		0	2p	2	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				4				0				0				0				0				0	4	4
Total	22	5	6	7	4	0	1	5	5	7	2			0			0				10				3				0				0				0				0		
		11		11		1		10		9		13																															

Case study B - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	1	0	1	1	1	0	0	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	1	0	1	0	0	0	1	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	7	2	0	5	0	1	0	1	0	5	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	14	4	1	7	2	2	0	2	1	9	3			0			0				2				0				0				0				0				0		
		5		9		2		3		12		2																															

(1) B: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study B - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	2	0	3	1	2	0	0	0	3	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	3	0	0	1	2	0	0	0	0	1	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				2				0				0				0				0				0	2	2
6 - 9	3	2	0	0	1	0	0	2	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	13	4	1	4	4	2	0	2	1	6	3			0			0				4				0				0				0				0				0		
		5		8		2		3		9		4																															

Case study B - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St1-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	1	1	0	0	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	9	5	2	2	0	3	0	2	2	3	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				2				0				0				0				0				0	2	5
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	6	4	1	1	0	4	0	0	1	5	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	19	9	6	4	0	7	0	2	6	9	5			3			0				2				0				0				0				0				0		
		15		*4*		*7*		*8*		*14*		*5*																															

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[1] B: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study B - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	1	1	0	0	0	1	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	7	5	1	1	0	0	0	5	1	4	1	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	5	3	1	1	0	0	0	3	1	3	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
9 - 12	8	7	1	0	0	4	0	3	1	1	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
12 - 15	4	2	1	1	0	0	0	2	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	27	18	5	4	0	4	0	14	5	13	4			6			0				4				0				0				0				0				0		
		23		*4*		*4*		*19*		*17*		*10*																															

Case study B - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St1-WD-No[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	2	0	1	1	1	0	1	0	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
3 - 6	8	3	0	4	1	0	0	3	0	7	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	5	4	0	1	0	3	0	1	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	7	4	1	1	1	2	0	2	1	5	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
12 - 15	11	5	1	2	3	2	0	3	1	5	2	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				2				0				0				0				0				0	2	4
Total	35	18	2	9	6	8	0	10	2	22	3			4			0				6				0				0				0				0				0		
		20		15		8		12		25								10																									

[1] B: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, No: noon

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Case study B - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	2	1	0	0	0	0	2	1	0	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	9	1	1	5	2	0	0	1	1	4	3	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	6	1	0	4	1	1	0	0	0	5	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	12	4	2	4	2	1	0	3	2	4	4	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
12 - 15	8	3	0	5	0	1	0	2	0	6	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	38	11	4	18	5	3	0	8	4	19	9			4			0				6				0				0				0				0				0		
		15		23		3		12		28								10																									

Case study B - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St1-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	0	0	1	1	0	2	0	3	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	12	2	1	8	1	0	0	2	1	6	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p	1	FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	4			B	0			B	0			B	0	4	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				4				0				0				0	4	4
6 - 9	7	3	0	3	1	1	0	2	0	6	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	9	6	2	0	1	2	0	4	2	4	3	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	16	3	2	6	5	2	0	1	2	7	3	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	3	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	3			G	0			G	0			G	0			G	0			G	0	3	
														0			0				6				0				0				0				0				0	6	6
Total	48	17	5	17	9	6	0	11	5	26	10			2			0				6				0				4				0				0				0		
		22		*26*		*6*		*16*		*36*		*12*																															

(1) B: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study B - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	1	0	1	0	0	1	1	0	0	2p		0	2p		0			MTA	0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p	1	FTA	1	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
3 - 6	15	2	1	11	1	0	0	2	1	7	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p	1	FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	6			B	0	6	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				6				0	6	6
6 - 9	8	1	3	2	2	1	1	0	2	3	1	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	1	FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			2				2				0				0				0				0				0	2	4
9 - 12	8	1	0	3	4	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	2	FTA	0	3p	1	FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	2			B	0			B	0			B	0			B	0	3	
												7p		0	7p		0			G	3			G	1			G	0			G	0			G	0			G	0	4	
														0			0				4				3				0				0				0				0	7	7
12 - 15	5	2	2	1	0	1	0	1	2	3	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	39	7	7	17	8	2	1	5	6	14	5			0			2				6				6				0				0				6				0		
		14		*25*		*3*		*11*		*19*		*20*																															

Case study B - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St2-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	1	1	0	0	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	9	5	2	2	0	3	0	2	2	3	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				2				0				0				0				0				0	2	5
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	6	4	1	1	0	4	0	0	1	5	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	19	9	6	4	0	7	0	2	6	9	5			3			0				2				0				0				0				0				0		
		15		4		7		8		14		5																															

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[1] B: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study B - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	1	1	0	0	0	1	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	7	5	1	1	0	0	0	5	1	4	1	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	5	3	1	1	0	0	0	3	1	3	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
9 - 12	8	7	1	0	0	4	0	3	1	1	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
12 - 15	4	2	1	1	0	0	0	2	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	27	18	5	4	0	4	0	14	5	13	4			6			0				4				0				0				0				0				0		
		23		4		4		19		17		10																															

Case study B - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	2	0	1	1	1	0	1	0	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
3 - 6	8	3	0	4	1	0	0	3	0	7	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	5	4	0	1	0	3	0	1	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	7	4	1	1	1	2	0	2	1	5	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
12 - 15	11	5	1	2	3	2	0	3	1	5	2	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				2				0				0				0				0				0	2	4
Total	35	18	2	9	6	8	0	10	2	22	3		4			0			6				0				0				0				0				0				
		20		*15*		*8*		*12*		*25*		*10*																															

(1) B: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, No: noon

Case study B - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	2	1	0	0	0	0	2	1	0	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	9	1	1	5	2	0	0	1	1	4	3	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	6	1	0	4	1	1	0	0	0	5	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	12	4	2	4	2	1	0	3	2	4	4	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
12 - 15	8	3	0	5	0	1	0	2	0	6	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	38	11	4	18	5	3	0	8	4	19	9		4			0			6				0				0				0				0				0				
		15		*23*		*3*		*12*		*28*		*10*																															

Case study B - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St2-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	0	0	1	1	0	2	0	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	12	2	1	8	1	0	0	2	1	6	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	4			B	0			B	0			B	0	4	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				4				0				0				0	4	4
6 - 9	7	3	0	3	1	1	0	2	0	6	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	9	6	2	0	1	2	0	4	2	4	3	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	16	3	2	6	5	2	0	1	2	7	3	2p		0	2p		0	2p	3	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	3			G	0			G	0			G	0			G	0			G	0	3	
														0			0				6				0				0				0				0				0	6	6
Total	48	17	5	17	9	6	0	11	5	26	10			2			0				6				0				4				0				0				0		
		22		26		6		16		36		12																															

(1) B: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study B - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: B-Bl2-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	1	0	1	0	0	1	1	0	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
3 - 6	15	2	1	11	1	0	0	2	1	7	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p	1	MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	6			B	0	6	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				6				0	6	6
6 - 9	8	1	3	2	2	1	1	0	2	3	1	2p		0	2p	1	2	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			2				2				0				0				0				0				0	2	4
9 - 12	8	1	0	3	4	0	0	1	0	1	0	2p		0	2p		0	2p	2	MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	2			B	0			B	0			B	0			B	0	3	
												7p		0	7p		0			G	3			G	1			G	0			G	0			G	0			G	0	4	
														0			0				4				3				0				0				0				0	7	7
12 - 15	5	2	2	1	0	1	0	1	2	3	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	39	7	7	17	8	2	1	5	6	14	5			0			2				6				6				0				0				6				0		
		14		25		3		11		19		20																															

Case study B - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	7	1	0	0	1	0	6	1	7	1			0			0				0				0				0				0				0				0		
		8		*0*		*1*		*7*		*8*		*0*																															

(1) B: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, Mo: Morning

Case study B - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	4	0	0	0	0	0	4	0	4	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	7	0	0	0	0	0	7	0	7	0			0			0				0				0				0				0				0				0		
		7		*0*		*0*		*7*		*7*		*0*																															

Case study B - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St1-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	3	3	0	0	0	0	3	3	1	0	2p		0	2p		0	2p	1	MTA	1	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				3				0				0				0				0	5	5
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	3	1	0	0	0	0	3	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	14	10	4	0	0	0	0	10	4	8	1			0			0				2				3				0				0				0				0		
		14		*0*		*0*		*14*		*9*		*5*																															

(1) B: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study B - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	0	0	1	1	0	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	3	1	0	0	0	0	3	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	7	2	0	0	0	0	7	2	6	1			0			0				2				0				0				0				0				0		
		9		*0*		*0*		*9*		*7*		*2*																															

Case study B - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St1-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	1	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	4	2	1	0	1	1	0	1	1	1	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	7	7	0	0	0	3	0	4	0	3	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
12 - 15	5	2	3	0	0	1	0	1	3	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			3				0				0				0				0				0				0	0	3
Total	19	13	5	0	1	6	0	7	5	8	1		4			3			0				3				0				0				0				0				
		18		*1*		*6*		*12*		*9*		*10*																															

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[1] B: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, An: afternoon

Case study B - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	6	0	0	0	0	0	6	0	6	0		0			0			0				0				0				0				0				0				
		6		*0*		*0*		*6*		*6*		*0*																															

Case study B - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	7	2	4	1	0	0	0	2	4	2	3	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
12 - 15	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	12	7	4	1	0	0	0	7	4	7	3			0			0				2				0				0				0				0				0		
		11		*1*		*0*		*11*		*10*		*2*																															

(1) B: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study B - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	5	0	-5	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	1	2	1	0	1	1	0	1	1	1	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	4	1	2	1	0	6	1	-5	1	1	1			0			0				2				0				0				0				0				0		
		3		*1*		*7*		*-4*		*2*		*2*																															

Case study B - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St2-WD-No[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	2	0	1	0	0	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	4	1	2	0	0	0	4	1	6	1			0			0				0				0				0				0				0				0		
		5		*2*		*0*		*5*		*7*		*0*																															

[(1)] B: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study B - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

3	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	7	6	0	1	0	0	0	6	0	7	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	12	10	0	2	0	1	0	9	0	12	0			0			0				0				0				0				0				0				0		
		10		*2*		*1*		*9*		*12*		*0*																															

Case study B - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	2	0	1	0	0	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	1	0	2	1	0	0	1	0	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	1	3	0	0	0	0	1	3	1	3	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	13	5	3	4	1	0	0	5	3	9	4			0			0				0				0				0				0				0				0		
		8		*5*		*0*		*8*		*13*		*0*																															

(1) B: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study B - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	6	5	0	1	0	0	0	5	0	4	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	6	4	0	2	0	1	0	3	0	-4	0	2p	5	10	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														10			0				0				0				0				0				0				0	0	10
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	1	0	2	1	0	0	1	0	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
Total	19	12	1	5	1	2	0	10	1	4	1			12			0				2				0				0				0				0				0		
		13		*6*		*2*		*11*		*5*		*14*																															

Case study B - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	3	0	0	0	0	0	3	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	2	0	2	0	1	0	1	0	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	10	6	1	3	0	1	0	5	1	5	1		2			0			2				0				0				0				0				0				
		7		3		1		6		6		4																															

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(1) B: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, Mo: Morning

Case study B - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	0	0	3	0	0	0	0	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	0	2	0	0	0	0	0	0	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
12 - 15	3	2	0	0	1	1	0	1	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	2	0	5	1	1	0	1	0	5	1		0			0			2				0				0				0				0				0				
		2		6		1		1		6		2																															

Case study B - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	4	0	-3	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	1	0	1	0	0	0	1	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	3	1	0	1	1	0	0	1	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	2	1	1	2	4	0	-2	1	3	3			0			0				0				0				0				0				0				0		
		3		*3*		*4*		*-1*		*6*		*0*																															

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(1) B: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, No: noon

Case study B - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	3	0	0	0	2	0	1	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	6	0	0	0	3	0	3	0	4	0			2			0				0				0				0				0				0				0		
		6		*0*		*3*		*3*		*4*		*2*																															

Case study B - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	0	0	1	0	0	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	3	0	0	1	1	0	2	0	3	1			0			0				0				0				0				0				0				0		
		3		*1*		*1*		*2*		*4*		*0*																															

(1) B: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, An: afternoon

Case study B - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	2	0	1	0	1	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	6	0	2	0	1	0	5	0	8	0			0			0				0				0				0				0				0				0		
		6		*2*		*1*		*5*		*8*		*0*																															

Case study B - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St2-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	1	0	2	0	0	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	1	1	1	1	0	0	1	1	1	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	10	4	1	4	1	0	0	4	1	7	1			0			0				2				0				0				0				0				0		
		5		*5*		*0*		*5*		*8*		*2*																															

[1] B: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, Mo: Morning

Case study B - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	0	1	1	0	0	0	0	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	1	1	1	0	0	0	1	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	3	0	1	0	0	0	3	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	1	0	1	2	0	0	1	0	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				2				0				0				0				0				0	2	2
Total	15	7	1	4	3	0	0	7	1	11	2			0			0				2				0				0				0				0				0		
		8		*7*		*0*		*8*		*13*		*2*																															

Case study B - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	0	0	1	0	0	1	0	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	5	0	2	1	2	0	0	0	2	1	2	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
6 - 9	5	1	1	0	3	0	0	1	1	1	0	2p		0	2p		0	2p	2	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	3			G	0			G	0			G	0			G	0			G	0	3	
														0			0				4				0				0				0				0				0	4	4
9 - 12	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	3	0	1	0	0	0	3	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	18	7	3	2	6	0	0	7	3	9	3			0			0				6				0				0				0				0				0		
		10		8		0		10		12		6																															

(1) B: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, No: noon

Case study B - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	0	3	0	0	0	1	0	2	0	1	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
3 - 6	7	3	1	2	1	0	0	3	1	5	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	0	1	0	1	0	0	0	1	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	7	2	0	2	3	0	0	2	0	3	0	2p		0	2p		0	2p	2	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	3			G	0			G	0			G	0			G	0			G	0	3	
														0			0				4				0				0				0				0				0	4	4
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	20	6	5	4	5	0	1	6	4	9	5			0			2				4				0				0				0				0				0		
		11		9		1		10		14		6																															

Case study B - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	1	0	1	0	0	0	1	0	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	4	1	0	1	1	0	3	1	4	2			0			0				0				0				0				0				0				0		
		5		*1*		*1*		*4*		*6*		*0*																															

(1) B: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study B - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: B-Ye2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	4	0	0	0	0	0	4	0	4	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	4	1	1	2	0	0	1	1	0	1	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	1	FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	3	2	1	0	0	1	0	1	1	2	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	2	0	0	2	0	0	2	0	2	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	16	10	2	2	2	1	1	9	1	10	4			0			0				2				0				0				0				0				0		
		12		*4*		*2*		*10*		*14*		*2*																															

Case study B - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Shuhada Bridge To Al-Ahrar Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
				Category 1		Category 2		Category 3		Individual	
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female
				Boy	Girl	Male	Female	Male	Female		
0 - 3	8	4	4	0	0	0	0	4	4	4	2
3 - 6	3	2	1	0	0	0	0	2	1	2	1
6 - 9	5	2	2	1	0	0	0	2	2	2	1
9 - 12	7	3	4	0	0	1	0	2	4	3	2
12 - 15	13	11	2	0	0	3	0	8	2	7	2
Total	36	22	13	1	0	4	0	18	13	18	8
		35		*1*		*4*		*31*		*26*	

Interval (minutes)	Status																															
	Group																															
	Male			Female			Mixed																									
	GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			0			2				0				0				0				0				0				0	0	
3 - 6	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			0			0				0				0				0				0				0				0	0	0
6 - 9	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
	5p		0	5p		0																										
	6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			0			0				2				0				0				0				0				0	2	2
9 - 12	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			0			2				0				0				0				0				0				0	0	2
12 - 15	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			4			0				0				0				0				0				0				0	0	4
Total			4			4				2				0				0				0				0				0		
	10																															

(1) B: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, Mo: Morning

Case study B - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Ahrar Bridge To Al-Shuhada Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
				Category 1		Category 2		Category 3		Individual	
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female
				Boy	Girl	Male	Female	Male	Female		
0 - 3	17	9	7	0	1	1	1	8	6	9	4
3 - 6	8	6	2	0	0	1	0	5	2	6	2
6 - 9	19	13	6	0	0	2	3	11	3	11	1
9 - 12	14	4	10	0	0	1	4	3	6	4	5
12 - 15	15	11	4	0	0	4	0	7	4	9	4
Total	73	43	29	0	1	9	8	34	21	39	16
		72		*1*		*17*		*55*		*55*	

Interval (minutes)	Status																															
	Group																															
	Male			Female			Mixed																									
	GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		0	2p	1	2	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
			0			2				2				0				0				0				0				0	2	4
3 - 6	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			0			0				0				0				0				0				0				0	0	0
6 - 9	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p	1	3																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			2			5				0				0				0				0				0				0	0	7
9 - 12	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p	1	3																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			0			5				0				0				0				0				0				0	0	5
12 - 15	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
	3p		0	3p		0																										
	4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
	5p		0	5p		0																										
	6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
	7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
			2			0				0				0				0				0				0				0	0	2
Total			4			12				2				0				0				0				0				0		
	18																															

Case study B - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St1-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Shuhada Bridge To Al-Ahrar Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	11	8	3	0	0	2	0	6	3	5	3	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				0				0				0				0				0				0	0	3
3 - 6	6	2	3	0	1	0	0	2	3	2	1	2p		0	2p		0	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
6 - 9	16	10	3	1	2	2	0	8	3	4	2	2p		0	2p		0	2p	3	MTA	3	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														4			0				6				0				0				0				0				0	6	10
9 - 12	12	4	4	3	1	0	0	4	4	3	3	2p	1	2	2p		0	2p	2	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				4				0				0				0				0				0	4	6
12 - 15	7	5	2	0	0	0	0	5	2	5	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	52	29	15	4	4	4	0	25	15	19	11			9			0				10				3				0				0				0				0		
		44		*8*		*4*		*40*		*30*		*22*																															

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(1) B: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study B - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Ahrar Bridge To Al-Shuhada Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	5	0	0	0	2	0	3	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	7	3	2	2	0	2	0	1	2	3	0	2p		0	2p	1	2	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				2				0				0				0				0				0	2	4
6 - 9	3	3	0	0	0	2	0	1	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	23	10	6	5	2	1	0	9	6	8	5	2p	2	4	2p		0	2p	3	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														4			0				6				0				0				0				0				0	6	10
12 - 15	13	6	2	3	2	1	0	5	2	6	1	2p		0	2p		0	2p	3	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	3			B	0			B	0			B	0			B	0			B	0	3	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				6				0				0				0				0				0	6	6
Total	51	27	10	10	4	8	0	19	10	23	6			6			2				14				0				0				0				0				0		
		37		*14*		*8*		*29*		*29*		*22*																															

Case study B - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St1-WD-An(1)

Movement Direction: Left To Right- Enter into the selected street

Pedestrian Flow Direction: From Al-Shuhada Bridge To Al-Ahrar Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
		Male	Female	Category 1		Category 2		Category 3		Individual		Group					
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	9	4	4	1	0	1	2	3	2	5	4	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	15	9	6	0	0	2	2	7	4	7	4	2p	1	2	2p	1	2
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			2
6 - 9	9	5	4	0	0	1	1	4	3	5	2	2p		0	2p	1	2
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			2
9 - 12	11	8	3	0	0	5	0	3	3	6	3	2p	1	2	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			0
12 - 15	19	13	6	0	0	4	4	9	2	11	2	2p	1	2	2p	2	4
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			4
Total	63	39	23	1	0	13	9	26	14	34	15			6			8
		62		1		22		40		49							

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	4
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	6
Total				0				0				0				0				0				0		
	14																									

(1) B: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, An: afternoon

Case study B - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Ahrar Bridge To Al-Shuhada Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
		Male	Female	Category 1		Category 2		Category 3		Individual		Group					
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	4	4	0	0	0	3	0	1	0	2	0	2p	1	2	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			0
3 - 6	7	4	2	1	0	3	1	1	1	4	1	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	8	6	2	0	0	0	1	6	1	3	0	2p		0	2p	1	2
												3p	1	3	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														3			2
9 - 12	9	3	4	0	2	1	0	2	4	3	3	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
12 - 15	6	5	0	0	1	1	0	4	0	5	1	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
Total	34	22	8	1	3	8	2	14	6	17	5			5			2
		30		4		10		20		22							

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
3 - 6	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	1			B	0			B	0			B	0			B	0			B	0	1	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				2				0				0				0				0				0	2	2
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	5
9 - 12	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	2			G	0			G	0			G	0			G	0	2	
				0				3				0				0				0				0	3	3
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
Total				2				3				0				0				0				0		
	12																									

Case study B - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Shuhada Bridge To Al-Ahrar Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	7	3	4	0	0	0	0	3	4	3	2	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
3 - 6	5	2	3	0	0	0	0	2	3	2	1	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	9	4	4	1	0	1	0	3	4	4	1	2p		0	2p	1	2	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				2				0				0				0				0				0	2	4
9 - 12	11	10	1	0	0	4	0	6	1	7	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				0				0				0				0				0				0	0	3
12 - 15	7	5	2	0	0	0	1	5	1	5	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	39	24	14	1	0	5	1	19	13	21	7			3			6				2				0				0				0				0				0		
		38		*1*		*6*		*32*		*28*		*11*																															

(1) B: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study B - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Ahrar Bridge To Al-Shuhada Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	7	6	1	0	0	0	0	6	1	6	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	14	6	6	1	1	0	0	6	6	7	4	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			3				0				0				0				0				0				0	0	3
6 - 9	8	3	5	0	0	1	2	2	3	3	3	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	16	9	6	1	0	3	0	6	6	7	5	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
12 - 15	11	5	6	0	0	4	0	1	6	5	6	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	56	29	24	2	1	8	2	21	22	28	19			2			5				2				0				0				0				0				0		
		53		*3*		*10*		*43*		*47*		*9*																															

Case study B - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Shuhada Bridge To Al-Ahrar Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	18	14	4	0	0	3	0	11	4	6	2	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			2				0				0				0				0				0				0	0	10
3 - 6	3	2	1	0	0	1	0	1	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	11	4	4	1	2	0	0	4	4	4	2	2p		0	2p		0	2p	1	MTA	1	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	1			G	0			G	0			G	0			G	0	2	
														0			0				2				3				0				0				0				0	5	5
9 - 12	9	7	1	0	1	2	0	5	1	3	0	2p	1	2	2p		0	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				4				0				0				0				0				0	4	6
12 - 15	9	2	3	1	3	0	0	2	3	2	5	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	50	29	13	2	6	6	0	23	13	17	10			10			2				8				3				0				0				0				0		
		42		*8*		*6*		*36*		*27*		*23*																															

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(1) B: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study B - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Ahrar Bridge To Al-Shuhada Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	6	2	2	2	0	0	0	2	2	2	0	2p		0	2p	1	2	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				2				0				0				0				0				0	2	4
6 - 9	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	9	4	2	1	2	0	0	4	2	3	2	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														2			0				2				0				0				0				0				0	2	4
12 - 15	10	4	1	2	3	0	0	4	1	5	0	2p		0	2p		0	2p	1	MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	3			G	0			G	0			G	0			G	0	3	
														0			0				2				3				0				0				0				0	5	5
Total	28	13	5	5	5	2	0	11	5	13	2			2			2				6				3				0				0				0				0		
		18		*10*		*2*		*16*		*15*		*13*																															

Case study B - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Shuhada Bridge To Al-Ahrar Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	2	1	0	0	0	1	2	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	1	2	0	0	0	1	1	1	1	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	11	6	5	0	0	2	1	4	4	2	3	2p	2	4	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				0				0				0				0				0				0	0	6
9 - 12	9	7	1	0	1	2	0	5	1	5	0	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														2			0				2				0				0				0				0				0	2	4
12 - 15	11	7	4	0	0	4	0	3	4	5	2	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
Total	37	23	13	0	1	8	3	15	10	15	8			8			4				2				0				0				0				0				0		
		36		*1*		*11*		*25*		*23*		*14*																															

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(1) B: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, An: afternoon

Case study B - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Al-Ahrar Bridge To Al-Shuhada Bridge Through Haifa Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	1	3	0	0	0	1	1	2	1	1	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	10	2	3	2	3	0	1	2	2	3	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	1			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	2			G	1			G	0			G	0			G	0	3	
														0			0				0				3				4				0				0				0	7	7
12 - 15	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	22	11	6	2	3	3	2	8	4	10	1			2			2				0				3				4				0				0				0		
		17		*5*		*5*		*12*		*11*		*11*																															

Case study B - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St1-WD-Mo[(1)]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Allawi Street To Sheikh Maruf Cemetery Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	11	11	0	0	0	2	0	9	0	7	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
3 - 6	7	5	1	1	0	0	0	5	1	6	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	4	0	0	0	1	0	3	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	8	5	2	1	0	3	0	2	2	4	2	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	13	10	1	2	0	2	0	8	1	7	0	2p	2	4	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				2				0				0				0				0				0	2	6
Total	43	35	4	4	0	8	0	27	4	28	3		10			0			2				0				0				0				0				0				
		39		*4*		*8*		*31*		*31*		*12*																															

[(1)] B: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study B - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Sheikh Maruf Cemetery To Al-Allawi Street Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	6	0	0	0	2	0	4	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	14	14	0	0	0	4	0	10	0	14	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	9	9	0	0	0	2	0	7	0	9	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	6	6	0	0	0	1	0	5	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	2	0	2	0	0	0	2	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	39	37	0	2	0	9	0	28	0	39	0		0			0			0				0				0				0				0				0				
		37		*2*		*9*		*28*		*39*		*0*																															

Case study B - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St1-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Allawi Street To Sheikh Maruf Cemetery Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	17	14	0	1	2	4	0	10	0	13	2	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	15	8	3	0	4	3	0	5	3	5	3	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	3			G	0			G	0			G	0	3	
														3			0				0				0				4				0				0				0	4	7
6 - 9	11	5	2	2	2	4	0	1	2	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	1			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	2			G	0			G	0			G	0	2	
														4			0				0				0				4				0				0				0	4	8
9 - 12	10	5	2	3	0	1	1	4	1	7	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
12 - 15	15	10	0	1	4	3	0	7	0	11	0	2p		0	2p		0	2p	2	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	4			G	0			G	0			G	0			G	0			G	0	4	
														0			0				4				0				0				0				0				0	4	4
Total	68	42	7	7	12	15	1	27	6	38	7			9			0				6				0				8				0				0				0		
		49		*19*		*16*		*33*		*45*		*23*																															

(1) B: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, No: noon

Case study B - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Sheikh Maruf Cemetery To Al-Allawi Street Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	8	8	0	0	0	3	0	5	0	6	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	4	3	1	0	0	1	0	2	1	2	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	7	6	0	1	0	1	0	5	0	7	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	10	9	1	0	0	1	0	8	1	4	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
12 - 15	12	12	0	0	0	5	0	7	0	7	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p	1	5	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														5			0				0				0				0				0				0				0	0	5
Total	41	38	2	1	0	11	0	27	2	26	1			12			0				2				0				0				0				0				0		
		40		*1*		*11*		*29*		*27*		*14*																															

Case study B - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St1-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Allawi Street To Sheikh Maruf Cemetery Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	10	10	0	0	0	4	0	6	0	6	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
3 - 6	12	10	1	1	0	4	0	6	1	9	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	15	15	0	0	0	4	0	11	0	7	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	2	6	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														8			0				0				0				0				0				0				0	0	8
9 - 12	10	10	0	0	0	5	0	5	0	10	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	8	7	1	0	0	1	0	6	1	7	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	55	52	2	1	0	18	0	34	2	39	2			14			0				0				0				0				0				0				0		
		54		1		18		36		41		14																															

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(1) B: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study B - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Sheikh Maruf Cemetery To Al-Allawi Street Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	6	6	0	0	0	1	0	5	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	10	8	0	0	2	4	0	4	0	6	0	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														2			0				2				0				0				0				0				0	2	4
6 - 9	6	2	1	3	0	1	0	1	1	3	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	2			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				3				0				0				0				0	3	3
9 - 12	8	6	0	2	0	1	0	5	0	8	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	9	7	0	2	0	0	0	7	0	5	0	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
Total	39	29	1	7	2	7	0	22	1	28	0			4			0				4				3				0				0				0				0		
		30		9		7		23		28		11																															

Case study B - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St2-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Sheikh Maruf Cemetery To Al-Allawi Street Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	6	6	0	0	0	0	0	6	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	9	5	2	2	0	1	0	4	2	4	0	2p		0	2p		0	2p	1	MTA	1	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	1			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				3				0				0				0				0	5	5
12 - 15	6	6	0	0	0	2	0	4	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	27	23	2	2	0	5	0	18	2	22	0			0			0				2				3				0				0				0				0		
		25		*2*		*5*		*20*		*22*		*5*																															

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[1] B: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, Mo: Morning

Case study B - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Allawi Street To Sheikh Maruf Cemetery Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	4	0	0	0	2	0	2	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	8	0	1	0	2	0	6	0	9	0			0			0				0				0				0				0				0				0		
		8		*1*		*2*		*6*		*9*		*0*																															

Case study B - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St2-WD-No[(1)]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Sheikh Maruf Cemetery To Al-Allawi Street Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	4	0	0	0	1	0	3	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	4	3	1	0	0	1	0	2	1	2	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	3	3	0	0	0	2	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	9	9	0	0	0	2	0	7	0	7	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	7	5	1	1	0	2	0	3	1	6	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	Mixed total	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0		
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0		
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0		
														0			0				0				0				0				0				0				0	0	0
Total	27	24	2	1	0	8	0	16	2	22	1			2			0				2				0				0				0				0				0		
		26		*1*		*8*		*18*		*23*		*4*																															

[(1)] B: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, No: noon

Case study B - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Allawi Street To Sheikh Maruf Cemetery Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	11	6	0	2	3	2	0	4	0	6	1	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														2			0				2				0				0				0				0				0	2	4
3 - 6	5	4	0	0	1	0	0	4	0	4	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	1	1	1	0	1	0	0	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	6	3	1	2	0	1	0	2	1	5	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	8	5	1	2	0	3	0	2	1	4	0	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
Total	33	19	3	7	4	7	0	12	3	21	4			4			0				4				0				0				0				0				0		
		22		*11*		*7*		*15*		*25*		*8*																															

Case study B - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St2-WD-An[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Sheikh Maruf Cemetery To Al-Allawi Street Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	6	5	0	1	0	0	0	5	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	11	9	0	2	0	1	0	8	0	11	0			0			0				0				0				0				0				0				0		
		9		*2*		*1*		*8*		*11*		*0*																															

[1] B: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, An: afternoon

There was a technical issue in calculating the number of individuals for the last two intervals (9-12, 12-15)

Case study B - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: B-Re2-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Allawi Street To Sheikh Maruf Cemetery Through Sheikh Maruf Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	1	2	0	1	1	1	0	1	1	1	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	3	0	0	0	2	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	4	2	0	1	3	1	1	1	4	1			0			0				2				0				0				0				0				0		
		6		*1*		*4*		*2*		*5*		*2*																															

There was a technical issue in calculating the number of individuals for the last two intervals (9-12, 12-15)

Street observation forms of case study C: Paralleled pattern

Case study C - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	0	0	1	0	1	0			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

(1) C: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study C - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study C - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

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(1) C: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study C - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0			0			0				0				0				0				0				0				0		
		0		*1*		*0*		*0*		*1*		*0*																															

Case study C - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	0	2	0	0	0	0	0	2	0	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	0	2	0	0	0	0	0	2	0	0			0			2				0				0				0				0				0				0		
		2		*0*		*0*		*2*		*0*		*2*																															

(1) C: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study C - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study C - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St2-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	1	0	0	0	1	0			0			0				0				0				0				0				0				0		
		1		0		1		0		1		0																															

(1) C: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study C - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	1	0	0	0	1	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	1	2	0	0	1	1	0	1	1	2			0			0				0				0				0				0				0				0		
		3		0		2		1		3		0																															

Case study C - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

(1) C: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, No: noon

Case study C - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	6	3	0	2	1	2	0	1	0	2	0	2p		0	2p		0	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				4				0				0				0				0				0	4	4
6 - 9	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	0	2	0	0	0	1	0	1	0	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
Total	11	5	2	3	1	2	1	3	1	5	0			0			2				4				0				0				0				0				0		
		7		*4*		*3*		*4*		*5*		*6*																															

Case study C - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St2-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	0	2	0	0	0	2	0	0	0	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	1	2	0	0	0	2	1	0	1	2			0			0				0				0				0				0				0				0		
		3		0		2		1		3		0																															

(1) C: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study C - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl1-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		0		0		0		0		0																															

Case study C - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St1-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	1	0	0	0	0	1	1	1	1			0			0				0				0				0				0				0				0		
		2		0		0		2		2		0																															

[1] C: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study C - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	0	2	0	0	0	0	0	2	0	2			0			0				0				0				0				0				0				0		
		2		0		0		2		2		0																															

Case study C - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St1-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	0	0	1	0	0	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	0	0	1	0	0	0	0	0	1			0			0				0				0				0				0				0				0		
		0		*1*		*0*		*0*		*1*		*0*																															

[1] C: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, No: noon

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Case study C - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	0	0	1	0	0	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	0	0	1	1	0	0	0	1	1			0			0				0				0				0				0				0				0		
		1		*1*		*1*		*0*		*2*		*0*																															

Case study C - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																													

(1) C: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study C - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	0	1	0	0	0	1	0	2	0			0			0				0				0				0				0				0				0		
		1		*1*		*0*		*1*		*2*		*0*																													

Case study C - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St2-WD-Mo[(1)]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	0	2	0	0	0	2	0	0	0	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	1	2	0	0	0	2	1	0	1	0			0			2				0				0				0				0				0				0		
		3		*0*		*2*		*1*		*1*		*2*																															

[(1)] C: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study C - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study C - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	0	1	0	1	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	0	1	0	1	0	0	0	2	0			0			0				0				0				0				0				0				0		
		1		*1*		*1*		*0*		*2*		*0*																															

(1) C: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study C - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	1	0	0	0	0	0	1	0	1			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

Case study C - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St2-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	0	1	0	1	0	0	0	1	0	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	0	1	0	1	0	0	0	1	0	0			0			0				2				0				0				0				0				0		
		1		*1*		*0*		*1*		*0*		*2*																															

(1) C: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study C - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: C-Bl2-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	0	1	1	0	0	0	0	1	1	1			0			0				0				0				0				0				0				0		
		1		*1*		*0*		*1*		*2*		*0*																															

Case study C - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St1-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

[1] C: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study C - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	0	3	0	0	0	3	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			3				0				0				0				0				0				0	0	3
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	1	3	0	0	0	3	1	0	1	0			0			3				0				0				0				0				0				0		
		4		*0*		*3*		*1*		*1*		*3*																															

Case study C - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St1-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	3	1	0	2	0	0	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	2	0	2	0	0	0	2	0	4	0			0			0				0				0				0				0				0				0		
		2		2		0		2		4		0																															

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[1] C: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study C - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	1	0	0	1	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	1	1	1	0	1	0	0	1	2	1			0			0				0				0				0				0				0				0		
		2		1		1		1		3		0																															

Case study C - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	1	2	0	0	0	0	1	2	1	2			0			0				0				0				0				0				0				0		
		3		0		0		3		3		0																															

(1) C: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study C - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	1	0	0	0	1	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	3	1	0	0	2	1	1	0	3	1			0			0				0				0				0				0				0				0		
		4		0		3		1		4		0																															

Case study C - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St2-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

(1) C: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, Mo: Morning

Case study C - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study C - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	0	0	1	0	1	0			0			0				0				0				0				0				0				0		
		1		0		0		1		1		0																															

(1) C: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study C - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

3	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	0	0	1	0	0	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	2	0	0	1	0	0	2	0	2	1			0			0				0				0				0				0				0				0		
		2		1		0		2		3		0																															

Case study C - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St2-WD-An[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

[1] C: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study C - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye1-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	2	0	0	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*2*		*0*		*2*		*0*																															

Case study C - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

(1) C: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study C - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	1	0	0	0	1	0			0			0				0				0				0				0				0				0		
		1		*0*		*1*		*0*		*1*		*0*																															

Case study C - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	4	1	0	0	1	0	3	1	4	1			0			0				0				0				0				0				0				0		
		5		0		1		4		5		0																															

(1) C: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, No: noon

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Case study C - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	0	0	2	0	0	1	0	1	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	8	2	4	0	2	1	1	1	3	2	4	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	17	5	8	0	4	3	1	2	7	5	10			0			2				0				0				0				0				0				0		
		13		4		4		9		15		2																															

Case study C - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St1-WD-An[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	1	0	0	0	1	0			0			0				0				0				0				0				0				0		
		1		*0*		*1*		*0*		*1*		*0*																															

[(1)] C: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study C - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	Group total
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	1	0	0	0	0	1	1	1	1			0			0				0				0				0				0				0				0		
		2		*0*		*0*		*2*		*2*		*0*																															

Case study C - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St2-WD-Mo[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0					
		0		*0*		*0*		*0*		*0*		*0*																															

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[1] C: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study C - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0					
		0		*0*		*0*		*0*		*0*		*0*																															

Case study C - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	0	0	1	1	0	0	0	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	0	0	2	0	0	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	3	1	2	1	1	0	2	1	5	2			0			0				0				0				0				0				0				0		
		4		*3*		*1*		*3*		*7*		*0*																															

(1) C: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study C - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	2	0	0	2	0	0	2	0	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	0			G	0			G	0			G	0			G	0	2	
														0			0				2				0				0				0				0				0	2	2
3 - 6	4	2	1	0	1	1	0	1	1	2	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	0	0	1	0	0	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	0	0	1	0	0	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	11	0	3	1	7	0	0	0	3	1	4	2p		0	2p		0	2p	3	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	6			G	0			G	0			G	0			G	0			G	0	6	
														0			0				6				0				0				0				0				0	6	6
Total	21	4	4	1	12	1	0	3	4	5	8			0			0				8				0				0				0				0				0		
		8		*13*		*1*		*7*		*13*		*8*																															

Case study C - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St2-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

(1) C: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study C - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: C-Ye2-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p	1	MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	0	0	1	0	1	0			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

Case study C - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Al-Moez Mosque To Baratha Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	1	0	0	0	0	3	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	2	1	1	0	0	0	2	1	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
9 - 12	5	4	1	0	0	1	0	3	1	2	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	14	10	3	1	0	1	0	9	3	8	2			2			0				2				0				0				0				0				0		
		13		*1*		*1*		*12*		*10*		*4*																															

[1] C: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study C - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Baratha Mosque To Moez Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	1	0	0	0	1	1	0	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	5	3	0	0	0	1	5	2	5	3			0			0				0				0				0				0				0				0		
		8		*0*		*1*		*7*		*8*		*0*																															

Case study C - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St1-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Baratha Mosque To Moez Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	9	5	3	1	0	1	0	4	3	6	3	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	8	4	2	2	0	3	1	1	1	2	2	2p	1	2	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
6 - 9	26	0	4	14	8	0	0	0	4	14	5	2p		0	2p		0	2p	2	MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	2			G	1			G	0			G	0			G	0			G	0	3	
														0			0				4				3				0				0				0				0	7	7
9 - 12	69	3	9	38	19	1	0	2	9	39	24	2p		0	2p		0	2p	3	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	3			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	2			B	0			B	0			B	0			B	0			B	0	2	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				6				0				0				0				0				0	6	6
12 - 15	33	4	7	10	12	1	0	3	7	13	18	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	145	16	25	65	39	6	1	10	24	74	52			2			0				14				3				0				0				0				0		
		41		*104*		*7*		*34*		*126*		*19*																															

(1) C: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study C - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Moez Mosque To Baratha Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	7	3	4	0	0	2	0	1	4	3	4	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	2	1	0	0	2	0	0	1	0	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	7	4	2	0	1	2	0	2	2	3	2	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	22	14	7	0	1	6	0	8	7	11	7			2			0				2				0				0				0				0				0		
		21		*1*		*6*		*15*		*18*		*4*																															

Case study C - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St1-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Baratha Mosque To Moez Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	4	0	1	0	2	0	2	0	5	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	10	9	0	1	0	5	0	4	0	10	0			0			0				0				0				0				0				0				0		
		9		*1*		*5*		*4*		*10*		*0*																															

(1) C: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study C - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Al-Moez Mosque To Baratha Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	11	10	0	1	0	1	0	9	0	11	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	7	6	1	0	0	2	0	4	1	6	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	0	2	0	0	0	0	0	2	0	0	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
Total	20	16	3	1	0	3	0	13	3	17	1			0			2				0				0				0				0				0				0		
		19		*1*		*3*		*16*		*18*		*2*																															

Case study C - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St2-WD-Mo$^{(1)}$

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Moez Mosque To Baratha Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	2	0	0	0	0	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	1	0	0	1	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	10	6	4	0	0	4	0	2	4	4	4		2			0			0				0				0				0				0				0				
		10		*0*		*4*		*6*		*8*		*2*																															

(1) C: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study C - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St2-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Baratha Mosque To Moez Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	1	0	0	1	0	0	1	0	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	1	0	1	0	0	1	1	-1	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	2	1	0	0	1	0	1	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	5	3	0	0	4	1	1	2	4	2		0			0			2				0				0				0				0				0				
		8		*0*		*5*		*3*		*6*		*2*																															

Case study C - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St2-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Moez Mosque To Baratha Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
		Male	Female	Category 1		Category 2		Category 3		Individual	
				Child		Teenager & Young		Adult & Elder		Male	Female
				Boy	Girl	Male	Female	Male	Female		
0 - 3	3	2	1	0	0	1	0	1	1	2	1
3 - 6	2	1	1	0	0	0	0	1	1	1	1
6 - 9	5	3	2	0	0	0	0	3	2	2	1
9 - 12	6	1	3	2	0	0	0	1	3	3	3
12 - 15	5	4	1	0	0	0	0	4	1	2	1
Total	21	11	8	2	0	1	0	10	8	10	7
		19		*2*		*1*		*18*		*17*	

Interval (minutes)	Status					
	Group					
	Male			Female		
	GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
3 - 6	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
6 - 9	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
9 - 12	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
12 - 15	2p	1	2	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			2			0
Total		2			0	

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				2				0				0				0				0				0	2	2
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
Total		2				0				0				0				0				0				
	4																									

(1) C: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study C - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St2-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Baratha Mosque To Moez Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
		Male	Female	Category 1		Category 2		Category 3		Individual	
				Child		Teenager & Young		Adult & Elder		Male	Female
				Boy	Girl	Male	Female	Male	Female		
0 - 3	6	4	1	1	0	0	0	4	1	5	1
3 - 6	1	0	1	0	0	0	0	0	1	0	1
6 - 9	11	1	1	7	2	0	0	1	1	5	2
9 - 12	21	1	2	7	11	1	0	0	2	7	11
12 - 15	31	2	5	15	9	0	0	2	5	15	11
Total	70	8	10	30	22	1	0	7	10	32	26
		18		*52*		*1*		*17*		*58*	

Interval (minutes)	Status					
	Group					
	Male			Female		
	GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
3 - 6	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
6 - 9	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
9 - 12	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
12 - 15	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
Total		0			0	

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p	2	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	2			B	0			B	0			B	0			B	0			B	0	2	
			G	1			G	0			G	0			G	0			G	0			G	0	1	
				4				0				0				0				0				0	4	4
9 - 12	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	0			B	1			B	0			B	0			B	0			B	0	1	
			G	0			G	1			G	0			G	0			G	0			G	0	1	
				0				3				0				0				0				0	3	3
12 - 15	2p	1	MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
			B	1			B	1			B	0			B	0			B	0			B	0	2	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				2				3				0				0				0				0	5	5
Total		6				6				0				0				0				0				
	12																									

Case study C - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St2-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: From Al-Moez Mosque To Baratha Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	0	2	0	0	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	1	3	0	0	1	0	0	3	1	1	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
12 - 15	4	1	2	1	0	0	0	1	2	1	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				3				0				0				0				0	3	3
Total	12	3	6	3	0	1	0	2	6	5	2			0			2				0				3				0				0				0				0		
		9		3		1		8		7		5																															

(1) C: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study C - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re1-St2-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: From Baratha Mosque To Moez Mosque

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	2	0	1	0	1	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	5	2	2	1	0	1	0	1	2	3	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	3	1	0	2	0	0	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	13	7	2	4	0	2	0	5	2	11	2			0			0				0				0				0				0				0				0		
		9		4		2		7		13		0																															

Case study C - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	0	0	2	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*0*		*2*		*2*		*0*																															

(1) C: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study C - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	1	2	1	0	1	0	0	2	2	2			0			0				0				0				0				0				0				0		
		3		*1*		*1*		*2*		*4*		*0*																															

Case study C - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St1-WD-No[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	1	3	0	1	0	1	1	2	1	2	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	2	3	1	1	0	1	2	2	3	2			0			0				2				0				0				0				0				0		
		5		2		1		4		5		2																															

[1] C: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, No: noon

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Case study C - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	0	2	0	0	1	0	-1	2	0	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	2	2	0	0	2	0	0	2	2	0			0			2				0				0				0				0				0				0		
		4		0		2		2		2		2																															

Case study C - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St1-WD-An[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	0	2	0	0	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	1	0	0	0	1	1	0	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	0	2	1	0	0	0	0	2	1	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	2	3	3	0	0	1	2	2	5	3			0			0				0				0				0				0				0				0		
		5		*3*		*1*		*4*		*8*		*0*																															

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[1] C: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study C - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	1	0	1	0	1	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	3	0	3	0	2	0	1	0	6	0			0			0				0				0				0				0				0				0		
		3		*3*		*2*		*1*		*6*		*0*																															

Case study C - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																		
				Category 1		Category 2		Category 3		Individual		Group																														
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																								
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		0		0		0		0		0																														

(1) C: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study C - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																		
				Category 1		Category 2		Category 3		Individual		Group																														
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																								
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	2	1	1	0	0	0	2	1	3	1			0			0				0				0				0				0				0				0		
		3		1		0		3		4		0																														

Case study C - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St2-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
				Category 1		Category 2		Category 3		Individual	
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female
				Boy	Girl	Male	Female	Male	Female		
0 - 3	4	1	2	1	0	0	0	1	2	2	2
3 - 6	0	0	0	0	0	0	0	0	0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0
Total	4	1	2	1	0	0	0	1	2	2	2
		3		*1*		*0*		*3*		*4*	

Interval (minutes)	Group: Male GN	Rep.	Tota	Female GN	Rep.	Tota
0 - 3	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
3 - 6	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
6 - 9	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
9 - 12	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
12 - 15	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
Total			0			0
	0					

Interval (minutes)	Mixed GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	Mixed total	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0		
			B	0			B	0			B	0			B	0			B	0			B	0		
			G	0			G	0			G	0			G	0			G	0			G	0		
				0				0				0				0				0				0	0	0
Total				0				0				0				0				0				0		

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[1] C: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study C - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status	
				Category 1		Category 2		Category 3		Individual	
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female
				Boy	Girl	Male	Female	Male	Female		
0 - 3	0	0	0	0	0	0	0	0	0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0
Total	3	3	0	0	0	0	0	3	0	3	0
		3		*0*		*0*		*3*		*3*	

Interval (minutes)	Group: Male GN	Rep.	Tota	Female GN	Rep.	Tota
0 - 3	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
3 - 6	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
6 - 9	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
9 - 12	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
12 - 15	2p		0	2p		0
	3p		0	3p		0
	4p		0	4p		0
	5p		0	5p		0
	6p		0	6p		0
	7p		0	7p		0
			0			0
Total			0			0
	0					

Interval (minutes)	Mixed GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
Total				0				0				0				0				0				0		

Case study C - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: C-Re2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0			0			0				0				0				0				0				0				0		
		0		*1*		*0*		*0*		*1*		*0*																															

(1) C: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study C - Red line two - station two - betweenness (0.0017 - 0.1397)

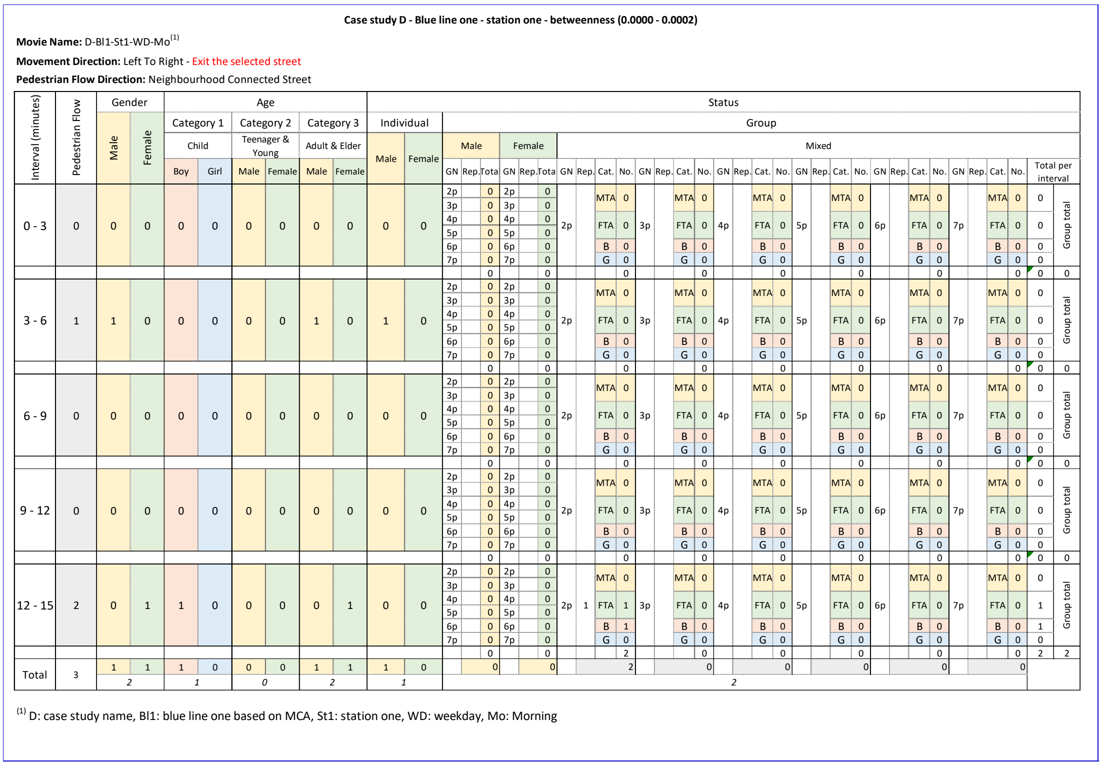
Movie Name: C-Re2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

Street observation forms of case study D: loop-grid pattern



Case study D - Blue line one - station one - betweenness (0.0000 - 0.0002)

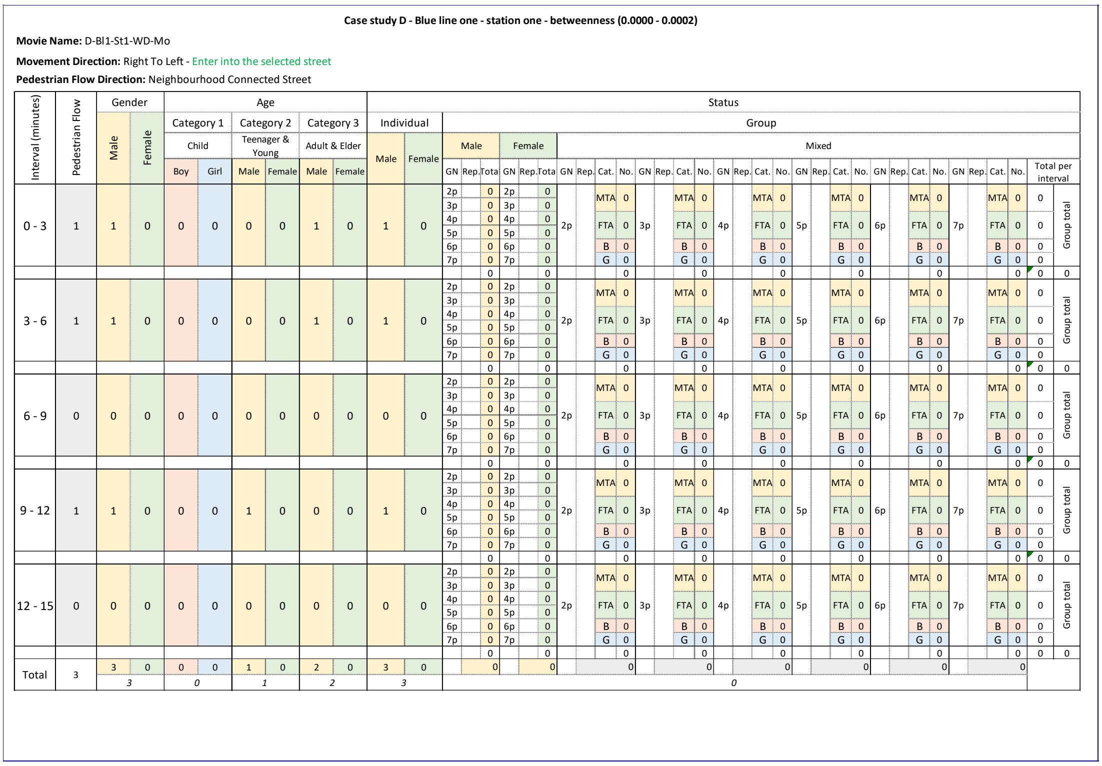
Movie Name: D-Bl1-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	0	1	1	0	0	0	0	1	0	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	3	1	1	1	0	0	0	1	1	1	0			0			0				2				0				0				0				0				0		
		2		*1*		*0*		*2*		*1*		*2*																															

(1) D: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, Mo: Morning



Case study D - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	3	0	0	0	1	0	2	0	3	0			0			0				0				0				0				0				0				0		
		3		*0*		*1*		*2*		*3*		*0*																															

Case study D - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	1	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	1	0	1	0	0	0	1	0	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	1	2	1	1	1	1	0	1	2	1			0			0				2				0				0				0				0				0		
		3		*2*		*2*		*1*		*3*		*2*																															

(1) D: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study D - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study D - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	2	0	0	0	1	0	1	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	2	2	0	0	0	1	2	1	0	0	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
12 - 15	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	3	6	0	0	0	2	3	4	1	4			2			2				0				0				0				0				0				0		
		9		0		2		7		5		4																															

(1) D: case study name, Bl1: blue line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study D - Blue line one - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	5	1	0	0	1	0	4	1	5	1			0			0				0				0				0				0				0				0		
		6		0		1		5		6		0																															

Case study D - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	3	0	0	0	2	0	1	0	3	0			0			0				0				0				0				0				0				0		
		3		0		2		1		3		0																															

(1) D: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study D - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	0	1	1	0	0	0	0	1	0	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	0	1	1	0	0	0	0	1	0	0			0			0				2				0				0				0				0				0		
		1		1		0		1		0		2																															

Case study D - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	1	0	0	0	0	0	1	0	1			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

(1) D: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study D - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	1	1	0	0	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	3	1	1	0	1	0	0	1	1	1	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	0			G	0			G	0			G	0			G	0	1	
														0			0				2				0				0				0				0				0	2	2
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	4	2	0	1	2	1	2	1	4	1			0			0				2				0				0				0				0				0		
		6		*1*		*3*		*3*		*5*		*2*																															

Case study D - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St2-WD-An[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	1	0	0	0	0	1	1	1	1			0			0				0				0				0				0				0				0		
		2		0		0		2		2		0																															

[(1)] D: case study name, Bl1: blue line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study D - Blue line one - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	3	0	2	1	0	0	1	0	1	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p	1	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				3				0				0				0				0	3	3
6 - 9	3	0	3	0	0	0	1	0	2	0	1	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	0	8	1	0	0	2	0	6	0	4			0			2				0				3				0				0				0				0		
		8		1		2		6		4		5																															

Case study D - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St1-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

[1] D: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study D - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	1	0	0	0	0	0	1	0	1			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

Case study D - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St1-WD-No[1]

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	2	1	0	0	2	0	0	1	0	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	2	2	0	0	2	0	0	2	0	2			2			0				0				0				0				0				0				0		
		4		0		2		2		2		2																															

[1] D: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, No: noon

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Case study D - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	0	1	1	0	0	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	1	2	2	0	0	0	1	2	3	2			0			0				0				0				0				0				0				0		
		3		2		0		3		5		0																															

Case study D - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St1-WD-An[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	0	1	1	0	0	0	0	1	1	1			0			0				0				0				0				0				0				0		
		1		*1*		*0*		*1*		*2*		*0*																															

[1] D: case study name, Bl2: blue line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study D - Blue line two - station one - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	1	0	0	0	0	0	1	0	1			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

Case study D - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	0	2	0	0	0	0	0	2	0	0	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	2	3	0	0	0	0	2	3	2	1			0			2				0				0				0				0				0				0		
		5		0		0		5		3		2																															

(1) D: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study D - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		0		0		0		0		0																															

Case study D - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	2	0	0	0	0	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	2	0	0	0	0	0			2			0				0				0				0				0				0				0		
		2		*0*		*2*		*0*		*0*		*2*																															

(1) D: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study D - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	1	1	0	0	1	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	4	2	0	0	2	0	2	2	4	2			0			0				0				0				0				0				0				0		
		6		*0*		*2*		*4*		*6*		*0*																															

Case study D - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	1	0	0	0	1	0			0			0				0				0				0				0				0				0		
		1		*0*		*1*		*0*		*1*		*0*																															

(1) D: case study name, Bl2: blue line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study D - Blue line two - station two - betweenness (0.0000 - 0.0002)

Movie Name: D-Bl2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	1	1	0	0	0	0	1	1	1	1			0			0				0				0				0				0				0				0		
		2		*0*		*0*		*2*		*2*		*0*																															

Case study D - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St1-WD-Mo(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	0	3	1	0	0	1	0	2	0	0	2p		0	2p	1	2	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				2				0				0				0				0				0	2	4
9 - 12	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	2	3	1	0	0	1	2	2	2	0			0			2				2				0				0				0				0				0		
		5		*1*		*1*		*4*		*2*		*4*																															

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(1) D: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study D - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St1-WD-Mo

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	3	1	2	0	0	0	0	1	2	1	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
Total	3	1	2	0	0	0	0	1	2	1	0			0			2				0				0				0				0				0				0		
		3		*0*		*0*		*3*		*1*		*2*																															

Case study D - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St1-WD-No(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	0	1	0	0	0	1	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	1	0	0	1	0	0	1	1	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	7	1	1	0	3	0	4	1	8	1			0			0				0				0				0				0				0				0		
		8		1		3		5		9		0																															

(1) D: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study D - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St1-WD-No

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	5	3	2	0	0	1	1	2	1	2	1	2p		0	2p		0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	1	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
12 - 15	5	1	4	0	0	0	0	1	4	1	4	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	12	4	7	1	0	1	1	3	6	4	6			0			0				2				0				0				0				0				0		
		11		1		2		9		10		2																															

Case study D - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St1-WD-An(1)

Movement Direction: Left To Right - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	1	2	0	0	0	0	1	2	0	1	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	1	1	0	0	1	0	0	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	7	4	3	0	0	2	0	2	3	3	2			0			0				2				0				0				0				0				0		
		7		0		2		5		5		2																															

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(1) D: case study name, Ye1: yellow line one based on MCA, St1: station one, WD: weekday, An: afternoon

Case study D - Yellow line one - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St1-WD-An

Movement Direction: Right To Left - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	4	2	2	0	0	2	1	0	1	2	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
6 - 9	3	2	1	0	0	1	1	1	0	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	10	6	4	0	0	4	2	2	2	6	2			0			2				0				0				0				0				0				0		
		10		0		6		4		8		2																															

Case study D - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	3	1	0	0	2	1	1	0	1	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	6	4	2	0	0	2	1	2	1	2	2			2			0				0				0				0				0				0				0		
		6		*0*		*3*		*3*		*4*		*2*																															

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(1) D: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, Mo: Morning

Case study D - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	5	3	2	0	0	0	0	3	2	3	2			0			0				0				0				0				0				0				0		
		5		*0*		*0*		*5*		*5*		*0*																															

Case study D - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	2	2	0	0	1	0	1	2	2	0	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	4	1	3	0	0	0	3	1	0	1	1	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
12 - 15	50	2	48	0	0	1	36	1	12	2	45	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			3				0				0				0				0				0				0	0	3
Total	62	9	53	0	0	3	39	6	14	9	46			0			7				0				0				0				0				0				0		
		62		0		42		20		55		7																															

(1) D: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, No: noon

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Case study D - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

3	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	2	0	0	0	0	0	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	2	0	1	1	0	0	0	0	1	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	1	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	1	1	0	0	0	0	1	1	1	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	5	2	1	0	3	0	2	2	3	1			2			0				2				0				0				0				0				0		
		7		1		3		4		4		4																															

Case study D - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	2	2	0	0	0	0	2	2	1	1	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	1	0	1	0	1	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	6	2	1	0	2	0	4	2	6	1			0			0				2				0				0				0				0				0		
		8		*1*		*2*		*6*		*7*		*2*																															

(1) D: case study name, Ye1: yellow line one based on MCA, St2: station two, WD: weekday, An: afternoon

Case study D - Yellow line one - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	3	2	1	0	0	0	0	2	1	2	1			0			0				0				0				0				0				0				0		
		3		*0*		*0*		*3*		*3*		*0*																															

Case study D - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

(1) D: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study D - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study D - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St1-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

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(1) D: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, No: noon

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Case study D - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

Case study D - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

(1) D: case study name, Ye2: yellow line two based on MCA, St1: station one, WD: weekday, An: afternoon

Case study D - Yellow line two - station one - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	0	1	0	0	0	1	0	0	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	0	0	1	0	0	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	4	2	1	1	0	1	1	1	0	3	1			0			0				0				0				0				0				0				0		
		3		*1*		*2*		*1*		*4*		*0*																															

Case study D - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

(1) D: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study D - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	1	0	0	0	0	0	1	0	1	0			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

Case study D - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	2	2	0	0	0	1	0	1	0	2	0			0			0				0				0				0				0				0				0		
		2		*0*		*1*		*1*		*2*		*0*																															

(1) D: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study D - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	0	1	0	0	0	0	0	1	0	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	1	0	1	0	0	0	0	0	1	0	1			0			0				0				0				0				0				0				0		
		1		*0*		*0*		*1*		*1*		*0*																															

Case study D - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

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(1) D: case study name, Ye2: yellow line two based on MCA, St2: station two, WD: weekday, An: afternoon

Case study D - Yellow line two - station two - betweenness (0.0002 - 0.0017)

Movie Name: D-Ye2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: Neighbourhood Connected Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p	1	MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p	1	MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0			0			0				0				0				0				0				0				0		
		0		*0*		*0*		*0*		*0*		*0*																															

Case study D - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St1-WD-Mo[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Army Channel To Beirut Square Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	9	7	2	0	0	2	0	5	2	4	1	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	
3 - 6	6	6	0	0	0	1	0	5	0	6	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	3	1	0	0	2	1	1	0	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	3	0	0	0	2	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	3	0	1	0	2	0	1	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	26	22	3	1	0	9	1	13	2	20	2			2			0				2				0				0				0				0				0		
		25		1		10		15		22		4																															

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[1] D: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study D - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Beirut Square To Army Channel Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	0	4	0	0	0	3	0	1	0	2	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	6	3	2	0	1	0	0	3	2	2	1	2p		0	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
Total	15	8	6	0	1	0	3	8	3	7	3			0			2				0				3				0				0				0				0		
		14		1		3		11		10		5																															

Case study D - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St1-WD-No[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Army Channel To Beirut Square Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
		Male	Female	Category 1		Category 2		Category 3		Individual		Group					
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	11	6	4	1	0	2	1	4	3	5	2	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	4	3	1	0	0	1	0	2	1	3	1	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	7	4	3	0	0	4	0	0	3	2	3	2p	1	2	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			0
9 - 12	6	2	4	0	0	0	2	2	2	2	2	2p		0	2p	1	2
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			2
12 - 15	5	5	0	0	0	4	0	1	0	3	0	2p	1	2	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			0
Total	33	20	12	1	0	11	3	9	9	15	8			4			2
		32		*1*		*14*		*18*		*23*		*10*					

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p	1	MTA	1	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0	2	
			B	0			B	0			B	1			B	0			B	0			B	0	1	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				4				0				0				0	4	4
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
9 - 12	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
Total				0				0				4				0				0				0		

[(1)] D: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, No: noon

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Case study D - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Beirut Square To Army Channel Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
		Male	Female	Category 1		Category 2		Category 3		Individual		Group					
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	11	8	3	0	0	5	3	3	0	6	1	2p	1	2	2p	1	2
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			2
3 - 6	4	4	0	0	0	2	0	2	0	4	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	5	3	2	0	0	2	0	1	2	3	2	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
9 - 12	4	3	1	0	0	0	0	3	1	2	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
12 - 15	3	3	0	0	0	2	0	1	0	1	0	2p	1	2	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			0
Total	27	21	6	0	0	11	3	10	3	16	3			4			2
		27		*0*		*14*		*13*		*19*		*8*					

Interval (minutes)	Status																									
	Group																									
	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	4
3 - 6	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				2				0				0				0				0				0	2	2
12 - 15	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
Total				2				0				0				0				0				0		

Case study D - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St1-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Army Channel To Beirut Square Through Tharra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	2	3	0	0	0	1	2	2	2	1	2p		0	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
3 - 6	12	5	6	1	0	1	1	4	5	4	4	2p		0	2p		0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	2	FTA	2	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				4				0				0				0				0				0	4	4
6 - 9	14	12	1	1	0	7	0	5	1	7	1	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														6			0				0				0				0				0				0				0	0	6
9 - 12	7	6	1	0	0	4	0	2	1	4	1	2p	1	2	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
12 - 15	11	6	2	1	2	3	0	3	2	5	0	2p		0	2p		0			MTA	0			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p	2	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	2			G	0			G	0			G	0			G	0	2	
														0			0				0				6				0				0				0				0	6	6
Total	49	31	13	3	2	15	2	16	11	22	7			8			2				4				6				0				0				0				0		
		44		5		17		27		29		20																															

(1) D: case study name, Re1: red line one based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study D - Red line one - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Beirut Square To Army Channel Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	14	8	4	0	2	2	0	6	4	4	0	2p		0	2p		0			MTA	2			MTA	2			MTA	0			MTA	0			MTA	0			MTA	0	4	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p	2	FTA	2	3p	2	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	2			G	0			G	0			G	0			G	0	2	
														0			0				4				6				0				0				0				0	10	10
3 - 6	13	8	5	0	0	5	2	3	3	4	3	2p	2	4	2p	1	2			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				0				0				0				0				0				0	0	6
6 - 9	13	10	2	0	1	4	0	6	2	10	0	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p	1	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
9 - 12	9	8	1	0	0	4	0	4	1	8	1	2p		0	2p		0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	25	16	8	0	1	10	3	6	5	6	-1	2p	2	4	2p	2	4			MTA	3			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	3	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0	2p	3	FTA	3	3p	1	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	5	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														7			4				6				3				0				0				0				0	9	20
Total	74	50	20	0	4	25	5	25	15	32	3			11			6				10				12				0				0				0				0		
		70		4		30		40		35		39																															

Case study D - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St2-WD-Mo[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Beirut Square To Army Channel Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	3	2	0	0	2	0	1	2	1	0	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	6	1	4	0	1	0	1	1	3	0	1	2p		0	2p		0	2p	1	MTA	1	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				2				3				0				0				0				0	5	5
9 - 12	3	3	0	0	0	1	0	2	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	5	3	1	0	1	0	0	3	1	2	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	1	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	1			G	0			G	0			G	0			G	0	1	
														0			0				0				3				0				0				0				0	3	3
Total	20	11	7	0	2	3	1	8	6	7	1			2			2				2				6				0				0				0				0		
		18		*2*		*4*		*14*		*8*		*12*																															

[(1)] D: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study D - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Army Channel To Beirut Square Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	4	3	1	0	0	1	1	2	0	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	5	4	0	1	0	1	0	3	0	5	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	14	12	1	1	0	2	1	10	0	13	1			0			0				0				0				0				0				0				0		
		13		*1*		*3*		*10*		*14*		*0*																															

Case study D - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St2-WD-No(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Beirut Square To Army Channel Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	4	1	0	0	2	0	2	1	4	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	5	5	0	0	0	2	0	3	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	10	9	1	0	0	5	0	4	1	8	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
9 - 12	6	5	1	0	0	0	0	5	1	2	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				0				0				0				0				0				0	0	3
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	27	24	3	0	0	9	0	15	3	18	2			5			0				2				0				0				0				0				0		
		27		*0*		*9*		*18*		*20*		*7*																															

(1) D: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, No: noon

Case study D - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Army Channel To Beirut Square Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	9	7	2	0	0	4	0	3	2	0	2	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														7			0				0				0				0				0				0				0	0	7
9 - 12	4	4	0	0	0	0	0	4	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	4	0	0	0	0	0	4	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	23	21	2	0	0	4	0	17	2	12	2			9			0				0				0				0				0				0				0		
		23		*0*		*4*		*19*		*14*		*9*																															

Case study D - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St2-WD-An[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Beirut Square To Army Channel Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	10	9	1	0	0	5	1	4	0	7	1	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	4	3	1	0	0	0	0	3	1	2	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	6	4	2	0	0	3	1	1	1	2	2	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
9 - 12	14	9	3	0	2	3	0	6	3	7	0	2p		0	2p		0	2p	2	MTA	2	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	1			G	1			G	0			G	0			G	0			G	0	2	
														0			0				4				3				0				0				0				0	7	7
12 - 15	10	6	4	0	0	3	2	3	2	6	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p	1	3																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			3				0				0				0				0				0				0	0	3
Total	44	31	11	0	2	14	4	17	7	24	4			4			3				6				3				0				0				0				0		
		42		*2*		*18*		*24*		*28*		*16*																															

[(1)] D: case study name, Re1: red line one based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study D - Red line one - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re1-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Army Channel To Beirut Square Through Thawra Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	8	3	5	0	0	1	2	2	3	3	5	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	16	10	6	0	0	7	2	3	4	6	2	2p	1	2	2p	1	2	2p	2	MTA	2	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				4				0				0				0				0				0	4	8
6 - 9	6	6	0	0	0	5	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
9 - 12	15	6	4	3	2	3	1	3	3	2	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p	1	MTA	1	6p	1	MTA	1	7p		MTA	0	2	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	2			FTA	2			FTA	0	4	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	2			B	1			B	0	3	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	2			G	0	2	
														2			0				0				0				0				5				6				0	11	13
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	47	27	15	3	2	16	5	11	10	15	7			8			2				4				0				0				5				6				0		
		42		*5*		*21*		*21*		*22*		*25*																															

Case study D - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St1-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From AL-Mustansiriya University To Beirut Square Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	1	0	1	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	2	2	0	0	0	2	0	0	0	0	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
6 - 9	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	0	0	2	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	11	11	0	0	0	3	0	8	0	9	0			2			0				0				0				0				0				0				0		
		11		*0*		*3*		*8*		*9*		*2*																															

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[1] D: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, Mo: Morning

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Case study D - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St1-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Beirut Square To AL-Mustansiriya University Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	4	4	0	0	0	3	0	1	0	4	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	9	0	0	0	6	0	3	0	9	0			0			0				0				0				0				0				0				0		
		9		*0*		*6*		*3*		*9*		*0*																															

Case study D - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St1-WD-No[1]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From AL-Mustansiriya University To Beirut Square Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	3	0	0	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	11	6	5	0	0	0	5	6	0	6	1	2p		0	2p	2	4	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			4				0				0				0				0				0				0	0	4
6 - 9	13	6	6	1	0	4	5	2	1	2	3	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p	1	MTA	2	5p		MTA	0	6p		MTA	0	7p		MTA	0	3	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0	3	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				4				0				0				0	6	8
9 - 12	5	2	3	0	0	2	3	0	0	2	1	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
12 - 15	5	3	2	0	0	3	1	0	1	2	1	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	37	20	16	1	0	12	14	8	2	13	6			4			6				4				0				4				0				0				0		
		36		1		26		10		19		18																															

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[1] D: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, No: noon

Case study D - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St1-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Beirut Square To AL-Mustansiriya University Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	3	1	0	0	2	1	1	0	2	0	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	5	2	2	1	0	0	0	2	2	2	0	2p		0	2p		0	2p		MTA	0	3p	1	MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	2			FTA	0			FTA	0			FTA	0			FTA	0	2	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	1			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				3				0				0				0				0	3	3
6 - 9	6	4	2	0	0	3	2	1	0	2	0	2p	1	2	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			2				0				0				0				0				0				0	0	4
9 - 12	5	4	1	0	0	0	0	4	1	4	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	2	1	1	0	1	0	1	1	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
Total	24	15	7	2	0	6	3	9	4	12	1			2			2				4				3				0				0				0				0		
		22		2		9		13		13		11																															

Case study D - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St1-WD-An[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From AL-Mustansiriya University To Beirut Square Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
				Category 1		Category 2		Category 3		Individual		Group					
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	6	4	2	0	0	1	1	3	1	4	2	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	11	8	3	0	0	7	0	1	3	4	1	2p		0	2p	1	2
												3p		0	3p		0
												4p	1	4	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														4			2
6 - 9	9	4	4	0	1	3	3	1	1	2	0	2p	1	2	2p	1	2
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														2			2
9 - 12	9	8	1	0	0	6	0	2	1	4	1	2p	2	4	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														4			0
12 - 15	9	8	1	0	0	5	0	3	1	3	0	2p	2	4	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														4			0
Total	44	32	11	0	1	22	4	10	7	17	4			14			4
		43		*1*		*26*		*17*		*21*		*23*					

Interval (minutes)	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	6
6 - 9			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p	1	FTA	2	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	2	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	1			G	0			G	0			G	0			G	0	1	
				0				3				0				0				0				0	3	7
9 - 12			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	4
12 - 15			MTA	1			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	1	Group total
	2p	1	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				2				0				0				0				0				0	2	6
Total				2				3				0				0				0				0		

[(1)] D: case study name, Re2: red line two based on MCA, St1: station one, WD: weekday, An: afternoon

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Case study D - Red line two - station one - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St1-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From Beirut Square To AL-Mustansiriya University Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status							
				Category 1		Category 2		Category 3		Individual		Group					
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female		
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota
0 - 3	5	2	3	0	0	0	1	2	2	2	3	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
3 - 6	3	3	0	0	0	2	0	1	0	3	0	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
6 - 9	5	4	1	0	0	0	0	4	1	4	1	2p		0	2p		0
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			0
9 - 12	11	3	7	0	1	0	2	3	5	3	2	2p		0	2p	2	4
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			4
12 - 15	4	0	4	0	0	0	0	0	4	0	2	2p		0	2p	1	2
												3p		0	3p		0
												4p		0	4p		0
												5p		0	5p		0
												6p		0	6p		0
												7p		0	7p		0
														0			2
Total	28	12	15	0	1	2	3	10	12	12	8			0			6
		27		*1*		*5*		*22*		*20*		*8*					

Interval (minutes)	Mixed																									
	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
3 - 6			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
6 - 9			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	0
9 - 12			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p	1	FTA	1	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	1	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	1			G	0			G	0			G	0			G	0			G	0	1	
				2				0				0				0				0				0	2	6
12 - 15			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0			MTA	0	0	Group total
	2p		FTA	0	3p		FTA	0	4p		FTA	0	5p		FTA	0	6p		FTA	0	7p		FTA	0	0	
			B	0			B	0			B	0			B	0			B	0			B	0	0	
			G	0			G	0			G	0			G	0			G	0			G	0	0	
				0				0				0				0				0				0	0	2
Total				2				0				0				0				0				0		

Case study D - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St2-WD-Mo(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Beirut Square To AL-Mustansiriya University Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	2	2	0	0	0	2	0	0	0	2	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	3	1	0	0	1	0	2	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	8	7	1	0	0	4	0	3	1	7	1			0			0				0				0				0				0				0				0		
		8		0		4		4		8		0																															

[1] D: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, Mo: Morning

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Case study D - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St2-WD-Mo

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From AL-Mustansiriya University To Beirut Square Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	2	2	0	0	0	2	0	0	0	0	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	3	3	0	0	0	0	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	2	0	2	0	0	0	0	0	2	0	2	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	1	1	0	0	0	1	0	0	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
Total	9	7	2	0	0	3	0	4	2	5	2			2			0				0				0				0				0				0				0		
		9		0		3		6		7		2																															

Case study D - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St2-WD-No[(1)]

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Beirut Square To AL-Mustansiriya University Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	3	3	0	0	0	0	0	3	0	1	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
6 - 9	4	1	3	0	0	1	2	0	1	1	1	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
9 - 12	4	3	1	0	0	0	0	3	1	3	1	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	Mixed total	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0		
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0		
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0		
														0			0				0				0				0				0				0				0	0	0
Total	13	9	4	0	0	1	2	8	2	7	2			2			2				0				0				0				0				0				0		
		13		*0*		*3*		*10*		*9*		*4*																															

[(1)] D: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, No: noon

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Case study D - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St2-WD-No

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From AL-Mustansiriya University To Beirut Square Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
		Male	Female	Category 1		Category 2		Category 3		Individual		Group																															
				Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	5	5	0	0	0	1	0	4	0	3	0	2p	1	2	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				0				0				0				0				0				0	0	2
3 - 6	5	3	2	0	0	2	1	1	1	0	1	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
6 - 9	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	9	5	4	0	0	4	1	1	3	5	4	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	6	6	0	0	0	3	0	3	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p	1	3	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														3			0				0				0				0				0				0				0	0	3
Total	25	19	6	0	0	10	2	9	4	11	5			7			0				2				0				0				0				0				0		
		25		*0*		*12*		*13*		*16*		*9*																															

Case study D - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St2-WD-An(1)

Movement Direction: Left To Right - Exit the selected street

Pedestrian Flow Direction: From Beirut Square To AL-Mustansiriya University Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	1	1	0	0	0	0	0	1	0	1	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
3 - 6	7	4	3	0	0	0	0	4	3	3	2	2p		0	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
6 - 9	3	3	0	0	0	2	0	1	0	3	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	0	0	0	0	0	0	0	0	0	0	0	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
12 - 15	4	2	2	0	0	0	0	2	2	2	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			2				0				0				0				0				0				0	0	2
Total	15	10	5	0	0	2	0	8	5	9	2			0			2				2				0				0				0				0				0		
		15		*0*		*2*		*13*		*11*		*4*																															

(1) D: case study name, Re2: red line two based on MCA, St2: station two, WD: weekday, An: afternoon

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Case study D - Red line two - station two - betweenness (0.0017 - 0.1397)

Movie Name: D-Re2-St2-WD-An

Movement Direction: Right To Left - Enter into the selected street

Pedestrian Flow Direction: From AL-Mustansiriya University To Beirut Square Through Palestine Street

Interval (minutes)	Pedestrian Flow	Gender		Age						Status																																	
				Category 1		Category 2		Category 3		Individual		Group																															
		Male	Female	Child		Teenager & Young		Adult & Elder		Male	Female	Male			Female			Mixed																									
				Boy	Girl	Male	Female	Male	Female			GN	Rep.	Tota	GN	Rep.	Tota	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	GN	Rep.	Cat.	No.	Total per interval	
0 - 3	4	2	1	1	0	1	0	1	1	2	0	2p		0	2p		0	2p	1	MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	1			B	0			B	0			B	0			B	0			B	0	1	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				2				0				0				0				0				0	2	2
3 - 6	7	5	2	0	0	5	1	0	1	1	0	2p		0	2p	1	2	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p	1	4	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			2				0				0				0				0				0				0	0	6
6 - 9	4	1	3	0	0	0	2	1	1	1	3	2p		0	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														0			0				0				0				0				0				0				0	0	0
9 - 12	6	6	0	0	0	5	0	1	0	2	0	2p	2	4	2p		0	2p		MTA	0	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	0	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	0	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														4			0				0				0				0				0				0				0	0	4
12 - 15	7	6	1	0	0	0	0	6	1	3	0	2p	1	2	2p		0	2p	1	MTA	1	3p		MTA	0	4p		MTA	0	5p		MTA	0	6p		MTA	0	7p		MTA	0	1	Group total
												3p		0	3p		0																										
												4p		0	4p		0			FTA	1			FTA	0			FTA	0			FTA	0			FTA	0			FTA	0	1	
												5p		0	5p		0																										
												6p		0	6p		0			B	0			B	0			B	0			B	0			B	0			B	0	0	
												7p		0	7p		0			G	0			G	0			G	0			G	0			G	0			G	0	0	
														2			0				2				0				0				0				0				0	2	4
Total	28	20	7	1	0	11	3	9	4	9	3			10			2				4				0				0				0				0				0		
		27		*1*		*14*		*13*		*12*		*16*																															

Appendix Two

Links ID, Length, Betweenness and Closeness

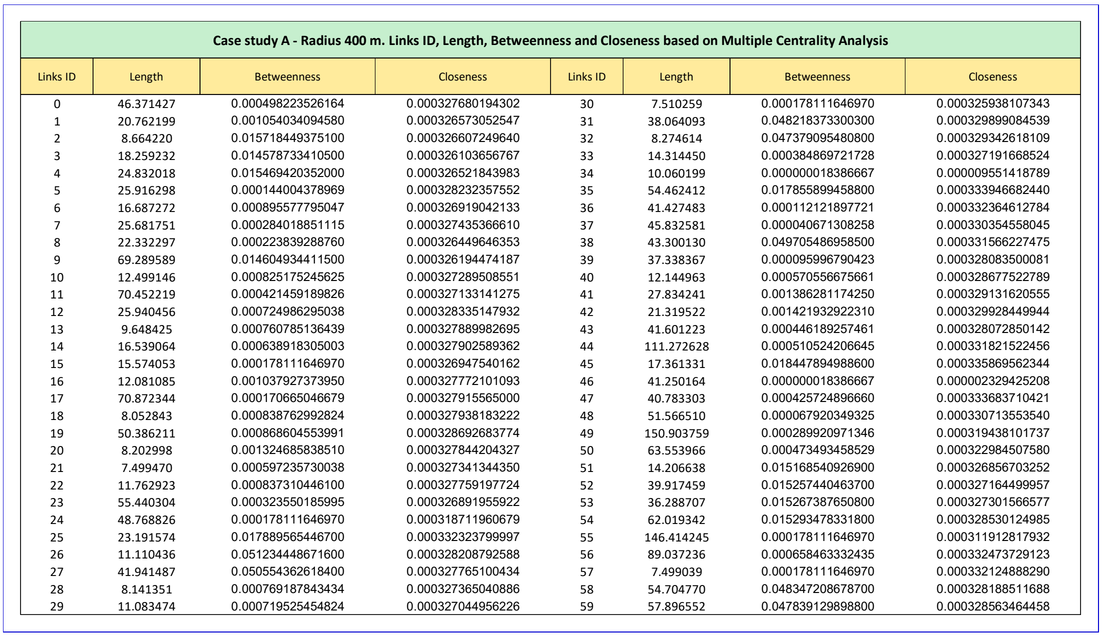
The case study A | organic pattern

ID: It is generated by ArcMap GIS.

Length: It based on the georeferencing aerial map (metric distance).

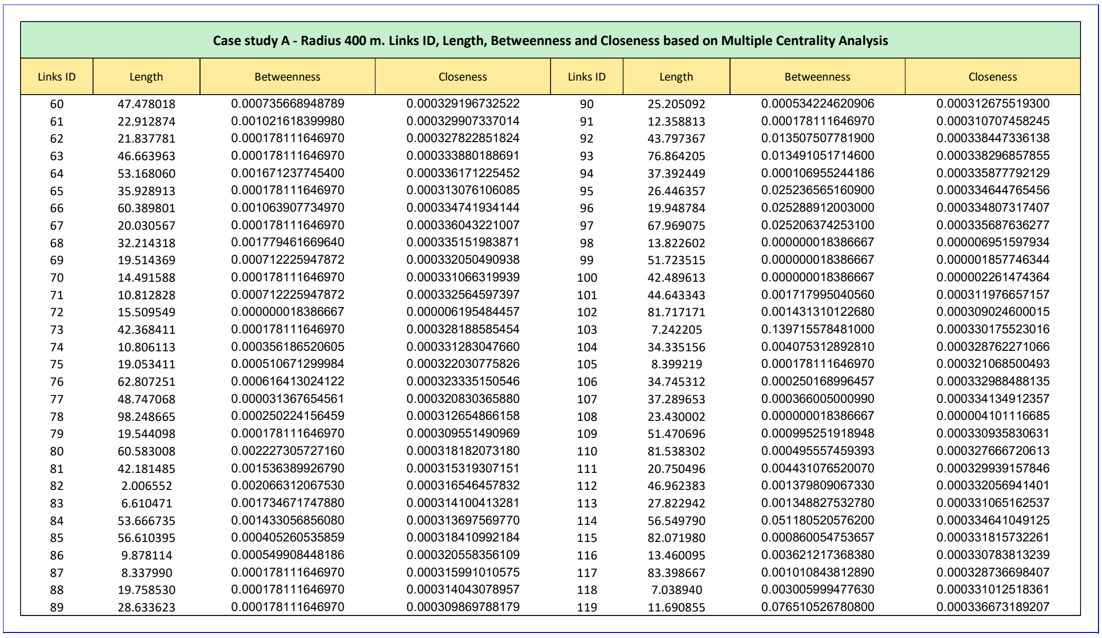
Betweenness centrality value: It derived from the Multiple Centrality Assessment (MCA).

Closeness centrality value: It derived from the Multiple Centrality Assessment (MCA).



Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
0	46.371427	0.000498223526164	0.000327680194302	30	7.510259	0.000178111646970	0.000325938107343
1	20.762199	0.001054034094580	0.000326573052547	31	38.064093	0.048218373300300	0.000329899084539
2	8.664220	0.015718449375100	0.000326607249640	32	8.274614	0.047379095480800	0.000329342618109
3	18.259232	0.014578733410500	0.000326103656767	33	14.314450	0.000384869721728	0.000327191668524
4	24.832018	0.015469420352000	0.000326521843983	34	10.060199	0.000000018386667	0.000009551418789
5	25.916298	0.000144004378969	0.000328232357552	35	54.462412	0.017855899458800	0.000333946682440
6	16.687272	0.000895577795047	0.000326919042133	36	41.427483	0.000112121897721	0.000332364612784
7	25.681751	0.000284018851115	0.000327435366610	37	45.832581	0.000040671308258	0.000330354558045
8	22.332297	0.000223839288760	0.000326449646353	38	43.300130	0.049705486958500	0.000331566227475
9	69.289589	0.014604934411500	0.000326194474187	39	37.338367	0.000095996790423	0.000328083500081
10	12.499146	0.000825175245625	0.000327289508551	40	12.144963	0.000570556675661	0.000328677522789
11	70.452219	0.000421459189826	0.000327133141275	41	27.834241	0.001386281174250	0.000329131620555
12	25.940456	0.000724986295038	0.000328335147932	42	21.319522	0.001421932922310	0.000329928449944
13	9.648425	0.000760785136439	0.000327889982695	43	41.601223	0.000446189257461	0.000328072850142
14	16.539064	0.000638918305003	0.000327902589362	44	111.272628	0.000510524206645	0.000331821522456
15	15.574053	0.000178111646970	0.000326947540162	45	17.361331	0.018447894988600	0.000335869562344
16	12.081085	0.001037927373950	0.000327772101093	46	41.250164	0.000000018386667	0.000002329425208
17	70.872344	0.000170665046679	0.000327915565000	47	40.783303	0.000425724896660	0.000333683710421
18	8.052843	0.000838762992824	0.000327938183222	48	51.566510	0.000067920349325	0.000330713553540
19	50.386211	0.000868604553991	0.000328692683774	49	150.903759	0.000289920971346	0.000319438101737
20	8.202998	0.001324685838510	0.000327844204327	50	63.553966	0.000473493458529	0.000322984507580
21	7.499470	0.000597235730038	0.000327341344350	51	14.206638	0.015168540926900	0.000326856703252
22	11.762923	0.000837310446100	0.000327759197724	52	39.917459	0.015257440463700	0.000327164499957
23	55.440304	0.000323550185995	0.000326891955922	53	36.288707	0.015267387650800	0.000327301566577
24	48.768826	0.000178111646970	0.000318711960679	54	62.019342	0.015293478331800	0.000328530124985
25	23.191574	0.017889565446700	0.000332323799997	55	146.414245	0.000178111646970	0.000311912817932
26	11.110436	0.051234448671600	0.000328208792588	56	89.037236	0.000658463332435	0.000332473729123
27	41.941487	0.050554362618400	0.000327765100434	57	7.499039	0.000178111646970	0.000332124888290
28	8.141351	0.000769187843434	0.000327365040886	58	54.704770	0.048347208678700	0.000328188511688
29	11.083474	0.000719525454824	0.000327044956226	59	57.896552	0.047839129898800	0.000328563464458



Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
60	47.478018	0.000735668948789	0.000329196732522	90	25.205092	0.000534224620906	0.000312675519300
61	22.912874	0.001021618399980	0.000329907337014	91	12.358813	0.000178111646970	0.000310707458245
62	21.837781	0.000178111646970	0.000327822851824	92	43.797367	0.013507507781900	0.000338447336138
63	46.663963	0.000178111646970	0.000333880188691	93	76.864205	0.013491051714600	0.000338296857855
64	53.168060	0.001671237745400	0.000336171225452	94	37.392449	0.000106955244186	0.000335877792129
65	35.928913	0.000178111646970	0.000313076106085	95	26.446357	0.025236565160900	0.000334644765456
66	60.389801	0.001063907734970	0.000334741934144	96	19.948784	0.025288912003000	0.000334807317407
67	20.030567	0.000178111646970	0.000336043221007	97	67.969075	0.025206374253100	0.000335687636277
68	32.214318	0.001779461669640	0.000335151983871	98	13.822602	0.000000018386667	0.000006951597934
69	19.514369	0.000712225947872	0.000332050490938	99	51.723515	0.000000018386667	0.000001857746344
70	14.491588	0.000178111646970	0.000331066319939	100	42.489613	0.000000018386667	0.000002261474364
71	10.812828	0.000712225947872	0.000332564597397	101	44.643343	0.001717995040560	0.000311976657157
72	15.509549	0.000000018386667	0.000006195484457	102	81.717171	0.001431310122680	0.000309024600015
73	42.368411	0.000178111646970	0.000328188585454	103	7.242205	0.139715578481000	0.000330175523016
74	10.806113	0.000356186520605	0.000331283047660	104	34.335156	0.004075312892810	0.000328762271066
75	19.053411	0.000510671299984	0.000322030775826	105	8.399219	0.000178111646970	0.000321068500493
76	62.807251	0.000616413024122	0.000323335150546	106	34.745312	0.000250168996457	0.000332988488135
77	48.747068	0.000031367654561	0.000320830365880	107	37.289653	0.000366005000990	0.000334134912357
78	98.248665	0.000250224156459	0.000312654866158	108	23.430002	0.000000018386667	0.000004101116685
79	19.544098	0.000178111646970	0.000309551490969	109	51.470696	0.000995251918948	0.000330935830631
80	60.583008	0.002227305727160	0.000318182073180	110	81.538302	0.000495557459393	0.000327666720613
81	42.181485	0.001536389926790	0.000315319307151	111	20.750496	0.004431076520070	0.000329939157846
82	2.006552	0.002066312067530	0.000316546457832	112	46.962383	0.001379809067330	0.000332056941401
83	6.610471	0.001734671747880	0.000314100413281	113	27.822942	0.001348827532780	0.000331065162537
84	53.666735	0.001433056856080	0.000313697569770	114	56.549790	0.051180520576200	0.000334641049125
85	56.610395	0.000405260535859	0.000318410992184	115	82.071980	0.000860054753657	0.000331815732261
86	9.878114	0.000549908448186	0.000320558356109	116	13.460095	0.003621217368380	0.000330783813239
87	8.337990	0.000178111646970	0.000315991010575	117	83.398667	0.001010843812890	0.000328736698407
88	19.758530	0.000178111646970	0.000314043078957	118	7.038940	0.003005999477630	0.000331012518361
89	28.633623	0.000178111646970	0.000309869788179	119	11.690855	0.076510526780800	0.000336673189207

Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
120	35.121689	0.058477140821700	0.000335443886004	150	61.679636	0.000395515602145	0.000337768444372
121	26.139741	0.059137056700900	0.000335595920750	151	36.436573	0.026891898439000	0.000334930268125
122	56.508334	0.058469767768100	0.000335999391438	152	58.910128	0.002302525583440	0.000333995467851
123	38.987234	0.059026056389900	0.000336337254839	153	35.480005	0.002300981103380	0.000333611099601
124	39.595998	0.059076821978500	0.000337695071979	154	51.273645	0.002442907788930	0.000335518573808
125	16.067857	0.000890190501503	0.000337431371224	155	15.119531	0.026158674917000	0.000334865843287
126	11.165271	0.000178111646970	0.000335971014101	156	19.682186	0.000178111646970	0.000332100549793
127	3.863827	0.000178111646970	0.000336212331694	157	13.627174	0.000178111646970	0.000333139133465
128	20.164218	0.000534224620906	0.000335228213005	158	28.346778	0.005600413405830	0.000337593977666
129	4.775828	0.000178111646970	0.000333722694983	159	64.479846	0.010638397043000	0.000340651270333
130	12.196715	0.000178111646970	0.000333279769859	160	30.572706	0.010423640767900	0.000340205077393
131	6.432191	0.075521452782100	0.000336656579279	161	107.438004	0.034879857378300	0.000340634789318
132	85.835436	0.024790798796800	0.000335645943730	162	72.230997	0.022520302788000	0.000327393479755
133	85.994244	0.003376840172150	0.000336620171507	163	9.281583	0.000739695628947	0.000318392021621
134	70.420154	0.000317335492418	0.000336573267704	164	35.137185	0.001872479819940	0.000338250222578
135	55.581494	0.003107585814940	0.000336790544404	165	32.216227	0.003382484879030	0.000338935633016
136	48.880866	0.000476361778642	0.000337758389399	166	38.638117	0.026239962373500	0.000334768601377
137	41.205653	0.000108297470905	0.000338766487625	167	28.447160	0.042784340847600	0.000337142449655
138	27.563559	0.000473070565179	0.000339628265127	168	40.790594	0.003182143751190	0.000338865116472
139	2.844987	0.003058695666360	0.000332811580827	169	38.255939	0.003404548879900	0.000339611997050
140	33.004723	0.002877256032600	0.000331801122968	170	54.225898	0.042684446083700	0.000336711955084
141	93.780845	0.000074116656234	0.000329012632199	171	11.635980	0.000178111646970	0.000332990251055
142	34.214099	0.004013533690400	0.000334020740244	172	11.218702	0.000178111646970	0.000334038206800
143	54.835810	0.000178111646970	0.000329515644921	173	8.548966	0.000712225947872	0.000334198380127
144	23.130884	0.000178111646970	0.000321992033955	174	36.601254	0.001246009288760	0.000336945904718
145	23.711916	0.000178111646970	0.000321959873831	175	13.238473	0.000178111646970	0.000333490692685
146	63.473901	0.000534224620906	0.000326932804228	176	14.036399	0.000178111646970	0.000329258606655
147	11.887840	0.003775389574410	0.000337777933123	177	23.557016	0.001423863522390	0.000334074746805
148	38.685197	0.015409939483000	0.000339783805172	178	2.509899	0.000890190501503	0.000330224899847
149	132.512434	0.000031533134567	0.000337556238319	179	19.375265	0.001246009288760	0.000331516873448

Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
180	6.823259	0.000178111646970	0.000329972205445	210	9.207687	0.000178111646970	0.000317336791768
181	3.501355	0.000178111646970	0.000324789970602	211	11.352033	0.000178111646970	0.000321935732440
182	44.075418	0.000356186520605	0.000327533239710	212	72.114673	0.000178111646970	0.000314008999005
183	23.962699	0.000178111646970	0.000331286171707	213	25.518704	0.001601680982680	0.000325282799975
184	25.876577	0.000534224620906	0.000334257311841	214	10.654012	0.001100681069740	0.000327146371888
185	7.167720	0.000178111646970	0.000332275791720	215	8.564555	0.000455217111147	0.000326553285975
186	15.977958	0.000178111646970	0.000326327274044	216	6.676796	0.000811109445075	0.000327123187672
187	14.353398	0.000178111646970	0.000330045619778	217	8.342265	0.000257008836724	0.000326444875380
188	31.267546	0.000356186520605	0.000329065174228	218	10.804522	0.000355929107262	0.000326195058342
189	11.635197	0.000178111646970	0.000328750345171	219	29.351114	0.000466984578275	0.000326464261174
190	59.457963	0.000356186520605	0.000332974509464	220	27.438305	0.001421105522280	0.000327096073596
191	36.399604	0.000178111646970	0.000327005427709	221	39.147764	0.001442912109800	0.000328863008085
192	38.784828	0.000356186520605	0.000331392606614	222	38.223280	0.002486980630660	0.000332814918957
193	45.167082	0.000890190501503	0.000335811214386	223	12.869442	0.057460633915300	0.000329961136123
194	18.425707	0.000712225947872	0.000331979602504	224	39.843928	0.057367284805000	0.000328507269136
195	11.887754	0.000000018386667	0.000008083038322	225	35.323224	0.056652429563700	0.000331899909471
196	6.714192	0.000000018386667	0.000014311352457	226	66.478791	0.056724854646500	0.000334629848538
197	14.633944	0.000000036773335	0.000008832793731	227	7.946762	0.052228983510600	0.000328409636042
198	22.761215	0.000000036773335	0.000008333769981	228	19.060648	0.001389535614380	0.000327884588091
199	14.737663	0.000000018386667	0.000006519973446	229	5.717459	0.000877393381002	0.000326892767538
200	9.600875	0.000000018386667	0.000010008376481	230	5.717459	0.051586608512100	0.000327608838956
201	67.149257	0.001637130477400	0.000324476033315	231	62.780416	0.051714377463800	0.000328688710746
202	35.586371	0.001850967419100	0.000321758766055	232	4.078239	0.051688397102700	0.000327877322770
203	27.597673	0.014671016094100	0.000329436459463	233	30.151872	0.067052149277300	0.000329912479839
204	14.166879	0.014798343765800	0.000331014315337	234	48.730713	0.004247320166210	0.000328314125238
205	52.675295	0.014926075944100	0.000334067165539	235	63.139241	0.000461321484720	0.000324802666950
206	49.105350	0.000178111646970	0.000321106626995	236	83.349146	0.000317905479107	0.000320505748841
207	14.126191	0.000178111646970	0.000318648466003	237	83.349146	0.000606796797079	0.000320371296276
208	39.663513	0.001246009288760	0.000321626180360	238	40.988713	0.000784687804041	0.000323572663932
209	14.510637	0.000890190501503	0.000318628211746	239	46.845232	0.028102715646400	0.000336004824958

Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
240	23.797565	0.027836127356000	0.000335267487347	270	11.259185	0.002593071701480	0.000339071271512
241	5.754268	0.000178111646970	0.000326408996218	271	63.810246	0.002401537787310	0.000338384799192
242	2.061793	0.000178111646970	0.000325904666602	272	10.090812	0.003493374870040	0.000337866466415
243	12.614475	0.000178111646970	0.000327116694248	273	33.444271	0.003359299291460	0.000338301392513
244	14.312853	0.000178111646970	0.000322793620982	274	9.048837	0.003773183174320	0.000339150677499
245	29.174802	0.000356186520605	0.000325257346729	275	64.356118	0.002808728923250	0.000339402223720
246	29.253467	0.000178111646970	0.000312764081150	276	26.697761	0.000000018386667	0.000003599147162
247	16.452045	0.000178111646970	0.000313434389092	277	49.664075	0.000448524364219	0.000336842149960
248	47.869830	0.000534224620906	0.000316890660001	278	20.266771	0.025619485895900	0.000334378992742
249	61.004630	0.000178111646970	0.000323983415321	279	30.595468	0.000678982853238	0.000334313082618
250	24.634823	0.000325039506053	0.000314045494227	280	106.589823	0.000646916505316	0.000335058545638
251	60.100009	0.001311815171340	0.000314136624610	281	8.386280	0.000754735922869	0.000336323520848
252	17.164320	0.000178111646970	0.000332730632277	282	23.888781	0.025638552870000	0.000334327490146
253	128.678546	0.001293520437290	0.000322354113122	283	43.714718	0.001118681617110	0.000335048032887
254	12.409894	0.001202396113720	0.000317412962172	284	21.441348	0.001335938478950	0.000336467063840
255	102.059044	0.056054439980300	0.000329245857739	285	29.712021	0.001015863373090	0.000334121780469
256	33.074874	0.001393911641220	0.000318109364938	286	58.417033	0.000971459571350	0.000333951897548
257	95.746559	0.000213395661684	0.000323841128121	287	14.398611	0.000983429291818	0.000333687035498
258	44.620067	0.001572538114870	0.000328897842248	288	10.200367	0.000178111646970	0.000335466113865
259	13.134610	0.056007590751800	0.000327440490923	289	12.218103	0.000178111646970	0.000333302476361
260	69.796880	0.001941264342630	0.000319799168577	290	41.833783	0.000818684752038	0.000316613086508
261	98.016767	0.000178111646970	0.000312118661829	291	82.720631	0.000397243948879	0.000319017119401
262	10.601474	0.000178111646970	0.000316995463013	292	68.085642	0.000061098895724	0.000315614404023
263	22.384440	0.000178111646970	0.000336266510619	293	24.644615	0.000365931454320	0.000314894592962
264	17.818712	0.005184231189540	0.000339748977845	294	113.501999	0.027493730835900	0.000340837363036
265	39.993601	0.003280218235030	0.000339906075528	295	18.483695	0.003450331681690	0.000337695119958
266	168.246725	0.028801574487100	0.000340799561884	296	36.138441	0.004459483921180	0.000339325375534
267	37.838428	0.009399852741180	0.000340564402704	297	14.698558	0.029357109255500	0.000337031418218
268	30.715861	0.005943398299250	0.000339350001714	298	24.608687	0.029190360569000	0.000336921960870
269	56.072283	0.005802299013730	0.000339353337465	299	23.641253	0.030898831315800	0.000337582752800

Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

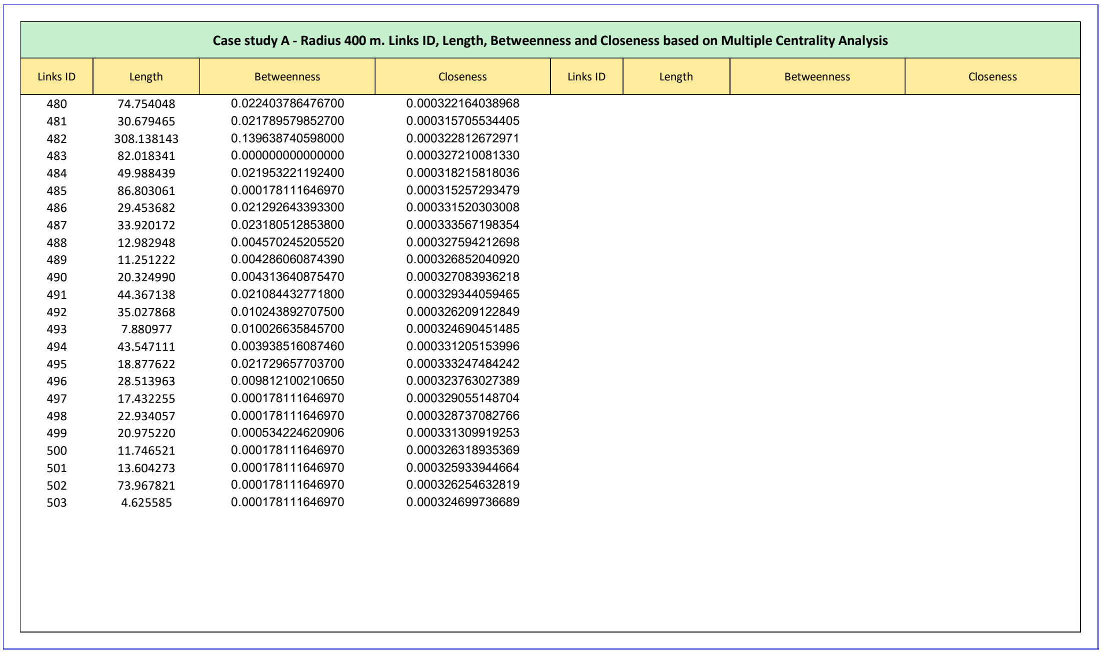
Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
300	106.339648	0.013806162420300	0.000338713494546	330	20.552884	0.000178111646970	0.000332027877053
301	40.677726	0.014939240798000	0.000340613801101	331	40.350517	0.000712225947872	0.000335693424189
302	47.929131	0.000045341521774	0.000333661224599	332	19.653806	0.000178111646970	0.000335173292794
303	8.690826	0.000178111646970	0.000334473313143	333	3.517048	0.000000036773335	0.000036038891490
304	101.892421	0.000064960095875	0.000309275396278	334	5.671956	0.000000036773335	0.000033845704677
305	52.231877	0.000398972295613	0.000312440809182	335	17.037727	0.000000055160002	0.000011005940289
306	58.920929	0.000087152803411	0.000336885798166	336	29.270863	0.000000055160002	0.000010142773725
307	62.518231	0.031050760348500	0.000339493757200	337	18.764917	0.000000055160002	0.000010859112804
308	60.843710	0.000719690934831	0.000317341011282	338	26.524110	0.000000018386667	0.000003622710526
309	52.266586	0.000429769963485	0.000314371495443	339	25.912495	0.000215822701779	0.000307465093102
310	42.468860	0.002727588560070	0.000321182299437	340	28.187647	0.001279270770060	0.000306737930195
311	42.197477	0.000489931139173	0.000313223546468	341	129.716324	0.000077775603044	0.000305474136923
312	16.616729	0.000178111646970	0.000313883604047	342	124.942124	0.000154337686040	0.000310058133564
313	17.060608	0.000515488606839	0.000336687249916	343	15.203250	0.000178111646970	0.000305473142646
314	49.786921	0.004557429698350	0.000338460097106	344	41.207561	0.032052208574300	0.000341084641983
315	17.522111	0.003782339734680	0.000337943511254	345	31.689313	0.013845086995100	0.000337755830575
316	30.020741	0.003704269944960	0.000337940894335	346	41.691784	0.015466901378600	0.000340087546023
317	34.376694	0.003732934759420	0.000338605417669	347	18.039000	0.014037319602700	0.000338565527532
318	19.970386	0.015476223419000	0.000335057894256	348	30.680175	0.000738941775584	0.000313720282487
319	18.235832	0.015533644981200	0.000335264019316	349	88.364426	0.000009340427032	0.000311437618316
320	18.832596	0.000159449179573	0.000335486884618	350	21.373992	0.000972158264710	0.000315530395659
321	20.598331	0.000196737341032	0.000336494754660	351	14.395162	0.013857185422300	0.000337118322940
322	19.919307	0.015718118415100	0.000335795036687	352	16.234463	0.013672142001700	0.000336613050034
323	31.132954	0.016514536912900	0.000336865849010	353	39.062838	0.000705036760924	0.000336618836239
324	30.602197	0.016642121997900	0.000338010762161	354	26.445889	0.000789909617578	0.000336246089933
325	28.415297	0.000178111646970	0.000336428296912	355	13.649412	0.013538930596500	0.000336258017836
326	3.844910	0.000178111646970	0.000335414066638	356	17.395098	0.000178111646970	0.000335808480987
327	12.059260	0.000178111646970	0.000334600132815	357	6.955824	0.000178111646970	0.000335444075322
328	45.777191	0.000178111646970	0.000332396822012	358	10.904908	0.000178111646970	0.000332908283538
329	12.182281	0.000178111646970	0.000332522426687	359	27.213435	0.001425463162450	0.000335257313039

Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
360	24.487577	0.001387384374290	0.000334548921247	390	19.111246	0.015321187039600	0.000327080269668
361	38.910939	0.001356733799760	0.000335217822667	391	8.654457	0.015435055670700	0.000328117166033
362	14.576440	0.000178111646970	0.000332574882993	392	23.846818	0.025306489657000	0.000335474270819
363	26.202828	0.000178111646970	0.000331889144202	393	60.649819	0.010873525745500	0.000321313027413
364	16.142017	0.000712225947872	0.000334413789806	394	9.494608	0.000248238396381	0.000325318033037
365	16.124941	0.000178111646970	0.000334489150492	395	25.540497	0.000322961812639	0.000326531693733
366	35.284117	0.000496826139442	0.000332608122057	396	36.083173	0.003156843696870	0.000319250595977
367	48.287644	0.001538099886860	0.000332739749182	397	24.992710	0.003060791746450	0.000318190733726
368	36.233563	0.000557116021802	0.000332571161565	398	22.321133	0.000211262808267	0.000326242205970
369	34.817128	0.001200943567000	0.000334235193972	399	48.201738	0.000438301377152	0.000328488521378
370	10.220886	0.016229120675100	0.000335609764925	400	24.567203	0.000178111646970	0.000317467618965
371	23.034372	0.015325599839700	0.000335536510607	401	36.242773	0.000178111646970	0.000328718786270
372	37.735335	0.008115213064240	0.000315818311936	402	52.352189	0.001068118281800	0.000321713725340
373	52.291498	0.007874936094840	0.000318513893757	403	12.472620	0.000178111646970	0.000316271186461
374	24.629284	0.007770720464090	0.000316675959898	404	17.088241	0.000712225947872	0.000317871556241
375	31.158942	0.000178111646970	0.000315387689703	405	7.410174	0.000178111646970	0.000321904965311
376	27.041252	0.000178111646970	0.000316307031026	406	45.729527	0.000534224620906	0.000324915658607
377	26.333146	0.000178111646970	0.000311594653968	407	63.093918	0.000178111646970	0.000313603073752
378	13.388976	0.000000018386667	0.000007176737762	408	67.106951	0.000534224620906	0.000318980859821
379	22.363018	0.000077591736370	0.000327455866667	409	7.100094	0.000178111646970	0.000321922218266
380	18.787287	0.013583499878200	0.000325780408035	410	8.715352	0.000178111646970	0.000318054794019
381	9.522934	0.013838945848200	0.000324902432039	411	57.930974	0.000178111646970	0.000312267134850
382	38.443468	0.001889652967280	0.000333002647388	412	27.798452	0.000178111646970	0.000313833784587
383	33.301935	0.001553838874140	0.000329169874522	413	19.216159	0.000178111646970	0.000315912216515
384	83.160023	0.001373796627090	0.000327984925795	414	8.377385	0.001068118281800	0.000317398305971
385	94.353688	0.025281612496000	0.000336488695942	415	42.022368	0.000178111646970	0.000310175179008
386	3.549862	0.002770558201750	0.000317807702249	416	20.029115	0.000178111646970	0.000328183155853
387	33.324656	0.002646393036900	0.000318191645482	417	24.369051	0.000178111646970	0.000324053239302
388	38.799407	0.000779263737162	0.000331558336576	418	43.124837	0.000712225947872	0.000314647884608
389	34.643906	0.013204808076700	0.000323640646443	419	22.012458	0.000178111646970	0.000308509817510

Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
420	26.069028	0.000356186520605	0.000310994408041	450	14.583265	0.000178111646970	0.000324668742673
421	40.632861	0.000178111646970	0.000316375587260	451	14.257031	0.000178111646970	0.000324639909044
422	42.866337	0.000356186520605	0.000320940744783	452	23.391361	0.000178111646970	0.000324125940019
423	14.928487	0.000000018386667	0.000006436631709	453	17.682073	0.000178111646970	0.000324795158679
424	46.376796	0.012772445593200	0.000336390902633	454	43.973885	0.001068118281800	0.000331097194209
425	7.846477	0.013732321564100	0.000336159282986	455	3.071904	0.000534224620906	0.000325623948346
426	65.384354	0.000343113600094	0.000334856553716	456	20.840680	0.000890190501503	0.000326997705385
427	21.472655	0.000438282990485	0.000334250172805	457	34.188778	0.016891629074400	0.000328561730827
428	24.484947	0.012689172376600	0.000335812264048	458	88.031458	0.003047259159250	0.000320393958330
429	19.989982	0.012629305387600	0.000335405118545	459	22.531221	0.000462406298095	0.000313316923857
430	44.039191	0.000712225947872	0.000332727440378	460	43.678445	0.000607863223788	0.000314375647675
431	20.220173	0.000178111646970	0.000328927330599	461	16.451187	0.000558973075208	0.000313207373737
432	12.031183	0.000178111646970	0.000329402201559	462	34.836280	0.000763432816542	0.000316963695098
433	69.444656	0.028653580201300	0.000335588824257	463	34.899044	0.001451388363460	0.000313454071683
434	48.883143	0.028777984392800	0.000335784163526	464	81.056681	0.000178111646970	0.000309077888538
435	45.782680	0.007025766248270	0.000314503273110	465	37.347235	0.000178111646970	0.000314262053391
436	56.824795	0.001537952793520	0.000314501829474	466	47.505498	0.000000091933337	0.000022013521184
437	74.967726	0.029694155255400	0.000339096654976	467	6.976328	0.000000091933337	0.000029758485388
438	50.256872	0.032566244634400	0.000339209245660	468	14.633285	0.000000091933337	0.000026788032616
439	34.525989	0.032528974859600	0.000337029706437	469	61.807290	0.002925006207800	0.000322742357907
440	68.245064	0.054135331571800	0.000332670305635	470	38.467753	0.003634768342240	0.000329423631978
441	56.111253	0.054765056543100	0.000335489891497	471	47.990180	0.003226124659580	0.000325297903321
442	19.281075	0.003960010101640	0.000335752288166	472	15.631258	0.053759213903800	0.000331565755972
443	77.118703	0.003729147105930	0.000334283478704	473	93.839840	0.003744371266530	0.000320706533590
444	17.424872	0.003875744005000	0.000333817728304	474	23.057828	0.006355075782030	0.000328191628924
445	33.269345	0.000178111646970	0.000321102761026	475	73.375165	0.023274340017500	0.000330245253976
446	48.657134	0.000356186520605	0.000325727173699	476	146.362449	0.061601017224000	0.000328939328596
447	35.603399	0.000178111646970	0.000332755852108	477	85.973931	0.000178111646970	0.000319690049688
448	26.150675	0.000534224620906	0.000327000693195	478	52.849594	0.021245242564700	0.000334712125352
449	10.173330	0.000178111646970	0.000324918069288	479	233.251328	0.020427808106100	0.000310623480273



Case study A - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
480	74.754048	0.022403786476700	0.000322164038968				
481	30.679465	0.021789579852700	0.000315705534405				
482	308.138143	0.139638740598000	0.000322812672971				
483	82.018341	0.000000000000000	0.000327210081330				
484	49.988439	0.021953221192400	0.000318215818036				
485	86.803061	0.000178111646970	0.000315257293479				
486	29.453682	0.021292643393300	0.000331520303008				
487	33.920172	0.023180512853800	0.000333567198354				
488	12.982948	0.004570245205520	0.000327594212698				
489	11.251222	0.004286060874390	0.000326852040920				
490	20.324990	0.004313640875470	0.000327083936218				
491	44.367138	0.021084432771800	0.000329344059465				
492	35.027868	0.010243892707500	0.000326209122849				
493	7.880977	0.010026635845700	0.000324690451485				
494	43.547111	0.003938516087460	0.000331205153996				
495	18.877622	0.021729657703700	0.000333247484242				
496	28.513963	0.009812100210650	0.000323763027389				
497	17.432255	0.000178111646970	0.000329055148704				
498	22.934057	0.000178111646970	0.000328737082766				
499	20.975220	0.000534224620906	0.000331309919253				
500	11.746521	0.000178111646970	0.000326318935369				
501	13.604273	0.000178111646970	0.000325933944664				
502	73.967821	0.000178111646970	0.000326254632819				
503	4.625585	0.000178111646970	0.000324699736689				

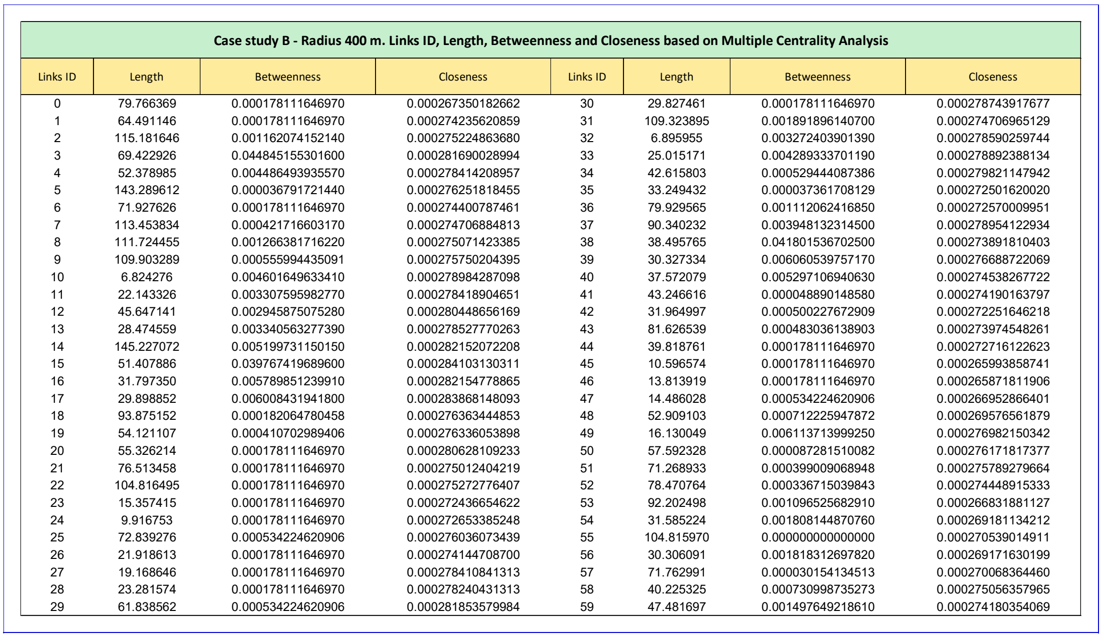
The case study B | hybrid pattern

ID: It is generated by ArcMap GIS.

Length: It based on the georeferencing aerial map (metric distance).

Betweenness centrality value: It derived from the Multiple Centrality Assessment (MCA).

Closeness centrality value: It derived from the Multiple Centrality Assessment (MCA).



Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
0	79.766369	0.000178111646970	0.000267350182662	30	29.827461	0.000178111646970	0.000278743917677
1	64.491146	0.000178111646970	0.000274235620859	31	109.323895	0.001891896140700	0.000274706965129
2	115.181646	0.001162074152140	0.000275224863680	32	6.895955	0.003272403901390	0.000278590259744
3	69.422926	0.044845155301600	0.000281690028994	33	25.015171	0.004289333701190	0.000278892388134
4	52.378985	0.004486493935570	0.000278414208957	34	42.615803	0.000529444087386	0.000279821147942
5	143.289612	0.000036791721440	0.000276251818455	35	33.249432	0.000037361708129	0.000272501620020
6	71.927626	0.000178111646970	0.000274400787461	36	79.929565	0.001112062416850	0.000272570009951
7	113.453834	0.000421716603170	0.000274706884813	37	90.340232	0.003948132314500	0.000278954122934
8	111.724455	0.001266381716220	0.000275071423385	38	38.495765	0.041801536702500	0.000273891810403
9	109.903289	0.000555994435091	0.000275750204395	39	30.327334	0.006060539757170	0.000276688722069
10	6.824276	0.004601649633410	0.000278984287098	40	37.572079	0.005297106940630	0.000274538267722
11	22.143326	0.003307595982770	0.000278418904651	41	43.246616	0.000048890148580	0.000274190163797
12	45.647141	0.002945875075280	0.000280448656169	42	31.964997	0.000500227672909	0.000272251646218
13	28.474559	0.003340563277390	0.000278527770263	43	81.626539	0.000483036138903	0.000273974548261
14	145.227072	0.005199731150150	0.000282152072208	44	39.818761	0.000178111646970	0.000272716122623
15	51.407886	0.039767419689600	0.000284103130311	45	10.596574	0.000178111646970	0.000265993858741
16	31.797350	0.005789851239910	0.000282154778865	46	13.813919	0.000178111646970	0.000265871811906
17	29.898852	0.006008431941800	0.000283868148093	47	14.486028	0.000534224620906	0.000266952866401
18	93.875152	0.000182064780458	0.000276363444853	48	52.909103	0.000712225947872	0.000269576561879
19	54.121107	0.000410702989406	0.000276336053898	49	16.130049	0.006113713999250	0.000276982150342
20	55.326214	0.000178111646970	0.000280628109233	50	57.592328	0.000087281510082	0.000276171817377
21	76.513458	0.000178111646970	0.000275012404219	51	71.268933	0.000399009068948	0.000275789279664
22	104.816495	0.000178111646970	0.000275272776407	52	78.470764	0.000336715039843	0.000274448915333
23	15.357415	0.000178111646970	0.000272436654622	53	92.202498	0.001096525682910	0.000266831881127
24	9.916753	0.000178111646970	0.000272653385248	54	31.585224	0.001808144870760	0.000269181134212
25	72.839276	0.000534224620906	0.000276036073439	55	104.815970	0.000000000000000	0.000270539014911
26	21.918613	0.000178111646970	0.000274144708700	56	30.306091	0.001818312697820	0.000269171630199
27	19.168646	0.000178111646970	0.000278410841313	57	71.762991	0.000030154134513	0.000270068364460
28	23.281574	0.000178111646970	0.000278240431313	58	40.225325	0.000730998735273	0.000275056357965
29	61.838562	0.000534224620906	0.000281853579984	59	47.481697	0.001497649218610	0.000274180354069

Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
60	32.551011	0.000344198413470	0.000272774541321	90	54.296396	0.003633352568850	0.000277381718936
61	72.108008	0.041710007872300	0.000277271621146	91	49.766348	0.000720996388215	0.000275324423496
62	41.064025	0.005368005930070	0.000275768023133	92	118.866212	0.001419138148870	0.000274017161972
63	23.467887	0.000371079721188	0.000273969488204	93	140.327182	0.012446229340400	0.000289832041041
64	80.725296	0.000190026207436	0.000272706151390	94	58.002285	0.005211700870620	0.000281394382625
65	35.038072	0.005124640000540	0.000274983685796	95	37.174379	0.003057408599650	0.000282792306554
66	19.561800	0.000178111646970	0.000271463753970	96	26.375808	0.005842345175300	0.000278666343631
67	34.578461	0.000178111646970	0.000270874071427	97	43.136280	0.002802826803020	0.000280448617244
68	37.373947	0.000252614423219	0.000274799620053	98	9.016715	0.004575650885730	0.000277937691395
69	16.521191	0.006100567532070	0.000277216959820	99	31.811620	0.005228782084620	0.000281361006542
70	30.048029	0.000092503323620	0.000274006098054	100	36.760020	0.000632887478100	0.000282042586844
71	71.267352	0.000101696657313	0.000275366099993	101	57.255622	0.001814396337670	0.000283440510773
72	61.485078	0.000122032311442	0.000275910818469	102	33.196376	0.002847157058090	0.000277051772451
73	6.944775	0.006161096441100	0.000277369531920	103	41.497709	0.001643050984300	0.000278919170936
74	56.084701	0.000178111646970	0.000275405864179	104	38.906045	0.005246378125310	0.000280885553384
75	17.636387	0.006107076412320	0.000277559441463	105	35.384781	0.002908439820480	0.000282665386082
76	32.131994	0.000175978793553	0.000272502681744	106	40.254380	0.000189162034069	0.000274782883691
77	28.585269	0.002722348359870	0.000269822032157	107	141.784620	0.000155496046085	0.000275355885270
78	14.268737	0.006300228353220	0.000278286799488	108	33.977324	0.000836188859390	0.000278816036766
79	34.183026	0.005936797485660	0.000281082666186	109	85.245934	0.001157220071950	0.000283514422810
80	21.827683	0.006479443200230	0.000279284444672	110	125.074671	0.005609239006170	0.000275921745944
81	72.749522	0.000078584616409	0.000277390864809	111	33.376826	0.006194357922410	0.000276417837709
82	26.304607	0.006288368952750	0.000278734310030	112	166.188575	0.005394464344440	0.000278673062541
83	34.566877	0.006582849817610	0.000280441633747	113	85.782013	0.023142562772300	0.000292916991080
84	19.119451	0.047259048929400	0.000280160463850	114	116.405099	0.023184705014000	0.000293635297653
85	77.066541	0.005462605333770	0.000277913482549	115	38.968643	0.000303821291890	0.000276513048555
86	45.561931	0.000178111646970	0.000276255344217	116	227.201745	0.000002463813430	0.000286542013273
87	21.477974	0.006157970707650	0.000277911205182	117	57.808402	0.000353722707176	0.000290481127866
88	72.323332	0.000279569277607	0.000271615451496	118	39.766719	0.000178111646970	0.000286105410196
89	99.522201	0.000123779044844	0.000271776194977	119	59.600777	0.000178111646970	0.000289918085375

Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
120	58.011774	0.000021494014175	0.000283095381059	150	52.888799	0.000534224620906	0.000290433257401
121	58.497243	0.006929512044510	0.000278956145071	151	11.938712	0.000178111646970	0.000287501859509
122	33.378727	0.000329544239563	0.000280982283326	152	12.235463	0.000178111646970	0.000287488706319
123	40.383152	0.012658668895400	0.000282762116024	153	8.214977	0.000178111646970	0.000292507431415
124	31.709770	0.002705285532530	0.000283657100066	154	15.020596	0.000178111646970	0.000292034312230
125	111.205675	0.002530373165690	0.000284743364656	155	31.553255	0.000178111646970	0.000291037148939
126	29.822709	0.002747832280870	0.000283587637029	156	13.198031	0.000000018386667	0.000007280568623
127	20.263621	0.000178111646970	0.000283096291265	157	18.077274	0.000000036773335	0.000013875764266
128	22.688422	0.000178111646970	0.000284160640717	158	3.272381	0.000000036773335	0.000016806608753
129	57.477222	0.000015757373950	0.000284131127324	159	85.856578	0.009199916120020	0.000292683468201
130	42.566670	0.002858244218520	0.000285267799425	160	61.962480	0.032326831838400	0.000293162168183
131	33.661825	0.012295348347800	0.000281175253852	161	46.977072	0.006089425211630	0.000290678040740
132	42.487922	0.000048430481895	0.000282361568381	162	16.580988	0.032298350890600	0.000293119991635
133	102.014677	0.025589846588100	0.000293934391232	163	66.455944	0.021398495437400	0.000292519010775
134	51.622806	0.002840758497840	0.000294245334267	164	46.173731	0.006402734023890	0.000291616710323
135	30.880233	0.001567426621340	0.000283346966384	165	25.954777	0.006237106924080	0.000290829654801
136	32.799181	0.000485260925657	0.000282948254803	166	15.298866	0.000178111646970	0.000287917628645
137	38.509389	0.014192208888700	0.000284254465457	167	21.863053	0.000534224620906	0.000289586754706
138	34.431472	0.000580283222708	0.000283569408316	168	20.743713	0.000178111646970	0.000287676230697
139	45.892138	0.000690897413704	0.000285631390366	169	24.524961	0.000178111646970	0.000284799093141
140	10.685963	0.011682134603800	0.000279309956908	170	31.331816	0.000356186520605	0.000287261203257
141	23.527721	0.003403372133190	0.000292432516477	171	58.287640	0.000081048429838	0.000286768062467
142	16.657208	0.003359685411480	0.000292218277017	172	18.449084	0.003086955974140	0.000287280410284
143	19.139640	0.003483850576330	0.000292704649111	173	9.464930	0.006001720808200	0.000290861911456
144	11.463427	0.003604614207730	0.000292919595313	174	36.241179	0.006036379676220	0.000291278072401
145	32.609437	0.003698000091380	0.000293319669357	175	44.665254	0.000334655733096	0.000289486928614
146	27.655451	0.000178111646970	0.000291028407811	176	17.048809	0.000178111646970	0.000288395357284
147	28.119031	0.000178111646970	0.000291291566322	177	30.196721	0.000892691088267	0.000288060343230
148	20.473213	0.000178111646970	0.000290158275318	178	27.090067	0.000002758000108	0.000287738374482
149	39.666813	0.000178111646970	0.000291195279281	179	38.980072	0.000154135432698	0.000283853917814

Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
180	44.091392	0.000024748454302	0.000283558128004	210	13.373129	0.002280682222580	0.000292306205885
181	78.429509	0.014369493135700	0.000287007113509	211	31.673090	0.007649883286030	0.000292239346906
182	9.398926	0.000178111646970	0.000287362812267	212	29.318290	0.007673767566970	0.000292427113799
183	23.211410	0.010895019759700	0.000278607724849	213	59.200039	0.003161918417070	0.000293734043188
184	21.355785	0.015256374037000	0.000278475001411	214	17.344578	0.000178111646970	0.000291770565197
185	19.512026	0.000594900623280	0.000288465153962	215	9.551647	0.000178111646970	0.000291939796341
186	20.290162	0.000329911972911	0.000287118000686	216	9.440649	0.000178111646970	0.000291801726567
187	21.915332	0.015881557501500	0.000289912827251	217	28.296769	0.000178111646970	0.000290978177873
188	23.708337	0.000412725522818	0.000288778563456	218	20.607013	0.000826995525696	0.000290058779562
189	23.280914	0.000335722159805	0.000288372024020	219	22.247159	0.000979825505011	0.000290418523431
190	29.691760	0.000451337524329	0.000289050829295	220	5.793012	0.001060359108160	0.000290688018955
191	13.682408	0.000178111646970	0.000287942413462	221	16.851476	0.001377602667240	0.000290877253757
192	26.326892	0.006332184381130	0.000291924795619	222	40.417686	0.001052195427840	0.000289281612969
193	27.361072	0.000529333767381	0.000290386893188	223	56.179040	0.000874745700898	0.000289959385763
194	22.602123	0.000178883887000	0.000289081351078	224	17.773489	0.000178111646970	0.000289405623351
195	31.180589	0.000517382433580	0.000289874993241	225	12.275329	0.000178111646970	0.000290074165600
196	22.530437	0.000178111646970	0.000291215788885	226	27.656934	0.000178111646970	0.000290783074795
197	21.690100	0.000178111646970	0.000290719342609	227	29.450040	0.000511186126671	0.000289590858504
198	62.203694	0.004899329778390	0.000285209136730	228	13.859995	0.000219904541939	0.000288154383764
199	54.022991	0.042106497967800	0.000285400989388	229	37.071312	0.000189695247423	0.000288923806575
200	30.455466	0.045142982539900	0.000289020145110	230	88.860959	0.045213807982700	0.000293253551709
201	43.149664	0.004126630081490	0.000284629804197	231	22.099137	0.000178111646970	0.000287522412118
202	48.348416	0.004508778576440	0.000285767015677	232	18.764097	0.000000018386667	0.000005120905668
203	87.538816	0.042116426768200	0.000286571212115	233	16.948357	0.002417019361250	0.000292017758983
204	91.668316	0.005600119219150	0.000290125028411	234	26.504623	0.002279266449200	0.000291357351530
205	42.062729	0.002603202755210	0.000293259698184	235	55.696482	0.000888921821453	0.000292205518355
206	10.339119	0.002540982272770	0.000292804809789	236	117.907433	0.000591425543144	0.000292902209929
207	10.442013	0.002480968190420	0.000292644596576	237	26.888717	0.001789464016690	0.000293104995818
208	6.809367	0.002336136411420	0.000292426860670	238	30.047615	0.001850875485760	0.000293572659763
209	6.016191	0.002393649907000	0.000292520537783	239	33.950658	0.001732538894470	0.000292672137750

Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
240	16.431006	0.001598610409230	0.000292356456474	270	41.438924	0.000178111646970	0.000268488925825
241	57.671591	0.001558527474320	0.000293049730955	271	67.234135	0.000356186520605	0.000272789039980
242	74.962764	0.000178111646970	0.000289919718811	272	70.035076	0.000178111646970	0.000267727651480
243	25.630401	0.000178111646970	0.000291725049128	273	122.906414	0.000178111646970	0.000264524180815
244	31.781471	0.000890190501503	0.000290997747261	274	46.382163	0.000534224620906	0.000285359567460
245	36.517714	0.000178111646970	0.000289532849122	275	63.141415	0.000178111646970	0.000278370162632
246	19.562686	0.000534224620906	0.000288673228306	276	27.118844	0.000356186520605	0.000282165555498
247	13.601729	0.000178111646970	0.000288939117765	277	28.984084	0.000000018386667	0.000003315239188
248	5.892774	0.000178111646970	0.000287533861782	278	7.475930	0.002772782988510	0.000292469688372
249	22.412240	0.000178111646970	0.000286803778869	279	42.500534	0.011118803888400	0.000294299281320
250	8.954824	0.000178111646970	0.000289114790796	280	42.899373	0.010158302770900	0.000293220821987
251	8.813117	0.000178111646970	0.000289121149125	281	20.705983	0.000288780997968	0.000291533400718
252	29.213603	0.000178111646970	0.000289403961115	282	12.080772	0.000519423353660	0.000291095380968
253	14.318720	0.000178111646970	0.000290340485438	283	17.831776	0.000750874722718	0.000291988028359
254	16.242350	0.000534224620906	0.000290253945815	284	19.683102	0.011662736669700	0.000295084076021
255	30.316446	0.000890190501503	0.000292384060449	285	32.811991	0.000984017665175	0.000293534324678
256	5.557068	0.000178111646970	0.000293520216795	286	12.672141	0.000178111646970	0.000290163081747
257	10.623606	0.001423863522390	0.000294272397901	287	9.680102	0.000178111646970	0.000291012112832
258	22.402701	0.000381762374940	0.000274996167284	288	8.053014	0.000178111646970	0.000292152690741
259	36.375656	0.000296466624935	0.000285364170423	289	35.012018	0.000178111646970	0.000290470417251
260	58.697647	0.000219224235246	0.000276302011382	290	11.734414	0.000178111646970	0.000291523672246
261	23.754858	0.012394268618400	0.000279984071093	291	20.079921	0.000178111646970	0.000291144296582
262	48.873992	0.000670966266257	0.000277489365666	292	14.640120	0.000178111646970	0.000295644080005
263	117.054262	0.000185834047272	0.000282371813475	293	34.294124	0.000712225947872	0.000293651231248
264	42.773212	0.000618380397533	0.000289033783800	294	28.498188	0.000178111646970	0.000294559694210
265	75.989680	0.000749458949329	0.000273484451490	295	6.573939	0.033044592173100	0.000296442132683
266	21.060955	0.000393860802080	0.000269790688765	296	80.833003	0.016503449752500	0.000295861025854
267	25.706612	0.000093845550339	0.000286923524085	297	14.836643	0.000000018386667	0.000006476476527
268	75.227474	0.016937007369500	0.000293453113814	298	58.428022	0.000403918309140	0.000305410024985
269	95.037963	0.000178111646970	0.000270761391588	299	62.410760	0.001074958122070	0.000292591266894

Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
300	26.948282	0.108869847860000	0.000307495788349	330	15.401637	0.000178111646970	0.000298798323410
301	30.267798	0.001630400957140	0.000291715062095	331	17.258978	0.000178111646970	0.000296234977492
302	106.978706	0.001420039095570	0.000292925719352	332	18.558190	0.000178111646970	0.000299194239639
303	24.265449	0.012686708563100	0.000295867072877	333	53.649852	0.000178111646970	0.000299311783442
304	11.509928	0.013035595576800	0.000296691544538	334	38.824830	0.000178111646970	0.000296546934814
305	21.453914	0.013270430092600	0.000297740111533	335	5.033416	0.000178111646970	0.000299033695181
306	50.538001	0.001013675359670	0.000296618231720	336	102.061265	0.000178111646970	0.000303047153015
307	24.852123	0.001349011399460	0.000300690995630	337	11.413780	0.000534224620906	0.000300091525098
308	8.001751	0.001171157165830	0.000299105125387	338	17.328009	0.000178111646970	0.000298445203788
309	33.850037	0.001704609546710	0.000303574639908	339	45.816443	0.000178111646970	0.000300622546958
310	122.644376	0.000074852122929	0.000298680341758	340	9.303100	0.000178111646970	0.000302537361197
311	200.615098	0.023220209668700	0.000294837525352	341	36.787348	0.000534224620906	0.000301070050829
312	11.807445	0.067826117654300	0.000296558222951	342	19.811401	0.000000018386667	0.000004850195675
313	19.955802	0.001572078448190	0.000291320378555	343	45.903664	0.000000018386667	0.000002093278898
314	39.296788	0.001492703205080	0.000290950780555	344	29.360053	0.000000018386667	0.000003272786054
315	29.399194	0.001452767363520	0.000290585564936	345	6.325187	0.000000018386667	0.000015191515116
316	36.115224	0.053460596038800	0.000304235278241	346	13.974888	0.018497851563900	0.000300366511856
317	75.708493	0.052671918327900	0.000297035827673	347	50.696694	0.018358039345100	0.000299259227534
318	29.426128	0.052729707623500	0.000297901178383	348	50.622003	0.018791596962000	0.000301754350745
319	16.591014	0.052974158366400	0.000302444454324	349	51.479076	0.019222580445600	0.000304599357831
320	65.409031	0.052856869815100	0.000300138939726	350	28.013844	0.005674493288730	0.000297829649381
321	49.181784	0.000171124713363	0.000304592896616	351	32.887242	0.108460340004000	0.000310052152550
322	23.807313	0.000178111646970	0.000288077150030	352	22.843598	0.108367211534000	0.000308619466398
323	112.967327	0.000178111646970	0.000286471463056	353	33.964660	0.001623561116870	0.000306157526768
324	58.614909	0.000890190501503	0.000291825047539	354	16.516096	0.001814120537660	0.000307516672049
325	32.716682	0.000178111646970	0.000288979554123	355	43.382104	0.000662710652601	0.000306670791890
326	6.486303	0.000178111646970	0.000277410326749	356	50.617247	0.002011538185380	0.000309722964404
327	6.385625	0.000178111646970	0.000277414489272	357	27.720253	0.000178111646970	0.000305670388829
328	132.661312	0.000534224620906	0.000283409817492	358	223.141393	0.012160941809200	0.000281549192035
329	19.635681	0.000178111646970	0.000298596127837	359	88.675283	0.012337380269500	0.000287613375358

Case study B - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
360	41.512573	0.013317316094500	0.000291453877111	390	52.155701	0.001609954983000	0.000311075258743
361	27.990111	0.013481417100900	0.000294282435072	391	31.581055	0.000733333842031	0.000306094077282
362	57.679730	0.018413787720600	0.000296400739135	392	33.014354	0.000826682952351	0.000307859211813
363	38.211330	0.000178111646970	0.000283736296992	393	53.470595	0.012380129271100	0.000308414218551
364	54.789172	0.000890190501503	0.000287400847441	394	53.684762	0.048016524465700	0.000298984727993
365	31.431400	0.009291077216920	0.000297680260353	395	32.357178	0.000479836858778	0.000300909584472
366	28.637284	0.009405515834740	0.000298682627801	396	93.136812	0.000555792181750	0.000303233095036
367	8.069616	0.009520855399250	0.000299567928761	397	36.510821	0.000178111646970	0.000290654229955
368	95.779967	0.009399595327840	0.000294746542066	398	27.717748	0.000534224620906	0.000293599986265
369	20.646785	0.009619499869780	0.000296614947306	399	10.664790	0.000178111646970	0.000291825566593
370	42.191272	0.009752527408320	0.000301179336785	400	18.900429	0.047429217536100	0.000296799341186
371	19.034876	0.000178111646970	0.000298905985006	401	36.193900	0.001261637956040	0.000295649433788
372	16.464303	0.000178111646970	0.000294010974480	402	58.519494	0.005600211152490	0.000291654008302
373	66.592129	0.000178111646970	0.000292846492047	403	44.928981	0.005676552595480	0.000292722124614
374	24.923378	0.000178111646970	0.000296868488320	404	54.740479	0.004859688123510	0.000293974202377
375	49.877097	0.000277031917508	0.000294174979773	405	30.024420	0.005231411378060	0.000294893983784
376	24.661056	0.000523413260483	0.000295583813533	406	22.368852	0.005502155055320	0.000295566313493
377	24.879376	0.000050655268649	0.000307374396594	407	42.554031	0.005612842792980	0.000296559966930
378	59.701555	0.000127456378321	0.000309402328903	408	56.194983	0.126993788156000	0.000314422548743
379	21.928521	0.108768629256000	0.000305941687659	409	63.339924	0.019178415670500	0.000308905836035
380	11.453094	0.108844106526000	0.000306654531536	410	199.449601	0.000000000000000	0.000301781940788
381	24.533866	0.048071206414500	0.000301649311301	411	18.933387	0.021345302808600	0.000312344482554
382	43.662121	0.055589073428700	0.000304006062943	412	90.909444	0.000123392924829	0.000306458768017
383	39.717405	0.108683315120000	0.000312084141474	413	74.645182	0.012597018399600	0.000312692780620
384	19.180121	0.000178111646970	0.000301293531182	414	308.138143	0.139638740598000	0.000322812672971
385	12.170895	0.000178111646970	0.000301634671375				
386	20.752479	0.000534224620906	0.000303257590336				
387	28.713171	0.000178111646970	0.000302866771456				
388	46.027538	0.000890190501503	0.000306611547244				
389	34.201998	0.000000018386667	0.000002809460723				

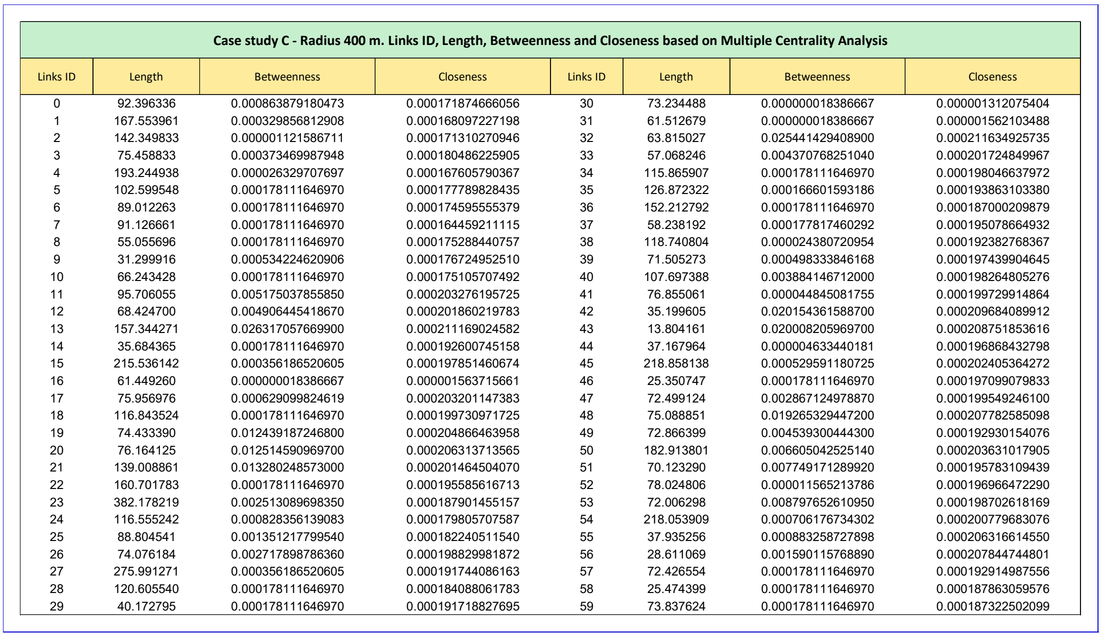
The case study C | paralleled pattern

ID: It is generated by ArcMap GIS.

Length: It based on the georeferencing aerial map (metric distance).

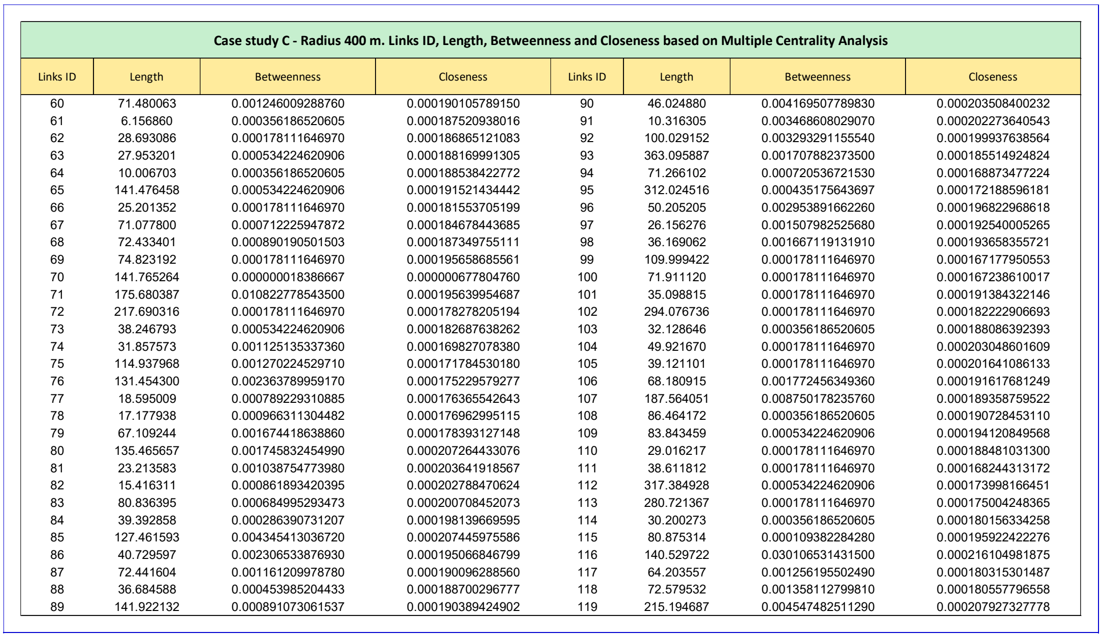
Betweenness centrality value: It derived from the Multiple Centrality Assessment (MCA).

Closeness centrality value: It derived from the Multiple Centrality Assessment (MCA).



Case study C - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
0	92.396336	0.000863879180473	0.000171874666056	30	73.234488	0.000000018386667	0.000001312075404
1	167.553961	0.000329856812908	0.000168097227198	31	61.512679	0.000000018386667	0.000001562103488
2	142.349833	0.000001121586711	0.000171310270946	32	63.815027	0.025441429408900	0.000211634925735
3	75.458833	0.000373469987948	0.000180486225905	33	57.068246	0.004370768251040	0.000201724849967
4	193.244938	0.000026329707697	0.000167605790367	34	115.865907	0.000178111646970	0.000198046637972
5	102.599548	0.000178111646970	0.000177789828435	35	126.872322	0.000166601593186	0.000193863103380
6	89.012263	0.000178111646970	0.000174595555379	36	152.212792	0.000178111646970	0.000187000209879
7	91.126661	0.000178111646970	0.000164459211115	37	58.238192	0.000177817460292	0.000195078664932
8	55.055696	0.000178111646970	0.000175288440757	38	118.740804	0.000024380720954	0.000192382768367
9	31.299916	0.000534224620906	0.000176724952510	39	71.505273	0.000498333846168	0.000197439904645
10	66.243428	0.000178111646970	0.000175105707492	40	107.697388	0.003884146712000	0.000198264805276
11	95.706055	0.005175037855850	0.000203276195725	41	76.855061	0.000044845081755	0.000199729914864
12	68.424700	0.004906445418670	0.000201860219783	42	35.199605	0.020154361588700	0.000209684089912
13	157.344271	0.026317057669900	0.000211169024582	43	13.804161	0.020008205969700	0.000208751853616
14	35.684365	0.000178111646970	0.000192600745158	44	37.167964	0.000004633440181	0.000196868432798
15	215.536142	0.000356186520605	0.000197851460674	45	218.858138	0.000529591180725	0.000202405364272
16	61.449260	0.000000018386667	0.000001563715661	46	25.350747	0.000178111646970	0.000197099079833
17	75.956976	0.000629099824619	0.000203201147383	47	72.499124	0.002867124978870	0.000199549246100
18	116.843524	0.000178111646970	0.000199730971725	48	75.088851	0.019265329447200	0.000207782585098
19	74.433390	0.012439187246800	0.000204866463958	49	72.866399	0.004539300444300	0.000192930154076
20	76.164125	0.012514590969700	0.000206313713565	50	182.913801	0.006605042525140	0.000203631017905
21	139.008861	0.013280248573000	0.000201464504070	51	70.123290	0.007749171289920	0.000195783109439
22	160.701783	0.000178111646970	0.000195585616713	52	78.024806	0.000011565213786	0.000196966472290
23	382.178219	0.002513089698350	0.000187901455157	53	72.006298	0.008797652610950	0.000198702618169
24	116.555242	0.000828356139083	0.000179805707587	54	218.053909	0.000706176734302	0.000200779683076
25	88.804541	0.001351217799540	0.000182240511540	55	37.935256	0.000883258727898	0.000206316614550
26	74.076184	0.002717898786360	0.000198829981872	56	28.611069	0.001590115768890	0.000207844744801
27	275.991271	0.000356186520605	0.000191744086163	57	72.426554	0.000178111646970	0.000192914987556
28	120.605540	0.000178111646970	0.000184088061783	58	25.474399	0.000178111646970	0.000187863059576
29	40.172795	0.000178111646970	0.000191718827695	59	73.837624	0.000178111646970	0.000187322502099



Case study C - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
60	71.480063	0.001246009288760	0.000190105789150	90	46.024880	0.004169507789830	0.000203508400232
61	6.156860	0.000356186520605	0.000187520938016	91	10.316305	0.003468608029070	0.000202273640543
62	28.693086	0.000178111646970	0.000186865121083	92	100.029152	0.003293291155540	0.000199937638564
63	27.953201	0.000534224620906	0.000188169991305	93	363.095887	0.001707882373500	0.000185514924824
64	10.006703	0.000356186520605	0.000188538422772	94	71.266102	0.000720536721530	0.000168873477224
65	141.476458	0.000534224620906	0.000191521434442	95	312.024516	0.000435175643697	0.000172188596181
66	25.201352	0.000178111646970	0.000181553705199	96	50.205205	0.002953891662260	0.000196822968618
67	71.077800	0.000712225947872	0.000184678443685	97	26.156276	0.001507982525680	0.000192540005265
68	72.433401	0.000890190501503	0.000187349755111	98	36.169062	0.001667119131910	0.000193658355721
69	74.823192	0.000178111646970	0.000195658685561	99	109.999422	0.000178111646970	0.000167177950553
70	141.765264	0.000000018386667	0.000000677804760	100	71.911120	0.000178111646970	0.000167238610017
71	175.680387	0.010822778543500	0.000195639954687	101	35.098815	0.000178111646970	0.000191384322146
72	217.690316	0.000178111646970	0.000178278205194	102	294.076736	0.000178111646970	0.000182222906693
73	38.246793	0.000534224620906	0.000182687638262	103	32.128646	0.000356186520605	0.000188086392393
74	31.857573	0.001125135337360	0.000169827078380	104	49.921670	0.000178111646970	0.000203048601609
75	114.937968	0.001270224529710	0.000171784530180	105	39.121101	0.000178111646970	0.000201641086133
76	131.454300	0.002363789959170	0.000175229579277	106	68.180915	0.001772456349360	0.000191617681249
77	18.595009	0.000789229310885	0.000176365542643	107	187.564051	0.008750178235760	0.000189358759522
78	17.177938	0.000966311304482	0.000176962995115	108	86.464172	0.000356186520605	0.000190728453110
79	67.109244	0.001674418638860	0.000178393127148	109	83.843459	0.000534224620906	0.000194120849568
80	135.465657	0.001745832454990	0.000207264433076	110	29.016217	0.000178111646970	0.000188481031300
81	23.213583	0.001038754773980	0.000203641918567	111	38.611812	0.000178111646970	0.000168244313172
82	15.416311	0.000861893420395	0.000202788470624	112	317.384928	0.000534224620906	0.000173998166451
83	80.836395	0.000684995293473	0.000200708452073	113	280.721367	0.000178111646970	0.000175004248365
84	39.392858	0.000286390731207	0.000198139669595	114	30.200273	0.000356186520605	0.000180156334258
85	127.461593	0.004345413036720	0.000207445975586	115	80.875314	0.000109382284280	0.000195922422276
86	40.729597	0.002306533876930	0.000195066846799	116	140.529722	0.030106531431500	0.000216104981875
87	72.441604	0.001161209978780	0.000190096288560	117	64.203557	0.001256195502490	0.000180315301487
88	36.684588	0.000453985204433	0.000188700296777	118	72.579532	0.001358112799810	0.000180557796558
89	141.922132	0.000891073061537	0.000190389424902	119	215.194687	0.004547482511290	0.000207927327778

Case study C - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
120	221.933976	0.000337928559891	0.000209113783660				
121	55.939171	0.004541892964410	0.000212360339979				
122	223.170985	0.000239762142716	0.000202316979173				
123	286.286175	0.030930713797100	0.000216183563010				
124	47.579851	0.056705438325700	0.000233863846060				

The case study D | loop-grid pattern

ID: It is generated by ArcMap GIS.

Length: It based on the georeferencing aerial map (metric distance).

Betweenness centrality value: It derived from the Multiple Centrality Assessment (MCA).

Closeness centrality value: It derived from the Multiple Centrality Assessment (MCA).

Case study D - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
0	150.508262	0.000165057113126	0.000204575655930	30	160.353308	0.000159743366251	0.000215689419113
1	124.648115	0.000672124626302	0.000224928835300	31	238.982184	0.001235528888350	0.000229637139159
2	171.999536	0.001976438037340	0.000216639963506	32	75.608191	0.000150586805893	0.000210935576422
3	134.040869	0.000178111646970	0.000208154681209	33	76.045915	0.000053762615437	0.000225211380755
4	149.179053	0.000322851492634	0.000208138349474	34	235.891763	0.000164670993111	0.000220632956534
5	162.279515	0.001849551645710	0.000215881310016	35	159.615096	0.000178111646970	0.000196692512703
6	33.853042	0.003489734309900	0.000212348449052	36	226.881772	0.000013661293868	0.000234276852789
7	171.899486	0.000178111646970	0.000205159858857	37	123.908979	0.000463822071484	0.000225451922758
8	62.718810	0.009954541722890	0.000219660907338	38	63.052197	0.000356370387279	0.000227412377819
9	93.890702	0.001581345328550	0.000207455787999	39	160.539290	0.000563698448726	0.000227400131066
10	80.993796	0.001181950139590	0.000205209390386	40	62.605367	0.000742251375713	0.000224137383234
11	147.259165	0.000356186520605	0.000200772029943	41	75.075624	0.001167277579010	0.000222111411355
12	147.272110	0.000178111646970	0.000194577744580	42	57.964561	0.000745156469160	0.000219471943821
13	166.414800	0.000488809552462	0.000212849260177	43	308.003088	0.000150586805893	0.000210935576422
14	151.471797	0.001041034720740	0.000206894679384	44	309.810828	0.000013440653859	0.000219039408384
15	80.826423	0.001390160761070	0.000202306076146	45	368.532845	0.000000000000000	0.000218499393375
16	33.504132	0.001849128752360	0.000210551895474	46	86.278429	0.000078639776411	0.000208753895546
17	7.012681	0.002498251657760	0.000211433849535	47	63.249705	0.000455584844495	0.000216739820400
18	42.885371	0.000713090121239	0.000209619452331	48	238.208549	0.000822987232206	0.000233104700493
19	117.020696	0.000757199736298	0.000210724127565	49	78.564285	0.000534224620906	0.000224671365745
20	32.939861	0.000594661596604	0.000209215627778	50	58.803500	0.012103115740300	0.000205822785112
21	81.095933	0.009567097867730	0.000216253712592	51	85.190110	0.012250742292700	0.000208277795311
22	139.735600	0.000562301062005	0.000198062794359	52	284.911150	0.000178111646970	0.000215428203144
23	143.057796	0.000178111646970	0.000197639239977	53	35.870881	0.000178111646970	0.000221589739521
24	208.583614	0.000178111646970	0.000204421180492	54	33.774813	0.001890278113970	0.000210544764515
25	5.681154	0.000356186520605	0.000209244333980	55	80.599440	0.023409592342800	0.000213232561879
26	67.915778	0.000178111646970	0.000180745808413	56	39.091827	0.022806215465800	0.000210764691280
27	49.127316	0.000178111646970	0.000199593002679	57	80.326791	0.024015763993200	0.000216641645798
28	79.309941	0.000178111646970	0.000172497286063	58	91.617489	0.024167987212400	0.000220450750370
29	74.966432	0.000356186520605	0.000183295427186	59	32.464180	0.001268919076320	0.000207320836433

Case study D - Radius 400 m. Links ID, Length, Betweenness and Closeness based on Multiple Centrality Analysis

Links ID	Length	Betweenness	Closeness	Links ID	Length	Betweenness	Closeness
60	13.118358	0.001117431323730	0.000206424001795	90	205.563716	0.029688308295100	0.000241040787561
61	27.662329	0.012071711312400	0.000214337308987	91	24.789521	0.029557487156700	0.000235676164386
62	159.595755	0.010527911558700	0.000206606195921	92	23.534180	0.029427033751600	0.000234666103202
63	159.164024	0.012232833678700	0.000218740739198	93	56.730796	0.000178111646970	0.000231438904783
64	186.531361	0.000178111646970	0.000207246593944	94	68.112540	0.000979365838326	0.000204862530999
65	186.628782	0.000178111646970	0.000210460251913	95	193.993980	0.000013054533844	0.000203678821293
66	64.235921	0.000133523978559	0.000222455776918	96	39.088940	0.000828613552426	0.000202847672852
67	62.760087	0.000675158426421	0.000221121579457	97	231.433974	0.000000000000000	0.000206212303863
68	81.452810	0.017307921610600	0.000219411922012	98	116.298658	0.011018136884500	0.000211088872973
69	97.083146	0.019513880417000	0.000221348333174	99	69.304894	0.009349105539190	0.000206982791927
70	79.313081	0.018996240570100	0.000218097610559	100	66.561815	0.009186953519520	0.000204154925771
71	65.232443	0.018911661900100	0.000217001386943	101	58.665525	0.002042758746610	0.000212477191740
72	15.332483	0.018953454795000	0.000217449632778	102	220.942097	0.000178111646970	0.000166631461870
73	87.485629	0.009936541175520	0.000218302810158	103	186.717531	0.000178111646970	0.000205607388030
74	160.025195	0.000094102963683	0.000224201276274	104	47.112375	0.001585868448730	0.000208908116583
75	62.422490	0.000512767380066	0.000221167775570	105	85.813330	0.001077660962170	0.000201627878732
76	63.402169	0.000262083556923	0.000227464024106	106	26.889232	0.010473045743200	0.000202689361481
77	61.597704	0.001003562692610	0.000230874898243	107	125.192223	0.009658976044650	0.000199636261922
78	63.865680	0.000419528589751	0.000220953434196	108	159.469022	0.000356186520605	0.000215756468018
79	87.740069	0.026638842735800	0.000224186934182	109	49.298394	0.000178111646970	0.000210586081145
80	188.201789	0.026768634220900	0.000230023888614	110	66.238272	0.000063930442502	0.000219514211969
81	86.967352	0.000178111646970	0.000217072719242				
82	63.917116	0.000178111646970	0.000224089530638				
83	63.391369	0.001942790436030	0.000227924981140				
84	228.416504	0.000038685548181	0.000231415950873				
85	160.716305	0.001803235630570	0.000230887144995				
86	63.411447	0.002111267469290	0.000228705360827				
87	54.788248	0.002797145322790	0.000233419429624				
88	66.212064	0.000481877778857	0.000237988289423				
89	63.354207	0.000317500972425	0.000234667097321				

Appendix Three

The Statistic of Blocks and Plots in the Selected Areas

Case Study A - The statistic of blocks and plots in a selected area - Circle (radius 400 m with area 502654.8246 m^2)

ABID	Block Area	Block Perimeter	Number of Plots per Block	Plot ID	Built up Area	Plot Area	Plot Perimeter	The difference between the area of the plot and the built-up area	Block Dimensions														
AB1	3741.55	347.13	19	AB1P1	86.50	86.50	40.37	0.00	41.79	79.14	41.15	15.36	15.24	56.62	29.41	68.42							
				AB1P2	206.64	206.64	59.78	0.00															
				AB1P3	180.27	180.27	64.30	0.00															
				AB1P4	166.28	166.28	54.17	0.00															
				AB1P5	593.99	593.99	127.54	0.00															
				AB1P6	711.62	711.62	144.75	0.00															
				AB7P7	194.25	194.25	64.16	0.00															
				AB1P8	184.87	184.87	60.49	0.00															
				AB1P9	44.29	44.29	29.14	0.00															
				AB1P10	72.41	72.41	36.79	0.00															
				AB1P11	112.21	112.21	45.02	0.00															
				AB1P12	27.29	27.29	21.24	0.00															
				AB1P13	281.49	281.49	68.30	0.00															
				AB1P14	228.11	228.11	61.70	0.00															
				AB1P15	51.43	51.43	30.74	0.00															
				AB1P16	45.63	45.63	33.82	0.00															
				AB1P17	119.71	119.71	61.88	0.00															
				AB1P18	168.93	168.93	61.02	0.00															
				AB1P19	95.83	95.83	42.77	0.00															
Total per block					3571.76	3571.76	1107.98	0.00															
AB2	5142.36	397.59	24	AB2P1	331.14	331.14	72.53	0.00	15.93	29.86	115.49	22.21	98.47	115.64									
				AB2P2	211.80	211.80	62.55	0.00															
				AB2P3	863.59	863.59	161.83	0.00															
				AB2P4	87.08	87.08	40.34	0.00															
				AB2P5	126.21	126.21	47.64	0.00															
				AB2P6	108.15	108.15	42.47	0.00															
				AB2P7	92.92	92.92	38.52	0.00															
				AB2P8	268.28	268.28	74.57	0.00															
				AB2P9	47.01	47.01	29.06	0.00															
				AB2P10	71.81	71.81	34.29	0.00															
				AB2P11	129.25	129.25	47.37	0.00															
				AB2P12	166.12	166.12	59.59	0.00															
				AB2P13	227.69	227.69	65.33	0.00															
				AB2P14	100.90	100.90	42.25	0.00															
				AB2P15	183.10	183.10	69.59	0.00															
				AB2P16	356.98	356.98	87.62	0.00															
				AB2P17	88.32	88.32	40.30	0.00															
				AB2P18	161.95	161.95	52.57	0.00															
				AB2P19	346.15	346.15	105.32	0.00															
				AB2P20	301.90	301.90	96.47	0.00															
				AB2P21	168.88	168.88	54.86	0.00															
				AB2P22	353.65	353.65	88.58	0.00															
				AB2P23	235.16	235.16	71.74	0.00															
				AB2P24	108.43	108.43	41.98	0.00															
Total per block					5136.48	5136.48	1527.39	0.00															
AB3	485.43	97.66	2	AB3P1	281.65	281.65	66.50	0.00	9.00	31.19	20.15	37.33											
				AB3P2	203.78	203.78	58.78	0.00															
Total per block					485.43	485.43	125.28	0.00															
AB4	6480.46	420.83	20	AB4P1	906.97	963.42	207.14	56.45	38.59	126.11	69.96	90.48	29.77	65.92									
				AB4P2	333.30	380.19	82.16	46.89															
				AB4P3	228.33	267.47	67.75	39.13															
				AB4P4	135.46	135.46	51.21	0.00															
				AB4P5	205.79	205.79	63.87	0.00															
				AB4P6	179.05	179.05	71.17	0.00															
				AB4P7	129.92	129.92	53.93	0.00															
				AB4P8	477.02	477.02	99.38	0.00															
				AB4P9	109.44	109.44	41.91	0.00															
				AB4P10	118.80	118.80	46.14	0.00															
				AB4P11	122.46	122.46	48.29	0.00															
				AB4P12	135.97	135.97	50.91	0.00															
				AB4P13	222.46	222.46	66.77	0.00															
				AB4P14	239.78	239.78	63.51	0.00															
				AB4P15	162.90	162.90	56.81	0.00															
				AB4P16	187.42	187.42	55.78	0.00															
				AB4P17	159.91	159.91	66.76	0.00															
				AB4P18	598.18	598.18	108.03	0.00															
				AB4P19	961.03	961.03	139.39	0.00															
				AB4P20	365.34	438.28	89.90	72.94															
Total per block					5979.53	6194.94	1530.80	215.41															
AB5	4651.88	310.82	18	AB5P1	1236.57	1452.38	162.69	215.81	81.68	64.53	26.39	21.47	31.72	85.03									
				AB5P2	173.99	173.99	61.79	0.00															
				AB5P3	121.18	121.18	45.74	0.00															
				AB5P4	214.56	214.56	65.34	0.00															
				AB5P5	402.17	402.17	96.38	0.00															
				AB5P6	238.44	238.44	61.37	0.00															
				AB5P7	487.76	487.76	109.03	0.00															
				AB5P8	222.20	222.20	69.70	0.00															
				AB5P9	84.55	84.55	41.90	0.00															
				AB5P10	100.96	100.96	48.79	0.00															
				AB5P11	51.88	51.88	48.64	0.00															
				AB5P12	137.87	137.87	51.38	0.00															
				AB5P13	34.45	34.45	23.71	0.00															
				AB5P14	145.38	169.10	58.90	23.73															
				AB5P15	169.06	169.06	68.33	0.00															
				AB5P16	178.28	178.28	58.54	0.00															
				AB5P17	210.94	210.94	59.58	0.00															
				AB5P18	123.50	123.50	79.58	0.00															
Total per block					4333.73	4573.27	1211.37	239.54															
AB6	7707.02	500.89	28	AB6P1	201.71	201.71	57.36	0.00	46.30	119.26	14.59	22.60	32.58	40.76	93.25	131.55							
				AB6P2	471.51	471.51	96.48	0.00															
				AB6P3	223.07	223.07	63.97	0.00															
				AB6P4	41.81	41.81	28.22	0.00															
				AB6P5	312.06	337.98	82.93	25.92															
				AB6P6	216.77	216.77	59.15	0.00															
				AB6P7	105.52	105.52	47.93	0.00															
				AB6P8	716.90	716.90	134.78	0.00															
				AB6P9	242.48	242.48	62.02	0.00															
				AB6P10	233.64	233.64	64.97	0.00															
				AB6P11	145.08	185.15	59.63	40.07															
				AB6P12	1530.32	1727.12	202.94	196.79															
				AB6P13	62.42	62.42	32.60	0.00															
				AB6P14	77.05	77.05	36.85	0.00															
				AB6P15	36.12	36.12	24.10	0.00															
				AB6P16	52.75	52.75	29.27	0.00															
				AB6P17	115.22	115.22	65.26	0.00															
				AB6P18	63.36	63.36	37.45	0.00															
				AB6P19	757.53	757.53	146.49	0.00															
				AB6P20	64.64	64.64	34.34	0.00															
				AB6P21	382.51	399.39	92.57	16.88															
				AB6P22	139.70	139.70	50.70	0.00															
				AB6P23	47.52	47.52	36.33	0.00															
				AB6P24	156.23	156.23	99.66	0.00															
				AB6P25	51.74	51.74	36.71	0.00															
				AB6P26	82.56	82.56	45.96	0.00															
				AB6P27	189.31	189.31	56.89	0.00															
				AB6P28	216.11	216.11	68.84	0.00															
Total per block					6935.64	7215.31	1854.40	279.67															
AB7	8005.67	406.56	5	AB7P1	2260.70	3446.25	245.87	1185.55	79.19	125.27	54.35	148.89											
				AB7P2	958.34	958.34	160.28	0.00															
				AB7P3	41.51	41.51	26.29	0.00															
				AB7P4	2230.14	3147.50	263.87	917.36															
				AB7P5	151.27	151.27	107.63	0.00															
Total per block					5641.96	7744.86	803.94	2102.90															

AB8	854.94	145.92	5	AB8P1	290.81	290.81	73.58	0.00	19.92	58.91	12.48	54.61											
				AB8P2	167.19	167.19	58.51	0.00															
				AB8P3	114.37	114.37	45.24	0.00															
				AB8P4	142.69	142.69	48.45	0.00															
				AB8P5	139.88	139.88	47.39	0.00															
Total per block					854.94	854.94	273.17	0.00															

AB9	509.72	108.70	4	AB9P1	232.04	232.04	71.66	0.00	17.88	22.83	14.86	10.60	6.62	35.91									
				AB9P2	58.30	58.30	31.98	0.00															
				AB9P3	70.07	70.07	33.76	0.00															
				AB9P4	149.31	149.31	51.67	0.00															
Total per block					509.72	509.72	189.06	0.00															

AB10	3708.62	323.89	23	AB10P1	417.18	514.25	94.06	97.07	48.70	107.45	61.09	8.65	15.62	82.38									
				AB10P2	75.39	75.39	44.74	0.00															
				AB10P3	168.17	168.17	53.33	0.00															
				AB10P4	77.44	77.44	40.06	0.00															
				AB10P5	157.73	157.73	65.13	0.00															
				AB10P6	178.39	178.39	59.80	0.00															
				AB10P7	261.98	274.89	78.69	12.91															
				AB10P8	84.70	90.87	42.00	6.16															
				AB10P9	107.07	107.07	42.08	0.00															
				AB10P10	48.03	48.03	28.43	0.00															
				AB10P11	103.18	103.18	45.13	0.00															
				AB10P12	234.07	234.07	80.90	0.00															
				AB10P13	191.05	191.05	53.45	0.00															
				AB10P14	289.06	305.29	97.41	16.23															
				AB10P15	190.19	190.19	59.60	0.00															
				AB10P16	157.19	157.19	49.73	0.00															
				AB10P17	159.39	182.20	78.20	22.82															
				AB10P18	134.09	134.09	52.67	0.00															
				AB10P19	52.58	52.58	32.58	0.00															
				AB10P20	53.46	53.46	29.53	0.00															
				AB10P21	196.28	196.28	60.56	0.00															
				AB10P22	37.19	37.19	25.04	0.00															
				AB10P23	108.17	108.17	46.49	0.00															
Total per block					3481.98	3637.17	1259.59	155.19															

AB11	6542.60	545.50	45	AB11P1	90.50	90.50	39.80	0.00	81.91	89.30	43.27	23.36	36.32	23.65	9.54	10.45	42.37	52.48	52.40	21.01	19.47	40.07	
				AB11P2	108.80	108.80	42.34	0.00															
				AB11P3	531.37	531.37	111.24	0.00															
				AB11P4	96.55	96.55	39.75	0.00															
				AB11P5	284.99	307.69	76.29	22.69															
				AB11P6	173.90	173.90	65.56	0.00															
				AB11P7	209.04	209.04	66.66	0.00															
				AB11P8	216.95	216.95	62.19	0.00															
				AB11P9	91.60	102.79	40.87	11.19															
				AB11P10	75.14	75.14	42.48	0.00															
				AB11P11	192.16	192.16	60.92	0.00															
				AB11P12	92.96	92.96	40.77	0.00															
				AB11P13	70.20	70.20	37.21	0.00															
				AB11P14	17.66	17.66	18.19	0.00															
				AB11P15	47.79	47.79	27.74	0.00															
				AB11P16	78.65	78.65	41.78	0.00															
				AB11P17	80.60	80.60	41.86	0.00															
				AB11P18	0.00	122.78	50.95	122.78															
				AB11P19	42.43	42.43	28.36	0.00															
				AB11P20	65.08	65.08	37.26	0.00															
				AB11P21	75.96	75.96	40.69	0.00															
				AB11P22	181.40	189.08	63.20	7.68															
				AB11P23	126.97	126.97	45.09	0.00															
				AB11P24	71.57	71.57	35.49	0.00															
				AB11P25	137.45	137.45	53.82	0.00															
				AB11P26	72.84	72.84	41.09	0.00															
				AB11P27	182.64	182.64	61.44	0.00															
				AB11P28	187.48	187.48	68.82	0.00															
				AB11P29	184.84	184.84	62.24	0.00															
				AB11P30	154.74	154.74	53.95	0.00															
				AB11P31	81.69	81.69	45.92	0.00															
				AB11P32	57.62	57.62	35.51	0.00															
				AB11P33	157.48	157.48	53.67	0.00															
				AB11P34	60.54	60.54	45.16	0.00															
				AB11P35	92.54	102.74	41.18	10.20															
				AB11P36	117.78	122.83	43.96	5.05															
				AB11P37	165.06	165.06	62.25	0.00															
				AB11P38	23.68	23.68	20.73	0.00															
				AB11P39	51.54	51.54	29.28	0.00															
				AB11P40	451.46	451.46	87.86	0.00															
				AB11P41	177.26	177.26	59.80	0.00															
				AB11P42	242.77	242.77	74.99	0.00															
				AB11P43	74.24	74.24	34.97	0.00															
				AB11P44	159.97	159.97	54.23	0.00															
				AB11P45	267.54	267.54	65.99	0.00															
Total per block					6123.43	6303.03	2253.57	179.60															

AB12	3165.74	266.65	14	AB12P1	363.27	363.27	75.20	0.00	78.46	61.80	90.95	35.44											
				AB12P2	231.21	231.21	62.57	0.00															
				AB12P3	164.92	164.92	55.87	0.00															
				AB12P4	152.34	194.07	56.12	41.73															
				AB12P5	249.23	249.23	70.87	0.00															
				AB12P6	39.63	39.63	25.35	0.00															
				AB12P7	383.91	383.91	103.14	0.00															
				AB12P8	410.00	410.00	105.85	0.00															
				AB12P9	69.75	69.75	36.78	0.00															
				AB12P10	133.61	149.78	49.70	16.17															
				AB12P11	134.34	134.34	54.59	0.00															
				AB12P12	72.41	72.41	35.76	0.00															
				AB12P13	79.19	79.19	35.75	0.00															
				AB12P14	300.08	300.08	79.82	0.00															
Total per block					2783.89	2841.80	847.35	57.90															

AB13	1421.01	163.31	1	AB13P1	1421.01	1421.01	163.31	0.00	21.37	40.05	22.03	55.63	24.23										
Total per block					1421.01	1421.01	163.31	0.00															

AB14	25326.18	716.49	1	AB14P1	4056.26	16359.24	554.90	12302.99	68.58	194.98	85.44	99.67	267.81										
Total per block					4056.26	16359.24	554.90	12302.99															

AB15	6554.30	493.21	8	AB15P1	422.61	422.61	87.89	0.00	55.64	108.38	12.62	64.32	13.87	17.61	19.46	90.18	111.14						
				AB15P2	185.05	185.05	140.71	0.00															
				AB15P3	122.15	122.15	46.00	0.00															
				AB15P4	140.61	163.11	54.45	22.50															
				AB15P5	2146.12	2527.55	236.37	381.43															
				AB15P6	1143.22	2156.91	202.31	1013.69															
				AB15P7	77.99	77.99	47.33	0.00															
				AB15P8	52.23	52.23	32.16	0.00															
Total per block					4289.97	5707.60	847.21	1417.62															

AB16	6292.83	463.65	36	AB16P1	197.25	197.25	59.50	0.00	57.61	36.01	31.10	36.17	64.23	45.04	23.32	7.67	11.59	63.39	23.15	21.21	43.15		
				AB16P2	139.82	169.52	55.36	29.70															
				AB16P3	390.84	390.84	104.74	0.00															
				AB16P4	159.33	198.48	57.24	39.15															
				AB16P5	237.09	237.09	78.10	0.00															
				AB16P6	61.94	69.39	35.13	7.44															
				AB16P7	168.08	168.08	168.08	0.00															
				AB16P8	96.69	96.69	41.44	0.00															
				AB16P9	136.94	136.94	55.83	0.00															
				AB16P10	75.21	75.21	36.83	0.00															
				AB16P11	84.92	112.25	54.53	27.33															
				AB16P12	82.94	82.94	42.18	0.00															
				AB16P13	62.74	71.49	34.98	8.75															
				AB16P14	41.81	41.81	28.20	0.00															
				AB16P15	58.45	58.45	44.59	0.00															
				AB16P16	104.88	109.63	47.96	4.75															
				AB16P17	185.46	214.63	71.15	29.17															
				AB16P18	49.42	49.42	28.62	0.00															
				AB16P19	212.80	252.76	82.12	39.96															
				AB16P20	222.84	259.54	79.04	36.70															
				AB16P21	86.53	104.66	42.52	18.13															
				AB16P22	234.58	234.58	73.19	0.00															

				AB16P23	761.77	772.83	118.97	11.06															
				AB16P24	331.02	331.02	76.84	0.00															
				AB16P25	188.64	188.64	56.60	0.00															
				AB16P26	251.20	251.20	64.31	0.00															
				AB16P27	94.53	94.53	39.65	0.00															
				AB16P28	72.25	72.25	37.45	0.00															
				AB16P29	73.45	73.45	46.55	0.00															
				AB16P30	187.07	187.07	66.81	0.00															
				AB16P31	53.70	53.70	31.80	0.00															
				AB16P32	53.73	53.73	38.36	0.00															
				AB16P33	173.72	173.72	57.54	0.00															
				AB16P34	109.38	109.38	41.98	0.00															
				AB16P35	57.66	57.66	36.27	0.00															
				AB16P36	192.28	192.28	63.60	0.00															
Total per block					5690.96	5943.10	2098.04	252.14															
AB17	5631.07	462.97	34	AB17P1	99.94	99.94	42.06	0.00	16.35	63.91	56.70	24.05	18.98	19.37	19.71	46.61	59.60	36.84	30.62	38.24	31.99		
				AB17P2	214.90	238.91	73.02	24.01															
				AB17P3	370.12	370.12	89.99	0.00															
				AB17P4	96.53	96.53	42.45	0.00															
				AB17P5	213.96	213.96	67.42	0.00															
				AB17P6	44.98	44.98	29.26	0.00															
				AB17P7	74.95	74.95	38.53	0.00															
				AB17P8	239.27	239.27	85.13	0.00															
				AB17P9	320.26	320.26	73.56	0.00															
				AB17P10	100.42	100.42	45.00	0.00															
				AB17P11	150.01	178.29	57.19	28.28															
				AB17P12	98.03	98.03	42.36	0.00															
				AB17P13	83.76	83.76	41.71	0.00															
				AB17P14	75.05	75.05	46.81	0.00															
				AB17P15	140.88	140.88	49.71	0.00															
				AB17P16	90.51	90.51	45.07	0.00															
				AB17P17	79.06	79.06	38.57	0.00															
				AB17P18	115.89	124.71	45.96	8.82															
				AB17P19	245.89	245.89	67.28	0.00															
				AB17P20	145.98	150.90	50.17	4.91															
				AB17P21	101.53	110.54	43.37	9.01															
				AB17P22	87.85	87.85	38.25	0.00															
				AB17P23	127.23	144.96	51.44	17.73															
				AB17P24	58.82	58.82	37.34	0.00															
				AB17P25	0.00	386.04	97.32	386.04															
				AB17P26	102.46	102.46	46.55	0.00															
				AB17P27	78.16	78.16	39.37	0.00															
				AB17P28	65.41	65.41	34.56	0.00															
				AB17P29	0.00	654.87	156.72	654.87															
				AB17P30	147.92	153.22	56.27	5.29															
				AB17P31	60.43	60.43	32.78	0.00															
				AB17P32	212.59	212.59	61.66	0.00															
				AB17P33	117.80	117.80	51.08	0.00															
				AB17P34	183.65	183.65	60.64	0.00															
Total per block					4344.28	5483.27	1878.59	1138.98															
AB18	6119.02	412.88	16	AB18P1	327.18	348.28	80.69	21.10	37.35	133.82	17.26	16.56	15.97	32.86	41.82	6.57	82.18	8.07	20.42				
				AB18P2	252.60	252.60	75.10	0.00															
				AB18P3	671.40	671.40	133.71	0.00															
				AB18P4	782.43	782.43	139.13	0.00															
				AB18P5	101.65	116.01	43.23	14.36															
				AB18P6	132.47	132.47	63.24	0.00															
				AB18P7	1028.63	1115.98	149.22	87.35															
				AB18P8	227.92	227.92	63.51	0.00															
				AB18P9	96.50	96.50	41.09	0.00															
				AB18P10	176.01	209.93	67.07	33.92															
				AB18P11	106.76	106.76	46.67	0.00															
				AB18P12	147.87	147.87	50.02	0.00															
				AB18P13	98.27	98.27	41.46	0.00															
				AB18P14	187.85	187.85	58.12	0.00															
				AB18P15	178.07	178.07	56.04	0.00															
				AB18P16	0.00	1410.13	192.96	1410.13															
Total per block					4515.61	6082.48	1301.26	1566.87															
AB19	5333.09	328.42	30	AB19P1	101.91	110.48	43.98	8.57	44.63	76.34	35.24	44.04	84.08	31.18	12.90								
				AB19P2	266.57	290.93	74.63	24.36															
				AB19P3	179.36	188.85	55.84	9.49															
				AB19P4	50.03	50.03	33.24	0.00															
				AB19P5	0.00	544.74	116.73	544.74															
				AB19P6	66.15	76.01	38.94	9.86															
				AB19P7	189.96	218.29	62.72	28.33															
				AB19P8	97.89	97.89	40.96	0.00															
				AB19P9	85.87	93.49	40.10	7.62															
				AB19P10	171.60	184.99	54.50	13.39															
				AB19P11	109.80	127.69	46.04	17.89															
				AB19P12	124.79	124.79	51.62	0.00															
				AB19P13	77.45	85.68	38.06	8.23															
				AB19P14	162.17	162.17	53.00	0.00															
				AB19P15	84.97	84.97	38.62	0.00															
				AB19P16	187.99	187.99	61.14	0.00															
				AB19P17	150.67	150.67	73.14	0.00															
				AB19P18	546.75	863.03	130.20	316.28															
				AB19P19	139.12	139.12	57.48	0.00															
				AB19P20	100.69	117.71	48.40	17.02															
				AB19P21	88.22	88.22	36.82	0.00															
				AB19P22	45.50	45.50	28.21	0.00															
				AB19P23	54.67	54.67	31.04	0.00															
				AB19P24	88.86	88.86	72.56	0.00															
				AB19P25	75.56	75.56	34.64	0.00															
				AB19P26	465.43	465.43	96.81	0.00															
				AB19P27	126.59	126.59	46.87	0.00															
				AB19P28	53.51	53.51	33.13	0.00															
				AB19P29	0.00	252.75	68.31	252.75															
				AB19P30	160.31	160.31	60.71	0.00															
Total per block					4052.40	5310.93	1668.44	1258.53															
AB20	3346.92	262.72	15	AB20P1	105.16	110.65	43.77	5.49	45.92	75.83	50.45	90.52											
				AB20P2	35.22	35.22	24.85	0.00															
				AB20P3	74.42	74.42	34.71	0.00															
				AB20P4	138.96	138.96	50.87	0.00															
				AB20P5	191.81	191.81	56.96	0.00															
				AB20P6	207.51	207.51	58.21	0.00															
				AB20P7	467.97	467.97	91.29	0.00															
				AB20P8	128.41	128.41	45.16	0.00															
				AB20P9	117.38	117.38	51.31	0.00															
				AB20P10	105.76	105.76	42.42	0.00															
				AB20P11	212.96	257.21	73.22	44.26															
				AB20P12	77.09	77.09	35.26	0.00															
				AB20P13	857.72	857.72	132.29	0.00															
				AB20P14	301.52	301.52	74.80	0.00															
				AB20P15	261.22	261.22	74.60	0.00															
Total per block					3283.11	3332.85	889.72	49.75															
AB21	7722.12	525.98	27	AB21P1	72.90	72.90	35.24	0.00	88.42	23.94	19.67	33.03	9.89	12.74	41.90	18.33	36.45	35.82	14.79	43.37	36.16	23.16	88.31
				AB21P2	109.77	109.77	44.57	0.00															
				AB21P3	175.63	175.63	55.94	0.00															
				AB21P4	317.19	317.19	85.97	0.00															
				AB21P5	118.14	118.14	44.01	0.00															
				AB21P6	127.57	127.57	53.88	0.00															
				AB21P7	562.20	783.86	126.75	221.66															
				AB21P8	92.74	92.74	41.16	0.00															
				AB21P9	1446.46	1446.46	225.91	0.00															
				AB21P10	135.88	135.88	45.62	0.00															
				AB21P11	55.10	55.10	30.25	0.00															
				AB21P12	66.33	66.33	33.51	0.00															
				AB21P13	386.17	420.73	85.03	34.56															
				AB21P14	349.77	370.81	92.99	21.04															
				AB21P15	251.98	251.98	66.12	0.00															
				AB21P16	190.53	190.53	60.64	0.00															
				AB21P17	157.88	177.66	55.55	19.78															
				AB21P18	149.94	160.33	56.65	10.39															
				AB21P19	82.97	82.97	37.20	0.00															
				AB21P20	77.40	77.40	36.99	0.00															

				AB21P21	139.56	139.56	59.11	0.00															
				AB21P22	128.21	150.72	55.53	22.52															
				AB21P23	128.88	167.53	52.02	38.65															
				AB21P24	154.23	173.97	52.91	19.74															
				AB21P25	132.76	132.76	47.84	0.00															
				AB21P26	114.22	114.22	46.19	0.00															
				AB21P27	138.98	138.98	53.10	0.00															
Total per block					5863.37	6251.69	1680.68	388.32															
AB22	458.87	88.12	1	AB22P1	458.87	458.87	88.12	0.00	24.34	7.68	31.55	17.06	7.48										
Total per block					458.87	458.87	88.12	0.00															
AB23	955.12	131.58	5	AB23P1	390.19	390.19	79.45	0.00	40.05	38.11	26.63	26.79											
				AB23P2	290.45	290.45	71.64	0.00															
				AB23P3	120.39	120.39	43.94	0.00															
				AB23P4	103.86	103.86	41.75	0.00															
				AB23P5	47.77	47.77	27.96	0.00															
Total per block					952.66	952.66	264.75	0.00															
AB24	1019.03	146.93	11	AB24P1	138.16	138.16	46.50	0.00	22.97	15.48	37.90	25.68	44.90										
				AB24P2	235.02	235.02	63.69	0.00															
				AB24P3	83.39	83.39	38.72	0.00															
				AB24P4	70.34	70.34	33.98	0.00															
				AB24P5	68.79	68.79	33.56	0.00															
				AB24P6	52.51	52.51	29.61	0.00															
				AB24P7	39.48	39.48	26.49	0.00															
				AB24P8	103.74	103.74	42.62	0.00															
				AB24P9	75.59	75.59	36.15	0.00															
				AB24P10	78.23	78.23	36.37	0.00															
				AB24P11	73.92	73.92	36.58	0.00															
Total per block					1019.17	1019.17	424.27	0.00															
AB25	2409.92	222.55	14	AB25P1	357.59	357.59	76.75	0.00	15.54	44.27	27.83	83.84	42.10	8.97									
				AB25P2	581.97	581.97	95.58	0.00															
				AB25P3	302.19	302.19	73.95	0.00															
				AB25P4	171.14	171.14	53.03	0.00															
				AB25P5	45.67	45.67	34.32	0.00															
				AB25P6	0.00	63.07	38.56	63.07															
				AB25P7	0.00	74.48	38.80	74.48															
				AB25P8	0.00	98.42	43.86	98.42															
				AB25P9	68.95	68.95	40.01	0.00															
				AB25P10	45.59	45.59	28.00	0.00															
				AB25P11	82.30	82.30	37.27	0.00															
				AB25P12	92.42	92.42	41.33	0.00															
				AB25P13	107.54	107.54	54.04	0.00															
				AB25P14	97.91	97.91	46.80	0.00															
Total per block					1953.26	2189.24	702.30	235.97															
AB26	1060.36	171.55	5	AB26P1	361.49	401.90	82.87	40.42	14.97	40.23	5.29	15.25	21.97	19.27	5.42	17.30	17.35	14.49					
				AB26P2	147.01	147.01	48.52	0.00															
				AB26P3	131.51	131.51	49.11	0.00															
				AB26P4	36.47	36.47	33.98	0.00															
				AB26P5	379.88	379.88	87.98	0.00															
Total per block					1056.35	1096.77	302.47	40.42															
AB27	7031.40	517.54	28	AB27P1	275.26	275.26	65.66	0.00	92.19	14.49	10.27	17.30	71.43	12.61	12.66	13.91	28.39	24.68	13.53	17.47	110.09	41.70	36.82
				AB27P2	809.84	1413.33	157.50	603.49															
				AB27P3	992.91	992.91	153.15	0.00															
				AB27P4	0.00	962.59	177.25	962.59															
				AB27P5	220.68	220.68	60.28	0.00															
				AB27P6	132.78	132.78	55.48	0.00															
				AB27P7	56.25	56.25	32.09	0.00															
				AB27P8	137.68	137.68	51.57	0.00															
				AB27P9	62.75	74.65	35.75	11.90															
				AB27P10	71.27	88.44	40.52	17.17															
				AB27P11	95.93	118.12	46.68	22.19															
				AB27P12	0.00	131.94	53.02	131.94															
				AB27P13	65.38	65.38	32.64	0.00															
				AB27P14	73.01	73.01	34.99	0.00															
				AB27P15	108.52	108.52	43.12	0.00															
				AB27P16	105.07	105.07	44.06	0.00															
				AB27P17	113.04	113.04	49.83	0.00															
				AB27P18	64.98	64.98	32.33	0.00															
				AB27P19	116.41	125.29	49.00	8.88															
				AB27P20	62.89	62.89	40.88	0.00															
				AB27P21	0.00	1091.98	197.69	1091.98															
				AB27P22	65.89	65.89	33.54	0.00															
				AB27P23	81.12	81.12	37.88	0.00															
				AB27P24	64.61	64.61	32.11	0.00															
				AB27P25	80.44	80.44	38.65	0.00															
				AB27P26	108.43	108.43	42.04	0.00															
				AB27P27	145.39	145.39	65.11	0.00															
				AB27P28	50.68	50.68	29.32	0.00															
Total per block					4161.22	7011.35	1732.15	2850.13															
AB28	1997.36	256.32	13	AB28P1	484.11	556.64	103.16	72.53	30.80	37.02	93.52	11.32	25.75	57.90									
				AB28P2	154.74	154.74	52.48	0.00															
				AB28P3	107.00	107.00	48.80	0.00															
				AB28P4	113.41	113.41	44.43	0.00															
				AB28P5	62.42	62.42	33.09	0.00															
				AB28P6	194.66	194.66	59.29	0.00															
				AB28P7	215.50	253.74	65.91	38.23															
				AB28P8	102.41	102.41	43.23	0.00															
				AB28P9	47.14	47.14	30.57	0.00															
				AB28P10	50.84	50.84	28.53	0.00															
				AB28P11	84.54	93.01	49.97	8.47															
				AB28P12	91.32	91.32	44.36	0.00															
				AB28P13	118.69	127.73	48.45	9.03															
Total per block					1826.80	1955.06	652.25	128.27															
AB29	3213.94	282.00	14	AB29P1	138.10	138.10	51.28	0.00	22.78	8.07	70.41	36.91	41.96	51.90	13.16	19.53	17.27						
				AB29P2	116.11	116.11	47.29	0.00															
				AB29P3	115.14	115.14	46.41	0.00															
				AB29P4	183.10	194.02	68.11	10.93															
				AB29P5	145.35	145.35	53.35	0.00															
				AB29P6	296.45	303.94	72.59	7.49															
				AB29P7	1160.33	1160.33	140.74	0.00															
				AB29P8	139.67	139.67	51.23	0.00															
				AB29P9	88.86	88.86	40.79	0.00															
				AB29P10	221.88	221.88	61.97	0.00															
				AB29P11	82.98	99.44	40.55	16.47															
				AB29P12	117.22	117.22	44.44	0.00															
				AB29P13	196.47	196.47	56.39	0.00															
				AB29P14	154.13	154.13	54.83	0.00															
Total per block					3155.77	3190.65	829.96	34.88															
AB30	2370.09	236.21	18	AB30P1	59.65	59.65	33.64	0.00	29.33	48.83	41.96	38.41	77.68										
				AB30P2	173.36	173.36	57.31	0.00															
				AB30P3	234.64	234.64	61.89	0.00															
				AB30P4	72.77	72.77	34.43	0.00															
				AB30P5	62.49	68.71	33.26	6.22															
				AB30P6	188.42	207.62	61.31	19.20															
				AB30P7	85.42	85.42	49.69	0.00															
				AB30P8	82.24	82.24	38.64	0.00															
				AB30P9	42.03	42.03	32.72	0.00															
				AB30P10	142.20	168.49	52.69	26.29															
				AB30P11	71.31	79.91	40.48	8.60															
				AB30P12	76.51	91.93	44.44	15.43															
				AB30P13	126.77	126.77	51.17	0.00															
				AB30P14	242.53	242.53	68.43	0.00															
				AB30P15	160.71	188.43	55.29	27.71															
				AB30P16	172.12	172.12	53.08	0.00															
				AB30P17	91.66	91.66	41.43	0.00															
				AB30P18	117.78	117.78	45.70	0.00															
Total per block					2202.60	2306.06	855.61	103.46															
AB31	5186.85	473.43	38	AB31P1	63.30	63.30	33.75	0.00	51.77	147.65	32.86	26.11	13.63	4.38	12.20	17.82	13.70	13.56	16.95	15.89	27.51	31.55	47.85
				AB31P2	148.20	148.20	50.96	0.00															
				AB31P3	194.97	194.97	59.31	0.00															

				AB31P4	93.81	106.79	52.78	12.98															
				AB31P5	332.45	425.15	90.38	92.70															
				AB31P6	100.39	100.39	50.42	0.00															
				AB31P7	101.79	117.69	47.57	15.89															
				AB31P8	105.12	105.12	44.41	0.00															
				AB31P9	196.42	196.42	61.38	0.00															
				AB31P10	146.10	156.82	53.20	10.72															
				AB31P11	0.00	178.21	70.25	178.21															
				AB31P12	147.12	147.12	48.62	0.00															
				AB31P13	66.98	76.61	43.50	9.63															
				AB31P14	76.23	84.13	45.38	7.90															
				AB31P15	141.37	157.45	61.86	16.07															
				AB31P16	52.92	62.55	32.73	9.63															
				AB31P17	67.64	84.91	50.79	17.27															
				AB31P18	72.82	72.82	40.11	0.00															
				AB31P19	97.66	97.66	53.53	0.00															
				AB31P20	56.60	56.60	32.70	0.00															
				AB31P21	181.01	181.01	55.66	0.00															
				AB31P22	164.42	259.51	68.79	95.09															
				AB31P23	145.77	161.86	67.95	16.09															
				AB31P24	101.50	114.40	52.49	12.90															
				AB31P25	88.30	95.77	39.49	7.48															
				AB31P26	145.48	145.48	51.25	0.00															
				AB31P27	67.77	67.77	32.81	0.00															
				AB31P28	89.10	89.10	41.41	0.00															
				AB31P29	38.95	38.95	28.15	0.00															
				AB31P30	70.62	77.63	35.92	7.01															
				AB31P31	44.91	44.91	27.88	0.00															
				AB31P32	78.19	78.19	44.85	0.00															
				AB31P33	84.75	84.75	46.08	0.00															
				AB31P34	259.67	259.67	79.24	0.00															
				AB31P35	123.03	123.03	46.58	0.00															
				AB31P36	324.72	324.72	82.10	0.00															
				AB31P37	121.08	121.08	45.06	0.00															
				AB31P38	39.41	39.41	25.61	0.00															
Total per block					4430.56	4940.15	1894.94	509.58															

AB32	3123.67	352.06	33	AB32P1	161.71	161.71	52.50	0.00	31.09	98.06	12.09	27.34	7.11	11.32	42.46	122.59							
				AB32P2	79.75	79.75	35.31	0.00															
				AB32P3	68.10	68.10	33.56	0.00															
				AB32P4	131.67	131.67	48.78	0.00															
				AB32P5	79.15	79.15	41.63	0.00															
				AB32P6	68.03	68.03	33.41	0.00															
				AB32P7	74.95	74.95	35.16	0.00															
				AB32P8	50.60	58.00	30.38	7.40															
				AB32P9	23.10	23.10	19.26	0.00															
				AB32P10	51.95	51.95	30.60	0.00															
				AB32P11	77.25	104.21	43.07	26.95															
				AB32P12	66.15	66.15	35.19	0.00															
				AB32P13	61.66	61.66	35.88	0.00															
				AB32P14	87.76	106.52	54.90	18.76															
				AB32P15	64.36	72.13	39.80	7.77															
				AB32P16	125.49	131.18	48.91	5.69															
				AB32P17	83.83	100.30	50.14	16.47															
				AB32P18	48.04	48.04	28.07	0.00															
				AB32P19	95.90	95.90	60.92	0.00															
				AB32P20	84.44	84.44	58.52	0.00															
				AB32P21	126.69	139.66	55.83	12.97															
				AB32P22	75.01	75.01	35.22	0.00															
				AB32P23	61.21	64.51	33.62	3.30															
				AB32P24	84.68	84.68	42.02	0.00															
				AB32P25	78.60	78.60	36.93	0.00															
				AB32P26	57.60	57.60	31.09	0.00															
				AB32P27	72.77	72.77	36.99	0.00															
				AB32P28	140.73	140.73	49.31	0.00															
				AB32P29	59.91	59.91	33.15	0.00															
				AB32P30	108.08	108.08	41.82	0.00															
				AB32P31	97.05	97.05	46.79	0.00															
				AB32P32	238.73	238.73	65.26	0.00															
				AB32P33	200.90	200.90	64.09	0.00															
Total per block					2985.87	3085.17	1388.10	99.31															

AB33	6140.04	448.78	27	AB33P1	1132.68	2730.18	227.74	1597.50	67.60	57.07	28.22	31.28	35.27	21.64	23.54	11.25	17.36	41.58	16.90	27.66	21.34	21.70	26.38
				AB33P2	121.12	129.44	45.41	8.32															
				AB33P3	66.53	72.52	34.25	5.99															
				AB33P4	35.02	43.55	29.62	8.52															
				AB33P5	69.67	69.67	33.55	0.00															
				AB33P6	64.57	64.57	32.41	0.00															
				AB33P7	105.15	105.15	44.30	0.00															
				AB33P8	0.00	278.18	77.94	278.18															
				AB33P9	0.00	131.75	65.50	131.75															
				AB33P10	0.00	54.36	31.81	54.36															
				AB33P11	0.00	33.40	23.23	33.40															
				AB33P12	241.73	241.73	62.47	0.00															
				AB33P13	112.54	112.54	48.39	0.00															
				AB33P14	136.11	156.02	52.40	19.91															
				AB33P15	0.00	91.42	39.40	91.42															
				AB33P16	179.40	188.81	57.54	9.42															
				AB33P17	261.44	294.62	72.95	33.17															
				AB33P18	152.09	152.09	56.12	0.00															
				AB33P19	84.59	90.67	40.03	6.07															
				AB33P20	156.39	156.39	73.47	0.00															
				AB33P21	159.41	159.41	67.73	0.00															
				AB33P22	75.43	75.43	37.40	0.00															
				AB33P23	83.85	83.85	38.89	0.00															
				AB33P24	83.90	88.92	39.01	5.02															
				AB33P25	87.53	87.53	37.75	0.00															
				AB33P26	119.70	119.70	48.59	0.00															
				AB33P27	51.15	51.15	29.16	0.00															
Total per block					3580.00	5863.03	1447.06	2283.03															

AB34	2759.23	283.28	18	AB34P1	90.77	111.41	42.84	20.63	25.65	56.71	19.84	13.46	14.13	8.14	18.38	16.84	11.73	18.09	21.64	28.11	19.49	11.07	
				AB34P2	54.00	54.00	34.27	0.00															
				AB34P3	58.91	58.91	35.07	0.00															
				AB34P4	100.38	100.38	48.14	0.00															
				AB34P5	0.00	402.30	88.42	402.30															
				AB34P6	108.71	108.71	43.48	0.00															
				AB34P7	187.94	187.94	58.86	0.00															
				AB34P8	90.81	108.54	45.10	17.72															
				AB34P9	171.06	171.06	58.99	0.00															
				AB34P10	95.14	122.27	50.71	27.13															
				AB34P11	39.03	39.03	26.72	0.00															
				AB34P12	97.69	127.98	50.61	30.29															
				AB34P13	104.03	117.63	44.87	13.60															
				AB34P14	89.57	89.57	46.11	0.00															
				AB34P15	0.00	149.82	55.12	149.82															
				AB34P16	84.83	137.67	53.49	52.84															
				AB34P17	211.82	235.00	66.73	23.18															
				AB34P18	291.67	291.67	69.89	0.00															
Total per block					1876.37	2613.89	919.41	737.52															

AB35	1407.46	178.17	3	AB35P1	128.83	128.83	46.65	0.00	11.20	68.83	31.92	66.22											
				AB35P2	94.83	94.83	42.28	0.00															
				AB35P3	0.00	1073.07	136.29	1073.07															
Total per block					223.66	1296.73	225.22	1073.07															

AB36	1205.25	160.00	3	AB36P1	390.25	390.25	82.00	0.00	26.00	61.00	16.50	56.50											
				AB36P2	360.00	360.00	77.00	0.00															
				AB36P3	455.00	455.00	87.00	0.00															
Total per block					1205.25	1205.25	246.00	0.00															

AB37	1056.00	144.00	3	AB37P1	327.96	327.96	83.60	0.00	24.00	48.00	21.00	51.00											
				AB37P2	336.00	336.00	74.00	0.00															
				AB37P3	373.00	373.00	80.00	0.00															
Total per block					1036.96	1036.96	237.60	0.00															

AB38	4506.28	359.02	20	AB38P1	200.79	200.79	62.82	0.00	10.14	98.96	41.50	18.40	14.09	17.02	34.20	124.72							
				AB38P2	92.07	105.55	47.38	13.47															
				AB38P3	79.48	83.90	37.38	4.42															

				AB38P4	87.58	87.58	40.42	0.00															
				AB38P5	51.19	51.19	30.05	0.00															
				AB38P6	127.88	146.92	51.66	19.05															
				AB38P7	105.90	105.90	45.68	0.00															
				AB38P8	71.28	71.28	35.69	0.00															
				AB38P9	102.92	102.92	46.45	0.00															
				AB38P10	423.74	423.74	89.31	0.00															
				AB38P11	240.10	240.10	65.10	0.00															
				AB38P12	109.99	142.05	50.14	32.06															
				AB38P13	84.53	84.53	39.67	0.00															
				AB38P14	111.07	122.22	57.89	11.15															
				AB38P15	74.93	74.93	42.31	0.00															
				AB38P16	129.17	159.73	56.23	30.56															
				AB38P17	146.64	312.91	71.54	166.26															
				AB38P18	1087.43	1666.15	199.73	578.72															
				AB38P19	0.00	113.49	45.10	113.49															
				AB38P20	170.90	181.40	60.78	10.50															
Total per block					3497.58	4477.26	1175.33	979.68															
AB39	2088.01	216.13	19	AB39P1	54.31	54.31	34.85	0.00	48.18	57.57	18.00	11.41	10.12	10.61	5.71	15.06	11.58	27.90					
				AB39P2	122.93	122.93	43.41	0.00															
				AB39P3	127.01	127.01	52.79	0.00															
				AB39P4	159.39	159.39	60.88	0.00															
				AB39P5	145.66	164.73	55.95	19.07															
				AB39P6	46.38	46.38	31.00	0.00															
				AB39P7	106.57	128.85	47.22	22.28															
				AB39P8	107.10	119.81	54.18	12.72															
				AB39P9	119.30	134.07	48.80	14.77															
				AB39P10	93.57	117.42	43.59	23.85															
				AB39P11	99.55	99.55	45.64	0.00															
				AB39P12	42.37	42.37	25.94	0.00															
				AB39P13	58.50	58.50	29.49	0.00															
				AB39P14	142.54	151.71	53.31	9.17															
				AB39P15	93.03	93.03	39.76	0.00															
				AB39P16	202.79	202.79	66.07	0.00															
				AB39P17	50.68	50.68	31.80	0.00															
				AB39P18	68.58	77.68	40.22	9.10															
				AB39P19	64.24	64.24	38.00	0.00															
Total per block					1904.50	2015.45	842.89	110.95															
AB40	2682.35	268.35	18	AB40P1	172.79	196.65	65.41	23.86	31.60	67.38	8.46	11.18	13.93	14.51	12.14	17.99	44.96	5.71	40.50				
				AB40P2	219.00	258.80	69.71	39.81															
				AB40P3	80.94	95.74	41.48	14.80															
				AB40P4	83.90	83.90	55.32	0.00															
				AB40P5	89.40	89.40	44.03	0.00															
				AB40P6	122.79	122.79	45.42	0.00															
				AB40P7	107.02	107.02	41.17	0.00															
				AB40P8	90.37	90.37	38.46	0.00															
				AB40P9	58.47	58.47	56.11	0.00															
				AB40P10	88.19	150.92	55.14	62.73															
				AB40P11	127.74	127.74	47.58	0.00															
				AB40P12	135.78	135.78	48.81	0.00															
				AB40P13	80.65	107.09	44.68	26.44															
				AB40P14	262.33	339.79	85.08	77.46															
				AB40P15	119.39	137.79	49.41	18.39															
				AB40P16	124.91	124.91	48.70	0.00															
				AB40P17	88.54	88.54	62.77	0.00															
				AB40P18	117.99	136.55	59.89	18.55															
Total per block					2170.19	2452.23	959.16	282.04															
AB41	2170.35	222.92	13	AB41P1	126.81	157.03	51.97	30.22	36.67	85.69	29.34	17.99	30.36	22.87									
				AB41P2	188.66	188.66	55.55	0.00															
				AB41P3	78.73	78.73	36.11	0.00															
				AB41P4	120.29	120.29	45.39	0.00															
				AB41P5	137.36	153.43	54.34	16.08															
				AB41P6	214.64	214.64	68.60	0.00															
				AB41P7	335.58	335.58	79.54	0.00															
				AB41P8	232.47	267.98	65.36	35.51															
				AB41P9	80.83	92.04	39.69	11.21															
				AB41P10	108.87	124.27	45.52	15.40															
				AB41P11	91.18	91.18	40.37	0.00															
				AB41P12	106.56	117.69	46.51	11.14															
				AB41P13	113.54	136.31	51.50	22.77															
Total per block					1935.49	2077.82	680.45	142.33															
AB42	3276.76	254.79	3	AB42P1	1623.00	1623.00	194.00	0.00	23.29	91.81	48.83	67.97	5.25	17.64									
				AB42P2	378.00	378.00	78.00	0.00															
				AB42P3	0.00	256.50	101.40	256.50															
Total per block					2001.00	2257.50	373.40	256.50															
AB43	4283.99	388.79	20	AB43P1	110.36	130.63	46.76	20.27	71.49	27.96	20.69	7.23	38.41	35.11	13.34	25.09	31.39	22.87	20.07	15.73	25.72	17.99	15.70
				AB43P2	100.70	131.72	47.60	31.02															
				AB43P3	0.00	196.69	63.68	196.69															
				AB43P4	182.44	182.44	55.15	0.00															
				AB43P5	88.37	98.28	39.86	9.91															
				AB43P6	102.41	102.41	45.66	0.00															
				AB43P7	83.78	83.78	38.42	0.00															
				AB43P8	76.20	88.84	39.98	12.64															
				AB43P9	296.97	296.97	69.36	0.00															
				AB43P10	87.99	93.97	40.33	5.97															
				AB43P11	388.53	424.24	90.99	35.71															
				AB43P12	174.57	174.57	56.76	0.00															
				AB43P13	0.00	175.05	55.18	175.05															
				AB43P14	101.88	101.88	42.48	0.00															
				AB43P15	254.18	303.89	83.21	49.70															
				AB43P16	146.48	146.48	56.97	0.00															
				AB43P17	223.35	237.46	87.58	14.11															
				AB43P18	136.52	136.52	57.18	0.00															
				AB43P19	0.00	217.59	63.87	217.59															
				AB43P20	107.83	107.83	42.98	0.00															
Total per block					2662.58	3431.24	1124.01	768.66															
AB44	1962.40	269.25	6	AB44P1	132.25	157.03	53.26	24.78	12.43	25.71	8.31	13.61	8.09	42.60	37.57	35.10	11.36	27.99	46.49				
				AB44P2	121.65	136.74	54.51	15.09															
				AB44P3	223.27	239.66	67.17	16.39															
				AB44P4	87.23	97.80	40.47	10.56															
				AB44P5	121.39	121.39	49.28	0.00															
				AB44P6	114.34	114.34	52.01	0.00															
Total per block					800.14	866.96	316.71	66.82															
AB45	1702.01	187.03	10	AB45P1	223.69	257.13	68.38	33.44	20.21	30.04	5.32	25.09	25.93	42.13	26.72	11.59							
				AB45P2	0.00	84.30	39.56	84.30															
				AB45P3	0.00	93.64	39.97	93.64															
				AB45P4	146.45	146.45	52.85	0.00															
				AB45P5	101.38	101.38	40.92	0.00															
				AB45P6	90.70	100.63	42.48	9.93															
				AB45P7	0.00	105.41	43.76	105.41															
				AB45P8	198.51	232.10	61.57	33.59															
				AB45P9	105.65	105.65	47.17	0.00															
				AB45P10	229.00	229.00	63.50	0.00															
Total per block					1095.38	1455.69	500.18	360.31															
AB46	2209.78	235.90	16	AB46P1	85.79	85.79	37.90	0.00	65.46	26.90	11.58	29.90	18.82	8.34	3.33	20.52	51.05						
				AB46P2	53.23	53.23	32.49	0.00															
				AB46P3	102.61	109.03	44.09	6.42															
				AB46P4	125.55	125.55	58.04	0.00															
				AB46P5	94.52	119.51	48.36	24.99															
				AB46P6	46.58	46.58	27.59	0.00															
				AB46P7	85.79	104.65	46.42	18.86															
				AB46P8	95.71	113.88	44.14	18.17															
				AB46P9	123.99	123.99	44.80	0.00															
				AB46P10	100.70	100.70	41.21	0.00															
				AB46P11	110.23	135.91	49.99	25.68															
				AB46P12	86.84	86.84	38.32	0.00															
				AB46P13	613.83	613.83	103.66	0.00															
				AB46P14	178.51	178.51	55.67	0.00															
				AB46P15	86.37	86.37	39.40	0.00															
				AB46P16	125.39	125.39	50.35	0.00															
Total per block					2115.67	2209.78	762.44	94.11															

AB47	3583.44	262.07	5	AB47P1	280.69	280.69	69.01	0.00	70.42	31.14	17.78	24.37	66.23	52.13									
				AB47P2	86.51	86.51	40.65	0.00															
				AB47P3	390.60	390.60	87.98	0.00															
				AB47P4	561.49	754.28	125.74	192.79															
				AB47P5	309.48	309.48	73.06	0.00															
Total per block					1628.77	1821.56	396.45	192.79															
AB48	501.04	97.24	2	AB48P1	185.04	185.04	60.25	0.00	17.72	31.23	11.17	37.12											
				AB48P2	316.00	316.00	72.08	0.00															
Total per block					501.04	501.04	132.33	0.00															
AB49	2966.66	308.55	21	AB49P1	153.07	153.07	58.15	0.00	17.59	112.19	6.09	75.65	18.76	32.18	46.39								
				AB49P2	157.42	157.42	58.19	0.00															
				AB49P3	189.77	189.77	59.45	0.00															
				AB49P4	93.64	93.64	40.75	0.00															
				AB49P5	134.09	134.09	49.67	0.00															
				AB49P6	73.82	73.82	34.87	0.00															
				AB49P7	270.57	270.57	72.13	0.00															
				AB49P8	127.51	127.51	48.17	0.00															
				AB49P9	136.07	136.07	55.24	0.00															
				AB49P10	122.85	122.85	44.71	0.00															
				AB49P11	76.95	76.95	40.67	0.00															
				AB49P12	90.00	90.00	42.64	0.00															
				AB49P13	117.10	117.10	48.12	0.00															
				AB49P14	136.44	136.44	55.53	0.00															
				AB49P15	44.89	44.89	27.78	0.00															
				AB49P16	129.46	129.46	49.60	0.00															
				AB49P17	186.14	186.14	56.90	0.00															
				AB49P18	110.28	110.28	50.44	0.00															
				AB49P19	396.38	396.38	80.32	0.00															
				AB49P20	139.40	139.40	47.84	0.00															
				AB49P21	82.43	82.43	39.38	0.00															
Total per block					2968.30	2968.30	1060.54	0.00															
AB50	1801.62	198.77	14	AB50P1	69.84	69.84	33.95	0.00	7.28	5.73	5.99	21.48	48.98	28.00	81.30								
				AB50P2	106.48	106.48	45.82	0.00															
				AB50P3	111.92	111.92	48.72	0.00															
				AB50P4	43.96	43.96	27.10	0.00															
				AB50P5	88.16	106.05	44.11	17.89															
				AB50P6	159.40	159.40	52.11	0.00															
				AB50P7	395.82	395.82	78.80	0.00															
				AB50P8	129.03	129.03	47.85	0.00															
				AB50P9	25.82	44.83	27.84	19.01															
				AB50P10	125.20	139.11	50.72	13.91															
				AB50P11	112.39	131.18	56.28	18.78															
				AB50P12	187.36	187.36	57.26	0.00															
				AB50P13	92.50	92.50	41.15	0.00															
				AB50P14	78.19	78.19	36.14	0.00															
Total per block					1726.07	1795.66	647.83	69.60															
AB51	1281.82	184.21	13	AB51P1	159.61	159.61	56.21	0.00	24.62	59.38	39.06	20.85	6.63	6.59	15.55	11.53							
				AB51P2	158.20	158.20	63.18	0.00															
				AB51P3	22.41	22.41	19.76	0.00															
				AB51P4	40.09	40.09	25.00	0.00															
				AB51P5	44.25	44.25	27.42	0.00															
				AB51P6	84.60	84.60	41.30	0.00															
				AB51P7	57.66	57.66	31.64	0.00															
				AB51P8	118.03	118.03	56.35	0.00															
				AB51P9	110.11	135.45	49.71	25.34															
				AB51P10	176.36	179.54	57.02	3.18															
				AB51P11	101.26	101.26	44.57	0.00															
				AB51P12	47.64	47.64	30.66	0.00															
				AB51P13	131.69	131.69	47.00	0.00															
Total per block					1251.92	1280.44	549.81	28.52															
AB52	1063.99	150.48	8	AB52P1	57.46	57.46	32.18	0.00	47.81	40.02	24.11	13.75	4.47	8.65	11.68								
				AB52P2	43.14	43.14	31.02	0.00															
				AB52P3	104.77	110.17	42.09	5.39															
				AB52P4	129.44	173.49	58.54	44.05															
				AB52P5	110.96	126.71	48.37	15.75															
				AB52P6	177.36	186.98	65.27	9.62															
				AB52P7	225.15	227.10	67.54	1.95															
				AB52P8	107.12	111.65	48.75	4.53															
Total per block					955.40	1036.70	393.76	81.30															
AB53	2380.09	268.59	19	AB53P1	137.80	137.80	59.25	0.00	30.08	8.65	34.69	15.55	7.40	26.32	51.32	22.23	18.88	24.33	29.15				
				AB53P2	133.87	133.87	47.27	0.00															
				AB53P3	77.92	77.92	43.76	0.00															
				AB53P4	121.07	129.79	48.06	8.72															
				AB53P5	221.98	221.98	66.67	0.00															
				AB53P6	92.18	92.18	45.15	0.00															
				AB53P7	89.04	89.04	50.53	0.00															
				AB53P8	142.20	151.72	55.45	9.52															
				AB53P9	90.60	95.44	42.82	4.84															
				AB53P10	56.16	64.34	38.01	8.18															
				AB53P11	86.61	86.61	42.20	0.00															
				AB53P12	111.73	111.73	43.69	0.00															
				AB53P13	86.99	86.99	53.47	0.00															
				AB53P14	140.58	140.58	70.06	0.00															
				AB53P15	173.24	192.86	56.94	19.62															
				AB53P16	96.66	96.66	39.66	0.00															
				AB53P17	106.59	106.59	55.59	0.00															
				AB53P18	89.73	89.73	48.41	0.00															
				AB53P19	244.57	266.11	68.28	21.54															
Total per block					2299.51	2371.94	975.28	72.44															
AB54	1015.30	160.50	10	AB54P1	56.56	56.56	30.32	0.00	10.80	42.97	29.15	5.10	5.75	4.07	4.02	7.39	4.66	5.99	15.66	7.54	10.07	6.05	
				AB54P2	115.01	115.01	43.79	0.00															
				AB54P3	110.44	110.44	41.38	0.00															
				AB54P4	121.25	121.25	44.01	0.00															
				AB54P5	90.26	90.26	39.56	0.00															
				AB54P6	74.49	78.93	49.04	4.43															
				AB54P7	95.25	95.25	40.53	0.00															
				AB54P8	137.28	149.19	57.77	11.91															
				AB54P9	63.61	63.61	33.70	0.00															
				AB54P10	74.12	74.12	34.93	0.00															
Total per block					938.28	954.62	415.02	16.34															
AB55	450.67	89.47	3	AB55P1	125.30	125.30	45.50	0.00	30.64	9.31	28.53	20.99											
				AB55P2	132.56	147.44	50.15	14.87															
				AB55P3	151.55	173.97	53.92	22.41															
Total per block					409.42	446.71	149.58	37.29															
AB56	4850.72	299.07	8	AB56P1	327.49	327.49	79.42	0.00	61.31	32.03	9.61	15.78	31.60	8.10	54.55	35.69	50.40						
				AB56P2	168.40	168.40	53.10	0.00															
				AB56P3	496.12	707.02	123.65	210.90															
				AB56P4	85.87	85.87	37.40	0.00															
				AB56P5	58.81	58.81	30.34	0.00															
				AB56P6	144.49	158.18	51.65	13.69															
				AB56P7	114.86	114.86	44.95	0.00															
				AB56P8	1399.04	3087.11	229.63	1688.07															
Total per block					2795.09	4707.74	650.16	1912.65															
AB57	377.51	78.95	1	AB57P1	377.51	377.51	78.95	0.00	17.29	22.66	19.75	19.25											
Total per block					377.51	377.51	78.95	0.00															
AB58	2715.26	284.03	15	AB58P1	91.45	103.10	39.81	11.65	20.33	27.82	88.15	22.87	6.96	4.04	6.20	12.16	88.57	6.93					
				AB58P2	74.45	74.45	35.43	0.00															
				AB58P3	98.71	98.71	39.78	0.00															
				AB58P4	111.74	111.74	46.90	0.00															
				AB58P5	113.56	113.56	53.46	0.00															
				AB58P6	71.72	71.72	37.09	0.00															
				AB58P7	118.35	118.35	50.67	0.00															
				AB58P8	116.56	116.56	46.19	0.00															
				AB58P9	165.01	165.01	57.85	0.00															
				AB58P10	150.70	150.70	52.25	0.00															
				AB58P11	76.07	76.07	53.35	0.00															
				AB58P12	110.37	110.37	41.45	0.00															

				AB58P13	115.25	115.25	45.30	0.00															
				AB58P14	133.36	152.58	54.98	19.22															
				AB58P15	78.19	89.75	37.64	11.55															
Total per block					1625.50	1667.92	692.18	42.42															
AB59	2593.06	314.70	26	AB59P1	47.95	47.95	29.76	0.00	31.35	34.49	41.96	26.57	11.52	20.07	11.58	8.47	21.62	28.74	10.42	12.09	31.00	9.21	15.65
				AB59P2	73.99	73.99	37.44	0.00															
				AB59P3	54.53	54.53	30.99	0.00															
				AB59P4	105.17	121.58	46.69	16.41															
				AB59P5	171.25	184.74	67.01	13.48															
				AB59P6	88.35	88.35	45.11	0.00															
				AB59P7	31.38	31.38	23.10	0.00															
				AB59P8	32.86	32.86	23.57	0.00															
				AB59P9	51.73	51.73	29.56	0.00															
				AB59P10	141.93	141.93	56.63	0.00															
				AB59P11	51.34	51.34	30.74	0.00															
				AB59P12	41.57	41.57	26.35	0.00															
				AB59P13	102.09	102.09	43.55	0.00															
				AB59P14	149.52	149.52	50.59	0.00															
				AB59P15	169.09	169.09	60.71	0.00															
				AB59P16	158.14	158.14	51.13	0.00															
				AB59P17	74.91	74.91	36.14	0.00															
				AB59P18	86.07	99.04	41.11	12.97															
				AB59P19	87.65	87.65	42.82	0.00															
				AB59P20	169.77	190.83	60.25	21.05															
				AB59P21	86.99	106.58	48.24	19.59															
				AB59P22	155.25	155.25	63.11	0.00															
				AB59P23	59.88	59.88	36.53	0.00															
				AB59P24	88.47	97.04	43.89	8.57															
				AB59P25	112.08	124.17	45.86	12.08															
				AB59P26	97.19	97.19	42.71	0.00															
Total per block					2489.16	2593.32	1113.58	104.16															
AB60	1635.72	166.36	12	AB60P1	105.10	115.17	42.59	10.06	41.74	32.84	35.65	31.00	25.13										
				AB60P2	118.29	134.11	55.80	15.83															
				AB60P3	81.10	81.10	42.89	0.00															
				AB60P4	65.50	65.50	34.14	0.00															
				AB60P5	52.49	52.49	29.13	0.00															
				AB60P6	174.27	204.89	58.18	30.62															
				AB60P7	202.08	202.08	71.52	0.00															
				AB60P8	204.72	235.35	66.82	30.64															
				AB60P9	113.49	128.88	45.75	15.39															
				AB60P10	109.04	121.10	45.01	12.06															
				AB60P11	93.11	117.23	45.18	24.12															
				AB60P12	81.31	109.33	43.10	28.02															
Total per block					1400.49	1567.22	580.10	166.73															
AB61	2857.06	310.64	23	AB61P1	150.58	150.58	57.66	0.00	30.28	35.14	8.94	23.34	15.03	13.83	17.92	11.00	13.77	35.31	14.03	15.65	7.85	35.15	33.42
				AB61P2	46.97	46.97	28.79	0.00															
				AB61P3	43.91	43.91	27.84	0.00															
				AB61P4	191.60	213.89	59.17	22.29															
				AB61P5	88.05	93.98	38.98	5.92															
				AB61P6	108.67	108.67	45.15	0.00															
				AB61P7	85.28	85.28	37.08	0.00															
				AB61P8	166.45	166.45	58.44	0.00															
				AB61P9	113.76	113.76	53.08	0.00															
				AB61P10	103.09	103.09	44.98	0.00															
				AB61P11	111.72	111.72	48.53	0.00															
				AB61P12	124.26	124.26	53.66	0.00															
				AB61P13	71.85	71.85	34.34	0.00															
				AB61P14	100.80	100.80	43.43	0.00															
				AB61P15	74.68	97.52	46.12	22.83															
				AB61P16	117.27	134.51	54.24	17.25															
				AB61P17	84.32	100.51	41.00	16.19															
				AB61P18	81.19	81.19	38.82	0.00															
				AB61P19	98.29	107.86	49.08	9.56															
				AB61P20	214.05	214.05	68.20	0.00															
				AB61P21	84.21	95.78	44.16	11.57															
				AB61P22	96.45	96.45	39.72	0.00															
				AB61P23	139.08	139.08	47.29	0.00															
Total per block					2496.55	2602.16	1059.75	105.61															
AB62	2531.80	332.21	14	AB62P1	232.15	232.15	81.94	0.00	50.23	68.80	48.53	14.75	9.05	15.03	23.34	9.21	11.93	18.96	17.91	4.11	13.50	14.15	12.73
				AB62P2	192.12	192.12	60.01	0.00															
				AB62P3	130.27	130.27	45.55	0.00															
				AB62P4	213.24	216.52	67.77	3.28															
				AB62P5	95.59	106.76	41.79	11.17															
				AB62P6	129.55	129.55	47.90	0.00															
				AB62P7	104.61	104.61	42.10	0.00															
				AB62P8	60.99	64.90	33.86	3.92															
				AB62P9	147.71	147.71	55.76	0.00															
				AB62P10	73.53	73.53	35.94	0.00															
				AB62P11	47.76	47.76	31.23	0.00															
				AB62P12	86.11	86.11	36.65	0.00															
				AB62P13	110.69	110.69	43.79	0.00															
				AB62P14	149.60	149.60	54.49	0.00															
Total per block					1773.92	1792.28	678.78	18.36															
AB63	1809.20	209.61	8	AB63P1	117.90	117.90	47.38	0.00	40.73	27.83	27.78	10.70	14.13	25.58	20.40	42.46							
				AB63P2	78.25	103.32	40.59	25.07															
				AB63P3	91.89	91.89	41.58	0.00															
				AB63P4	75.90	75.90	35.36	0.00															
				AB63P5	67.39	67.39	33.51	0.00															
				AB63P6	162.46	162.46	65.69	0.00															
				AB63P7	170.62	170.62	53.71	0.00															
				AB63P8	275.73	275.73	72.30	0.00															
Total per block					1040.13	1065.20	390.12	25.07															
AB64	2990.58	305.24	9	AB64P1	119.84	119.84	43.69	0.00	51.85	41.09	15.47	14.50	65.59	29.86	29.11	57.77							
				AB64P2	112.49	112.49	42.92	0.00															
				AB64P3	666.00	666.00	133.97	0.00															
				AB64P4	153.65	153.65	50.18	0.00															
				AB64P5	75.36	75.36	36.67	0.00															
				AB64P6	203.84	203.84	57.82	0.00															
				AB64P7	239.11	239.11	62.89	0.00															
				AB64P8	133.66	133.66	64.64	0.00															
				AB64P9	56.11	56.11	32.12	0.00															
Total per block					1760.07	1760.07	524.91	0.00															
AB65	3229.16	357.66	27	AB65P1	161.27	161.27	51.66	0.00	52.56	47.57	17.36	14.41	8.25	7.92	14.04	29.11	48.02	39.21	9.03	23.20	14.55	16.82	15.62
				AB65P2	106.55	141.14	56.04	34.59															
				AB65P3	81.50	81.50	45.11	0.00															
				AB65P4	83.75	83.75	39.71	0.00															
				AB65P5	90.95	90.95	38.62	0.00															
				AB65P6	85.42	85.42	37.76	0.00															
				AB65P7	63.50	63.50	38.19	0.00															
				AB65P8	56.97	56.97	36.39	0.00															
				AB65P9	146.08	146.08	51.93	0.00															
				AB65P10	51.37	51.37	28.79	0.00															
				AB65P11	40.17	40.17	26.71	0.00															
				AB65P12	94.48	94.48	42.08	0.00															
				AB65P13	103.65	103.65	52.84	0.00															
				AB65P14	138.96	138.96	50.94	0.00															
				AB65P15	176.02	194.98	60.46	18.96															
				AB65P16	115.01	115.01	46.34	0.00															
				AB65P17	155.92	155.92	54.62	0.00															
				AB65P18	186.93	186.93	55.41	0.00															
				AB65P19	226.62	226.62	67.04	0.00															
				AB65P20	111.46	111.46	44.97	0.00															
				AB65P21	98.51	98.51	42.80	0.00															
				AB65P22	118.96	134.59	51.90	15.63															
				AB65P23	86.57	86.57	42.35	0.00															
				AB65P24	153.73	153.73	50.54	0.00															
				AB65P25	109.36	109.36	44.18	0.00															
				AB65P26	122.68	122.68	45.03	0.00															
				AB65P27	117.06	117.06	47.16	0.00															
Total per block					3083.47	3152.64	1249.59	69.17															
AB66	2805.29	294.41	24	AB66P1	117.50	150.20	53.22	32.71	12.86	15.85	14.55	25.98	35.71	9.98	19.85	11.70	10.30	10.56	48.90	24.71	7.32	7.57	38.57

				AB66P2	138.15	138.15	46.49	0.00															
				AB66P3	75.25	75.25	36.63	0.00															
				AB66P4	116.93	122.23	44.49	5.30															
				AB66P5	67.55	67.55	38.83	0.00															
				AB66P6	126.13	126.13	53.47	0.00															
				AB66P7	83.02	83.02	41.52	0.00															
				AB66P8	96.46	96.46	45.56	0.00															
				AB66P9	113.59	113.59	48.69	0.00															
				AB66P10	90.14	90.14	43.55	0.00															
				AB66P11	40.17	40.17	27.77	0.00															
				AB66P12	80.91	80.91	35.48	0.00															
				AB66P13	241.93	241.93	69.43	0.00															
				AB66P14	154.00	154.00	54.65	0.00															
				AB66P15	129.37	129.37	46.04	0.00															
				AB66P16	136.64	136.64	49.32	0.00															
				AB66P17	91.18	91.18	44.37	0.00															
				AB66P18	44.98	44.98	28.49	0.00															
				AB66P19	94.55	94.55	42.06	0.00															
				AB66P20	62.48	62.48	32.04	0.00															
				AB66P21	60.75	60.75	32.63	0.00															
				AB66P22	88.06	88.06	41.47	0.00															
				AB66P23	73.04	73.04	40.79	0.00															
				AB66P24	441.54	441.54	96.98	0.00															
Total per block					2764.32	2802.32	1093.94	38.00															
AB67	2154.76	228.84	9	AB67P1	194.40	194.40	57.87	0.00	18.99	56.83	61.00	32.78	29.99	29.25									
				AB67P2	72.10	72.10	37.77	0.00															
				AB67P3	104.80	264.72	75.85	159.92															
				AB67P4	270.35	270.35	69.92	0.00															
				AB67P5	304.66	304.66	72.17	0.00															
				AB67P6	211.66	211.66	66.56	0.00															
				AB67P7	411.64	411.64	84.86	0.00															
				AB67P8	136.42	148.04	49.43	11.62															
				AB67P9	256.92	277.17	74.81	20.25															
Total per block					1962.93	2154.72	589.24	191.79															
AB68	1868.58	240.44	10	AB68P1	296.78	313.72	72.91	16.94	23.08	11.93	15.60	15.27	31.30	18.08	16.89	21.05	87.24						
				AB68P2	228.35	228.35	74.10	0.00															
				AB68P3	113.46	113.46	43.58	0.00															
				AB68P4	106.67	106.67	42.97	0.00															
				AB68P5	70.72	70.72	37.01	0.00															
				AB68P6	101.30	101.30	41.64	0.00															
				AB68P7	146.17	150.61	50.62	4.44															
				AB68P8	111.52	111.52	41.86	0.00															
				AB68P9	343.97	343.97	82.92	0.00															
				AB68P10	0.00	303.75	72.51	303.75															
Total per block					1518.95	1844.07	560.11	325.12															
AB69	3385.83	311.90	29	AB69P1	109.70	109.70	41.75	0.00	42.43	21.25	15.69	19.08	67.91	39.83	22.32	8.29	3.01	4.05	6.07	8.94	2.81	50.24	
				AB69P2	90.27	90.27	48.12	0.00															
				AB69P3	130.85	130.85	50.79	0.00															
				AB69P4	131.31	131.31	70.10	0.00															
				AB69P5	127.15	168.27	53.08	41.13															
				AB69P6	94.62	94.62	51.55	0.00															
				AB69P7	104.87	104.87	104.87	0.00															
				AB69P8	91.61	91.61	41.37	0.00															
				AB69P9	133.96	151.34	54.34	17.38															
				AB69P10	78.94	78.94	41.73	0.00															
				AB69P11	26.69	36.09	29.72	9.41															
				AB69P12	45.73	45.73	30.80	0.00															
				AB69P13	109.63	109.63	44.19	0.00															
				AB69P14	85.05	85.05	36.99	0.00															
				AB69P15	39.48	39.48	28.82	0.00															
				AB69P16	41.83	41.83	29.45	0.00															
				AB69P17	126.29	126.29	54.60	0.00															
				AB69P18	64.82	84.24	46.49	19.43															
				AB69P19	120.55	120.55	46.09	0.00															
				AB69P20	114.58	114.58	43.25	0.00															
				AB69P21	46.81	46.81	29.72	0.00															
				AB69P22	67.27	67.27	34.73	0.00															
				AB69P23	45.21	45.21	29.84	0.00															
				AB69P24	627.39	627.39	107.86	0.00															
				AB69P25	192.53	213.44	70.87	20.91															
				AB69P26	81.36	81.36	35.90	0.00															
				AB69P27	42.64	42.64	27.28	0.00															
				AB69P28	146.46	146.46	49.26	0.00															
				AB69P29	85.74	97.80	46.65	12.06															
Total per block					3203.31	3323.63	1380.20	120.31															
AB70	199.59	69.97	3	AB70P1	30.46	30.46	22.69	0.00	6.67	25.55	8.41	11.72	3.78	13.85									
				AB70P2	61.41	61.41	30.90	0.00															
				AB70P3	90.64	90.64	42.95	0.00															
Total per block					182.51	182.51	96.54	0.00															
AB71	2619.83	247.98	25	AB71P1	35.37	35.37	25.69	0.00	34.48	50.42	58.46	28.70	6.50	3.92	3.97	4.72	5.28	7.79	22.64	5.25			
				AB71P2	79.15	99.84	50.09	20.69															
				AB71P3	70.34	82.98	44.46	12.64															
				AB71P4	129.73	156.72	52.98	26.99															
				AB71P5	122.71	153.75	54.58	31.04															
				AB71P6	152.01	169.53	58.37	17.52															
				AB71P7	113.07	140.81	56.08	27.75															
				AB71P8	67.48	86.26	38.46	18.78															
				AB71P9	41.82	41.82	28.26	0.00															
				AB71P10	110.02	132.87	52.11	22.85															
				AB71P11	73.56	73.56	38.04	0.00															
				AB71P12	166.68	186.95	57.75	20.27															
				AB71P13	61.02	68.80	35.12	7.79															
				AB71P14	161.10	194.85	67.00	33.75															
				AB71P15	69.36	69.36	37.33	0.00															
				AB71P16	61.64	61.64	31.46	0.00															
				AB71P17	180.82	199.88	60.24	19.05															
				AB71P18	108.67	125.84	47.35	17.17															
				AB71P19	86.48	117.60	47.20	31.12															
				AB71P20	80.05	102.49	41.09	22.44															
				AB71P21	91.47	119.42	49.54	27.95															
				AB71P22	51.05	51.05	33.35	0.00															
				AB71P23	49.06	49.06	33.72	0.00															
				AB71P24	51.73	57.57	35.45	5.84															
				AB71P25	35.46	35.46	27.54	0.00															
Total per block					2249.84	2613.48	1103.27	363.65															
AB72	1712.23	237.25	11	AB72P1	228.81	228.81	74.96	0.00	32.55	13.83	18.03	2.91	33.15	22.64	6.44	13.98	10.08	21.80	8.94	12.38	8.94	8.29	23.27
				AB72P2	272.39	272.39	73.57	0.00															
				AB72P3	329.66	329.66	82.46	0.00															
				AB72P4	132.13	132.13	52.71	0.00															
				AB72P5	121.13	121.13	51.45	0.00															
				AB72P6	128.77	128.77	52.11	0.00															
				AB72P7	113.06	113.06	46.78	0.00															
				AB72P8	122.29	122.29	45.00	0.00															
				AB72P9	77.76	77.76	38.36	0.00															
				AB72P10	97.97	97.97	41.09	0.00															
				AB72P11	87.49	87.49	44.08	0.00															
Total per block					1711.45	1711.45	602.59	0.00															
AB73	213.34	60.07	1	AB73P1	213.34	213.34	60.07	0.00	17.25	12.98	16.48	13.35											
Total per block					213.34	213.34	60.07	0.00															
AB74	3092.02	326.44	23	AB74P1	194.17	194.17	57.90	0.00	43.01	78.40	31.40	18.58	5.25	33.15	19.11	16.62	23.52	10.59	6.32	7.50	10.51	22.47	
				AB74P2	200.93	200.93	71.12	0.00															
				AB74P3	54.55	54.55	32.23	0.00															
				AB74P4	71.51	71.51	37.48	0.00															
				AB74P5	270.12	270.12	79.28	0.00															
				AB74P6	52.07	52.07	36.46	0.00															
				AB74P7	74.57	85.80	40.22	11.23															
				AB74P8	57.55	57.55	30.43	0.00															
				AB74P9	102.45	117.14	48.68	14.69															
				AB74P10	268.04	268.04	78.99	0.00															
				AB74P11	146.98	146.98	66.04	0.00															
				AB74P12	80.24	80.24	37.41	0.00															

				AB74P13	110.33	110.33	42.57	0.00															
				AB74P14	103.29	103.29	45.90	0.00															
				AB74P15	56.51	56.51	31.06	0.00															
				AB74P16	38.40	38.40	25.28	0.00															
				AB74P17	27.77	27.77	21.97	0.00															
				AB74P18	78.34	78.34	38.42	0.00															
				AB74P19	57.78	57.78	32.65	0.00															
				AB74P20	55.51	55.51	33.34	0.00															
				AB74P21	62.05	62.05	38.59	0.00															
				AB74P22	45.67	45.67	30.56	0.00															
				AB74P23	0.00	802.98	185.01	802.98															
Total per block					2208.84	3037.74	1141.59	828.90															
AB75	1369.37	170.10	9	AB75P1	110.28	110.28	45.98	0.00	47.83	35.44	32.60	17.75	8.89	9.61	17.99								
				AB75P2	156.18	173.02	55.31	16.84															
				AB75P3	69.29	83.20	43.30	13.91															
				AB75P4	75.62	75.62	42.77	0.00															
				AB75P5	193.14	193.14	57.53	0.00															
				AB75P6	96.05	96.05	44.82	0.00															
				AB75P7	147.36	147.36	55.54	0.00															
				AB75P8	91.77	100.97	44.35	9.20															
				AB75P9	0.00	388.69	120.94	388.69															
Total per block					939.69	1368.34	510.52	428.64															
AB76	3053.81	270.55	10	AB76P1	189.38	189.38	57.92	0.00	43.55	37.81	36.77	4.77	50.15	29.62	20.58	19.92	27.38						
				AB76P2	101.43	101.43	41.06	0.00															
				AB76P3	58.47	58.47	30.90	0.00															
				AB76P4	658.23	658.23	128.35	0.00															
				AB76P5	257.45	257.45	72.46	0.00															
				AB76P6	89.46	89.46	47.01	0.00															
				AB76P7	138.51	138.51	48.79	0.00															
				AB76P8	97.49	97.49	44.47	0.00															
				AB76P9	128.68	128.68	47.88	0.00															
				AB76P10	0.00	1272.32	212.30	1272.32															
Total per block					1719.10	2991.42	731.15	1272.32															
AB77	3523.27	367.38	5	AB77P1	311.61	311.61	77.05	0.00	19.64	161.51	15.49	6.03	7.71	157.00									
				AB77P2	880.00	880.00	124.00	0.00															
				AB77P3	1320.00	1320.00	164.00	0.00															
				AB77P4	880.00	880.00	124.00	0.00															
				AB77P5	71.56	71.56	39.29	0.00															
Total per block					3463.17	3463.17	528.33	0.00															
AB78	1536.30	200.63	5	AB78P1	276.39	276.39	74.60	0.00	17.25	78.00	20.00	72.89	3.93	8.57									
				AB78P2	330.00	330.00	73.00	0.00															
				AB78P3	330.00	330.00	73.00	0.00															
				AB78P4	300.00	300.00	70.00	0.00															
				AB78P5	300.00	300.00	70.00	0.00															
Total per block					1536.39	1536.39	360.60	0.00															
AB79	2655.92	251.00	3	AB79P1	1864.15	1864.15	187.54	0.00	40.53	60.81	53.33	76.78	19.55										
				AB79P2	462.80	462.80	93.35	0.00															
				AB79P3	327.84	327.84	77.52	0.00															
Total per block					2654.79	2654.79	358.40	0.00															
AB80	2606.20	362.37	17	AB80P1	454.76	454.76	85.33	0.00	14.25	142.43	32.19	45.22	46.46	9.26	11.84	15.36	9.30	13.13	22.91				
				AB80P2	284.70	284.70	68.66	0.00															
				AB80P3	54.78	54.78	30.01	0.00															
				AB80P4	114.65	114.65	47.41	0.00															
				AB80P5	210.28	210.28	60.86	0.00															
				AB80P6	144.98	144.98	49.69	0.00															
				AB80P7	175.51	175.51	54.63	0.00															
				AB80P8	107.98	107.98	46.67	0.00															
				AB80P9	194.11	194.11	57.87	0.00															
				AB80P10	256.24	256.24	66.37	0.00															
				AB80P11	110.05	110.05	42.82	0.00															
				AB80P12	41.85	41.85	26.61	0.00															
				AB80P13	65.16	65.16	35.76	0.00															
				AB80P14	164.16	164.16	56.85	0.00															
				AB80P15	48.48	48.48	36.54	0.00															
				AB80P16	50.12	50.12	30.89	0.00															
				AB80P17	99.27	99.27	43.95	0.00															
Total per block					2577.09	2577.09	840.94	0.00															
AB81	2100.00	242.00	6	AB81P1	419.00	419.00	86.00	0.00	21.00	100.00	21.00	100.00											
				AB81P2	350.22	350.22	83.73	0.00															
				AB81P3	315.00	315.00	72.00	0.00															
				AB81P4	336.00	336.00	74.00	0.00															
				AB81P5	336.00	336.00	74.00	0.00															
				AB81P6	308.00	336.00	74.00	28.00															
Total per block					2064.22	2092.22	463.73	28.00															
AB82	7331.15	756.84	52	AB82P1	439.04	439.04	101.12	0.00	73.02	179.09	33.43	16.11	32.66	57.20	39.27	45.13	21.69	7.32	24.19	37.93	23.05	43.37	42.71
				AB82P2	62.64	62.64	32.00	0.00															
				AB82P3	164.49	203.90	58.15	39.40															
				AB82P4	195.06	195.06	59.45	0.00															
				AB82P5	117.76	117.76	49.92	0.00															
				AB82P6	62.20	62.20	34.43	0.00															
				AB82P7	128.98	128.98	54.99	0.00															
				AB82P8	29.10	29.10	21.97	0.00															
				AB82P9	346.04	346.04	86.43	0.00															
				AB82P10	165.06	178.71	65.66	13.65															
				AB82P11	177.52	177.52	54.72	0.00															
				AB82P12	63.25	63.25	31.64	0.00															
				AB82P13	90.05	90.05	39.73	0.00															
				AB82P14	86.01	86.01	40.75	0.00															
				AB82P15	37.20	37.20	27.29	0.00															
				AB82P16	54.85	54.85	40.90	0.00															
				AB82P17	70.17	77.65	36.18	7.48															
				AB82P18	71.00	71.00	38.13	0.00															
				AB82P19	724.04	724.04	134.04	0.00															
				AB82P20	314.06	314.06	71.36	0.00															
				AB82P21	93.02	93.02	42.97	0.00															
				AB82P22	34.77	34.77	23.85	0.00															
				AB82P23	134.17	134.17	53.81	0.00															
				AB82P24	111.67	111.67	50.42	0.00															
				AB82P25	70.62	70.62	33.97	0.00															
				AB82P26	49.32	49.32	30.05	0.00															
				AB82P27	114.74	120.61	59.74	5.87															
				AB82P28	116.48	143.54	50.23	27.06															
				AB82P29	24.39	24.39	20.01	0.00															
				AB82P30	84.31	84.31	42.94	0.00															
				AB82P31	279.95	279.95	89.17	0.00															
				AB82P32	91.65	94.05	48.88	2.39															
				AB82P33	58.21	58.21	37.84	0.00															
				AB82P34	122.17	122.17	58.27	0.00															
				AB82P35	70.13	88.46	38.52	18.33															
				AB82P36	89.88	89.88	47.01	0.00															
				AB82P37	103.81	103.81	40.91	0.00															
				AB82P38	540.35	540.35	103.92	0.00															
				AB82P39	137.90	155.82	54.17	17.92															
				AB82P40	68.23	68.23	35.04	0.00															
				AB82P41	151.42	151.42	52.26	0.00															
				AB82P42	97.49	97.49	41.57	0.00															
				AB82P43	69.25	69.25	34.28	0.00															
				AB82P44	83.90	83.90	36.70	0.00															
				AB82P45	111.51	111.51	47.59	0.00															
				AB82P46	108.00	108.00	46.09	0.00															
				AB82P47	80.13	80.13	40.11	0.00															
				AB82P48	51.72	51.72	30.22	0.00															
				AB82P49	106.18	106.18	48.90	0.00															
				AB82P50	103.34	103.34	41.77	0.00															
				AB82P51	275.60	275.60	76.78	0.00															
				AB82P52	178.44	178.44	75.78	0.00															
Total per block					7211.26	7343.37	2612.64	132.11															
AB83	8482.76	913.46	52	AB83P1	448.11	448.11	94.77	0.00	58.06	22.70	33.52	14.64	56.59	141.16	24.95	57.65	35.93	38.54	83.33	172.59	36.11	48.37	89.32
				AB83P2	287.60	287.60	71.91	0.00															
				AB83P3	126.02	126.02	48.10	0.00															

				AB83P4	134.09	134.09	51.85	0.00															
				AB83P5	191.26	191.26	70.65	0.00															
				AB83P6	459.47	459.47	135.21	0.00															
				AB83P7	101.36	101.36	42.47	0.00															
				AB83P8	206.67	206.67	65.53	0.00															
				AB83P9	188.42	188.42	56.15	0.00															
				AB83P10	195.78	195.78	63.02	0.00															
				AB83P11	134.61	134.61	46.63	0.00															
				AB83P12	38.33	38.33	28.56	0.00															
				AB83P13	78.26	78.26	36.13	0.00															
				AB83P14	238.43	238.43	63.89	0.00															
				AB83P15	426.23	437.79	86.73	11.57															
				AB83P16	60.36	60.36	31.13	0.00															
				AB83P17	318.22	318.22	86.69	0.00															
				AB83P18	98.98	98.98	39.87	0.00															
				AB83P19	124.78	124.78	48.99	0.00															
				AB83P20	134.01	134.01	51.33	0.00															
				AB83P21	105.35	105.35	43.41	0.00															
				AB83P22	39.09	39.09	26.95	0.00															
				AB83P23	43.64	43.64	27.47	0.00															
				AB83P24	68.02	68.02	37.86	0.00															
				AB83P25	80.14	80.14	41.17	0.00															
				AB83P26	67.78	67.78	33.96	0.00															
				AB83P27	77.41	77.41	39.80	0.00															
				AB83P28	152.22	152.22	61.26	0.00															
				AB83P29	74.04	92.72	39.19	18.68															
				AB83P30	110.13	110.13	42.74	0.00															
				AB83P31	61.56	70.50	45.68	8.94															
				AB83P32	85.62	85.62	47.68	0.00															
				AB83P33	49.19	49.19	29.44	0.00															
				AB83P34	275.49	275.49	81.14	0.00															
				AB83P35	51.08	51.08	29.10	0.00															
				AB83P36	112.94	112.94	44.90	0.00															
				AB83P37	77.07	77.07	35.32	0.00															
				AB83P38	457.65	457.65	107.52	0.00															
				AB83P39	192.54	192.54	58.48	0.00															
				AB83P40	185.46	185.46	56.54	0.00															
				AB83P41	146.87	146.87	53.23	0.00															
				AB83P42	178.88	178.88	58.21	0.00															
				AB83P43	89.81	89.81	48.87	0.00															
				AB83P44	164.72	164.72	61.21	0.00															
				AB83P45	160.05	165.64	55.39	5.59															
				AB83P46	279.01	279.01	83.86	0.00															
				AB83P47	95.60	95.60	39.01	0.00															
				AB83P48	145.85	145.85	52.29	0.00															
				AB83P49	150.43	150.43	50.40	0.00															
				AB83P50	219.78	219.78	87.92	0.00															
				AB83P51	398.92	398.92	95.76	0.00															
				AB83P52	22.88	22.88	22.31	0.00															
Total per block					8410.21	8454.99	2857.69	44.78															

AB84	6628.52	468.80	29	AB84P1	213.78	213.78	67.95	0.00	41.70	25.33	15.63	14.00	115.34	10.83	10.75	6.13	51.46	177.62					
				AB84P2	156.76	156.76	53.98	0.00															
				AB84P3	57.09	57.09	34.44	0.00															
				AB84P4	249.31	249.31	67.03	0.00															
				AB84P5	143.88	143.88	56.29	0.00															
				AB84P6	101.48	101.48	52.52	0.00															
				AB84P7	275.46	283.14	67.28	7.68															
				AB84P8	607.41	607.41	101.43	0.00															
				AB84P9	286.72	286.72	69.86	0.00															
				AB84P10	201.53	201.53	66.25	0.00															
				AB84P11	87.00	87.00	37.48	0.00															
				AB84P12	70.18	70.18	34.54	0.00															
				AB84P13	71.69	71.69	37.48	0.00															
				AB84P14	236.05	255.47	63.67	19.41															
				AB84P15	207.50	207.50	63.08	0.00															
				AB84P16	278.93	278.93	78.30	0.00															
				AB84P17	152.59	179.56	61.95	26.97															
				AB84P18	289.99	289.99	69.90	0.00															
				AB84P19	116.89	145.39	50.11	28.50															
				AB84P20	186.94	186.94	73.45	0.00															
				AB84P21	145.56	145.56	51.43	0.00															
				AB84P22	179.18	307.80	72.18	128.62															
				AB84P23	325.07	349.28	78.53	24.21															
				AB84P24	352.49	352.49	77.09	0.00															
				AB84P25	368.64	368.64	84.12	0.00															
				AB84P26	246.15	246.15	64.63	0.00															
				AB84P27	346.33	346.33	74.52	0.00															
				AB84P28	171.46	171.46	57.90	0.00															
				AB84P29	119.37	119.37	56.72	0.00															
Total per block					6245.41	6480.81	1824.11	235.40															

AB85	2196.75	235.69	9	AB85P1	242.30	242.30	63.43	0.00	5.97	69.54	56.13	6.49	13.37	13.58	26.67	31.03	3.39	9.52					
				AB85P2	205.62	228.73	64.98	23.12															
				AB85P3	106.03	106.03	42.39	0.00															
				AB85P4	612.98	637.73	117.84	24.74															
				AB85P5	140.06	140.06	50.50	0.00															
				AB85P6	188.36	188.36	54.60	0.00															
				AB85P7	190.25	190.25	59.41	0.00															
				AB85P8	89.68	89.68	37.94	0.00															
				AB85P9	357.39	357.39	84.46	0.00															
Total per block					2132.66	2180.52	575.56	47.86															

AB86	3303.77	359.87	9	AB86P1	448.65	448.65	86.78	0.00	21.00	160.57	16.96	161.00											
				AB86P2	336.00	336.00	74.00	0.00															
				AB86P3	336.00	336.00	74.00	0.00															
				AB86P4	336.00	336.00	74.00	0.00															
				AB86P5	357.00	357.00	76.00	0.00															
				AB86P6	350.41	355.31	80.40	4.91															
				AB86P7	336.00	336.00	74.00	0.00															
				AB86P8	336.00	336.00	74.00	0.00															
				AB86P9	399.68	399.68	94.03	0.00															
Total per block					3235.73	3240.64	707.21	4.91															

AB87	7775.21	597.94	46	AB87P1	73.09	73.09	35.86	0.00	57.03	51.77	20.28	20.81	35.14	14.23	13.91	37.63	15.01	36.90	15.66	15.61	28.27	96.72	138.96
				AB87P2	203.09	235.26	63.12	32.17															
				AB87P3	123.81	123.81	49.10	0.00															
				AB87P4	432.08	432.08	88.05	0.00															
				AB87P5	126.88	126.88	49.54	0.00															
				AB87P6	240.37	240.37	62.32	0.00															
				AB87P7	436.16	436.16	94.38	0.00															
				AB87P8	226.93	226.93	62.44	0.00															
				AB87P9	353.39	353.39	79.80	0.00															
				AB87P10	260.10	260.10	66.37	0.00															
				AB87P11	480.04	480.04	104.14	0.00															
				AB87P12	94.04	94.04	40.12	0.00															
				AB87P13	47.26	47.26	33.91	0.00															
				AB87P14	87.23	87.23	40.54	0.00															
				AB87P15	78.39	78.39	41.73	0.00															
				AB87P16	123.96	123.96	44.15	0.00															
				AB87P17	53.09	53.09	31.24	0.00															
				AB87P18	76.42	76.42	38.19	0.00															
				AB87P19	94.42	94.42	41.78	0.00															
				AB87P20	87.49	87.49	41.23	0.00															
				AB87P21	401.54	401.54	83.84	0.00															
				AB87P22	193.26	245.39	65.85	52.13															
				AB87P23	133.55	133.55	46.89	0.00															
				AB87P24	103.49	103.49	42.38	0.00															
				AB87P25	100.07	100.07	43.68	0.00															
				AB87P26	152.68	152.68	57.97	0.00															
				AB87P27	152.70	156.32	74.45	3.62															
				AB87P28	103.18	103.18	41.45	0.00															
				AB87P29	105.23	105.23	43.10	0.00															
				AB87P30	239.86	239.86	61.88	0.00															
				AB87P31	136.28	170.41	57.87	34.13															
				AB87P32	255.56	255.56	68.99	0.00															
				AB87P33	83.26	83.26	37.31	0.00															
				AB87P34	394.00	394.00	90.30	0.00															
				AB87P35	103.53	103.53	40.74	0.00															

				AB87P36	128.45	128.45	45.32	0.00															
				AB87P37	93.44	93.44	39.78	0.00															
				AB87P38	150.56	170.67	54.01	20.11															
				AB87P39	41.27	41.27	25.72	0.00															
				AB87P40	147.21	147.21	53.24	0.00															
				AB87P41	150.06	150.06	53.38	0.00															
				AB87P42	91.34	91.34	39.03	0.00															
				AB87P43	152.95	152.95	62.41	0.00															
				AB87P44	76.73	76.73	36.10	0.00															
				AB87P45	90.07	90.07	45.11	0.00															
				AB87P46	116.54	116.54	43.82	0.00															
Total per block					7595.03	7737.19	2462.61	142.16															
AB88	1739.41	175.21	8	AB88P1	131.48	131.48	49.33	0.00	21.85	24.70	2.82	18.78	24.88	3.20	10.09	29.74	39.13						
				AB88P2	120.20	120.20	44.47	0.00															
				AB88P3	256.41	282.32	66.90	25.91															
				AB88P4	116.78	116.78	44.65	0.00															
				AB88P5	72.27	72.27	36.48	0.00															
				AB88P6	72.77	72.77	35.47	0.00															
				AB88P7	646.55	646.55	120.69	0.00															
				AB88P8	271.01	271.01	84.24	0.00															
Total per block					1687.47	1713.38	482.21	25.91															
AB89	6388.90	388.24	25	AB89P1	394.76	394.76	80.38	0.00	86.66	147.91	16.82	136.84											
				AB89P2	283.39	300.63	84.69	17.24															
				AB89P3	206.98	206.98	64.60	0.00															
				AB89P4	333.61	333.61	79.08	0.00															
				AB89P5	435.30	435.30	94.43	0.00															
				AB89P6	235.73	235.73	69.25	0.00															
				AB89P7	100.74	100.74	49.33	0.00															
				AB89P8	208.76	208.76	62.12	0.00															
				AB89P9	70.61	70.61	35.63	0.00															
				AB89P10	36.15	36.15	25.82	0.00															
				AB89P11	55.09	55.09	31.11	0.00															
				AB89P12	161.91	161.91	52.28	0.00															
				AB89P13	233.00	233.00	65.48	0.00															
				AB89P14	243.21	250.27	81.28	7.06															
				AB89P15	135.83	152.70	51.74	16.87															
				AB89P16	325.06	349.84	104.89	24.77															
				AB89P17	169.16	169.16	53.98	0.00															
				AB89P18	355.48	355.48	84.96	0.00															
				AB89P19	148.12	148.12	52.05	0.00															
				AB89P20	90.03	90.03	45.52	0.00															
				AB89P21	110.33	110.33	44.96	0.00															
				AB89P22	141.14	141.14	49.83	0.00															
				AB89P23	198.57	198.57	57.74	0.00															
				AB89P24	1123.18	1196.23	153.89	73.05															
				AB89P25	384.14	384.14	96.55	0.00															
Total per block					6180.28	6319.27	1671.57	138.99															
AB90	4591.16	329.42	23	AB90P1	283.28	283.28	72.47	0.00	88.21	14.32	115.01	40.23	45.37	26.28									
				AB90P2	102.48	102.48	43.64	0.00															
				AB90P3	199.00	212.65	67.43	13.65															
				AB90P4	227.04	227.04	63.18	0.00															
				AB90P5	148.91	148.91	52.71	0.00															
				AB90P6	79.81	79.81	42.85	0.00															
				AB90P7	587.67	587.67	113.80	0.00															
				AB90P8	225.59	225.59	69.29	0.00															
				AB90P9	209.41	209.41	70.61	0.00															
				AB90P10	223.04	223.04	74.45	0.00															
				AB90P11	156.41	156.41	52.31	0.00															
				AB90P12	93.43	93.43	42.23	0.00															
				AB90P13	73.40	73.40	39.77	0.00															
				AB90P14	69.95	69.95	34.74	0.00															
				AB90P15	63.09	63.09	38.94	0.00															
				AB90P16	92.12	92.12	41.80	0.00															
				AB90P17	97.15	97.15	53.53	0.00															
				AB90P18	328.38	328.38	72.58	0.00															
				AB90P19	171.50	171.50	59.25	0.00															
				AB90P20	202.02	205.03	67.03	3.00															
				AB90P21	541.18	541.18	93.03	0.00															
				AB90P22	156.12	156.12	57.20	0.00															
				AB90P23	243.54	243.54	76.14	0.00															
Total per block					4574.51	4591.16	1398.98	16.65															
AB91	651.49	121.69	4	AB91P1	202.63	202.63	57.26	0.00	23.83	44.87	8.96	44.03											
				AB91P2	117.27	117.27	47.22	0.00															
				AB91P3	187.21	196.22	57.00	9.01															
				AB91P4	129.50	129.50	45.11	0.00															
Total per block					636.61	645.62	206.60	9.01															
AB92	1828.00	226.00	1	AB92P1	1828.00	1828.00	226.00	0.00	20.00	96.00	16.00	94.00											
Total per block					1828.00	1828.00	226.00	0.00															
AB93	9031.05	699.92	27	AB93P1	945.82	945.82	156.26	0.00	52.77	174.49	15.64	43.05	19.72	17.99	8.76	15.64	39.84	68.10	78.85	23.07	51.42	15.69	75.10
				AB93P2	101.35	101.35	41.23	0.00															
				AB93P3	1026.51	1054.02	154.46	27.52															
				AB93P4	718.74	718.74	117.71	0.00															
				AB93P5	381.20	381.20	85.18	0.00															
				AB93P6	232.37	232.37	72.05	0.00															
				AB93P7	100.95	100.95	70.84	0.00															
				AB93P8	133.44	133.44	48.29	0.00															
				AB93P9	115.61	115.61	46.25	0.00															
				AB93P10	260.55	260.55	76.97	0.00															
				AB93P11	177.25	177.25	59.12	0.00															
				AB93P12	173.60	173.60	58.92	0.00															
				AB93P13	283.75	283.75	84.32	0.00															
				AB93P14	140.03	140.03	47.11	0.00															
				AB93P15	95.63	95.63	50.89	0.00															
				AB93P16	122.76	122.76	45.41	0.00															
				AB93P17	141.52	141.52	52.42	0.00															
				AB93P18	579.86	579.86	109.58	0.00															
				AB93P19	477.53	477.53	102.85	0.00															
				AB93P20	211.44	211.44	58.63	0.00															
				AB93P21	73.68	80.08	37.71	6.40															
				AB93P22	93.92	93.92	38.85	0.00															
				AB93P23	530.83	530.83	116.98	0.00															
				AB93P24	409.86	422.17	99.46	12.31															
				AB93P25	257.49	257.49	74.96	0.00															
				AB93P26	652.14	652.14	120.54	0.00															
				AB93P27	154.28	154.28	55.23	0.00															
Total per block					8592.10	8638.32	2082.21	46.22															
AB94	1739.63	186.42	3	AB94P1	1024.83	1024.83	128.01	0.00	39.81	19.13	68.88	14.99	21.65	21.97									
				AB94P2	284.53	284.53	73.27	0.00															
				AB94P3	430.27	430.27	83.51	0.00															
Total per block					1739.63	1739.63	284.78	0.00															
AB95	1548.32	155.15	1	AB95P1	531.83	531.83	122.33	0.00	47.41	92.31	5.33	10.10											
Total per block					531.83	531.83	122.33	0.00															
AB96	5582.00	426.00	1	AB96P1	5582.00	5582.00	426.00	0.00	35.00	178.00	35.00	178.00											
Total per block					5582.00	5582.00	426.00	0.00															
AB97	2710.92	347.63	14	AB97P1	151.01	151.01	52.25	0.00	32.71	31.17	17.62	12.62	14.04	19.37	51.94	17.06	6.23	29.16	12.71	9.52	10.54	82.93	
				AB97P2	215.74	215.74	67.88	0.00															
				AB97P3	195.38	195.38	66.97	0.00															
				AB97P4	48.90	48.90	29.80	0.00															
				AB97P5	182.50	182.50	56.58	0.00															
				AB97P6	148.15	148.15	49.73	0.00															
				AB97P7	362.79	362.79	87.06	0.00															
				AB97P8	420.06	420.06	86.66	0.00															
				AB97P9	297.20	297.20	92.12	0.00															
				AB97P10	177.41	177.41	54.22	0.00															
				AB97P11	47.69	47.69	30.63	0.00															
				AB97P12	144.00	144.00	48.13	0.00															
				AB97P13	153.65	153.65	49.62	0.00															
				AB97P14	134.16	134.16	47.35	0.00															
Total per block					2678.65	2678.65	819.01	0.00															

AB98	2350.82	241.52	15	AB98P1	186.43	186.43	56.95	0.00	31.86	71.94	14.19	12.71	12.04	9.27	6.82	10.25	10.03	2.86	34.07	5.28	20.20		
				AB98P2	324.38	324.38	73.77	0.00															
				AB98P3	146.49	146.49	48.65	0.00															
				AB98P4	81.59	81.59	40.04	0.00															
				AB98P5	229.13	229.13	61.56	0.00															
				AB98P6	148.91	148.91	62.12	0.00															
				AB98P7	71.78	71.78	37.34	0.00															
				AB98P8	67.15	67.15	35.04	0.00															
				AB98P9	105.98	105.98	42.08	0.00															
				AB98P10	289.57	363.81	85.67	74.24															
				AB98P11	138.27	138.27	47.38	0.00															
				AB98P12	153.68	153.68	50.84	0.00															
				AB98P13	90.13	90.13	40.49	0.00															
				AB98P14	64.87	64.87	37.87	0.00															
				AB98P15	173.53	173.53	53.59	0.00															
Total per block					2271.89	2346.13	773.39	74.24															

AB99	2308.95	277.33	12	AB99P1	134.32	134.32	46.42	0.00	19.19	21.25	6.24	29.06	3.47	13.06	10.25	6.82	9.27	50.56	16.21	14.90	8.45	68.61	
				AB99P2	108.77	108.77	42.34	0.00															
				AB99P3	131.86	131.86	54.76	0.00															
				AB99P4	107.16	107.16	45.36	0.00															
				AB99P5	116.37	116.37	48.02	0.00															
				AB99P6	255.48	255.48	69.51	0.00															
				AB99P7	729.58	729.58	166.50	0.00															
				AB99P8	140.73	140.73	48.76	0.00															
				AB99P9	144.37	144.37	53.20	0.00															
				AB99P10	97.42	97.42	41.82	0.00															
				AB99P11	86.85	86.85	40.18	0.00															
				AB99P12	241.81	241.81	70.07	0.00															
Total per block					2294.72	2294.72	726.94	0.00															

AB100	1419.21	205.77	12	AB100P1	161.16	161.16	58.25	0.00	18.65	60.79	14.90	16.21	13.22	56.19	4.49	21.31							
				AB100P2	87.82	87.82	46.32	0.00															
				AB100P3	65.37	65.37	38.48	0.00															
				AB100P4	112.96	112.96	46.05	0.00															
				AB100P5	209.69	209.69	69.66	0.00															
				AB100P6	145.69	145.69	52.33	0.00															
				AB100P7	68.60	68.60	37.84	0.00															
				AB100P8	106.93	106.93	41.43	0.00															
				AB100P9	84.60	84.60	45.58	0.00															
				AB100P10	129.83	129.83	52.76	0.00															
				AB100P11	176.85	176.85	66.26	0.00															
				AB100P12	41.41	41.41	27.14	0.00															
Total per block					1390.92	1390.92	582.10	0.00															

AB101	3322.54	370.52	15	AB101P1	200.26	200.26	88.29	0.00	31.84	72.67	31.61	10.61	10.23	3.60	9.48	16.72	4.89	5.08	8.82	59.63	23.16	11.96	70.23
				AB101P2	85.48	85.48	44.57	0.00															
				AB101P3	127.09	127.09	59.49	0.00															
				AB101P4	186.48	186.48	56.36	0.00															
				AB101P5	690.30	690.30	106.96	0.00															
				AB101P6	220.36	220.36	77.84	0.00															
				AB101P7	92.65	92.65	41.51	0.00															
				AB101P8	194.69	194.69	55.96	0.00															
				AB101P9	541.56	541.56	111.73	0.00															
				AB101P10	101.23	101.23	46.43	0.00															
				AB101P11	186.86	186.86	60.96	0.00															
				AB101P12	147.61	147.61	59.58	0.00															
				AB101P13	227.33	227.33	66.25	0.00															
				AB101P14	123.12	123.12	45.37	0.00															
				AB101P15	163.09	163.09	54.67	0.00															
Total per block					3288.10	3288.10	975.96	0.00															

AB102	5693.05	557.50	32	AB102P1	345.65	345.65	97.67	0.00	75.14	56.78	28.71	80.90	26.01	23.56	6.44	72.91	7.53	18.84	41.02	26.92	7.62	46.95	38.94
				AB102P2	536.30	536.30	122.72	0.00															
				AB102P3	468.50	468.50	112.25	0.00															
				AB102P4	33.98	33.98	24.72	0.00															
				AB102P5	35.27	35.27	26.66	0.00															
				AB102P6	18.57	18.57	17.59	0.00															
				AB102P7	174.43	174.43	57.93	0.00															
				AB102P8	202.74	202.74	59.70	0.00															
				AB102P9	109.89	109.89	53.21	0.00															
				AB102P10	61.56	61.56	32.05	0.00															
				AB102P11	76.49	76.49	43.73	0.00															
				AB102P12	210.43	210.43	65.50	0.00															
				AB102P13	132.26	132.26	53.16	0.00															
				AB102P14	206.72	206.72	63.85	0.00															
				AB102P15	71.36	71.36	38.08	0.00															
				AB102P16	107.29	107.29	42.09	0.00															
				AB102P17	18.53	18.53	17.91	0.00															
				AB102P18	114.27	114.27	53.09	0.00															
				AB102P19	942.47	942.47	135.76	0.00															
				AB102P20	63.97	63.97	33.84	0.00															
				AB102P21	170.27	170.27	57.27	0.00															
				AB102P22	152.12	173.38	53.01	21.26															
				AB102P23	511.13	681.96	109.13	170.83															
				AB102P24	32.66	32.66	30.48	0.00															
				AB102P25	166.91	166.91	70.38	0.00															
				AB102P26	30.36	30.36	24.36	0.00															
				AB102P27	41.38	41.38	41.38	0.00															
				AB102P28	15.16	15.16	15.67	0.00															
				AB102P29	32.59	32.59	25.27	0.00															
				AB102P30	10.51	10.51	14.19	0.00															
				AB102P31	146.82	146.82	61.96	0.00															
				AB102P32	202.69	202.69	69.79	0.00															
Total per block					5443.26	5635.35	1724.36																

AB103	987.70	194.27	7	AB103P1	99.23	99.23	40.80	0.00	14.28	42.44	41.77	11.68	16.59	18.64	4.88	27.87	16.11						
				AB103P2	118.26	118.26	45.11	0.00															
				AB103P3	434.88	434.88	89.77	0.00															
				AB103P4	84.63	84.63	38.51	0.00															
				AB103P5	50.76	50.76	30.10	0.00															
				AB103P6	115.73	115.73	43.73	0.00															
				AB103P7	84.22	84.22	38.27	0.00															
Total per block					987.70	987.70	326.29	0.00															

AB104	8645.53	418.26	2	AB104P1	3155.33	4795.90	310.92	1640.58	68.16	147.77	45.14	28.67	13.28	115.24									
				AB104P2	1228.09	1228.09	150.83	0.00															
Total per block					4383.42	6024.00	461.75	1640.58															

AB105	215.58	100.49	1	AB105P1	215.58	215.58	100.49	0.00	6.58	46.06	3.60	44.25											
Total per block					215.58	215.58	100.49	0.00															

AB106	203.18	76.47	1	AB106P1	203.18	203.18	76.47	0.00	7.17	31.42	7.32	30.56											
Total per block					203.18	203.18	76.47	0.00															

AB107	283.41	92.28	1	AB107P1	283.41	283.41	92.28	0.00	8.60	39.16	7.36	37.16											
Total per block					283.41	283.41	92.28	0.00															

AB108	4676.05	321.93	17	AB108P1	464.68	499.21	121.28	34.53	107.32	14.14	8.53	9.22	29.76	107.69	45.27								
				AB108P2	217.49	217.49	61.42	0.00															
				AB108P3	28.00	28.00	22.12	0.00															
				AB108P4	33.47	33.47	24.06	0.00															
				AB108P5	65.22	65.22	39.10	0.00															
				AB108P6	11.53	11.53	17.08	0.00															
				AB108P7	70.61	70.61	34.29	0.00															
				AB108P8	78.06	78.06	43.44	0.00															
				AB108P9	1179.52	1616.65	167.04	437.13															
				AB108P10	105.20	105.20	45.01	0.00															
				AB108P11	46.33	46.33	27.55	0.00															
				AB108P12	288.25	288.25	80.01	0.00															
				AB108P13	69.48	69.48	34.56	0.00															
				AB108P14	296.28	296.28	78.93	0.00															
				AB108P15	75.70	75.70	38.72	0.00															
				AB108P16	361.53	361.53	104.13	0.00															
				AB108P17	297.72	297.72	77.73	0.00															
Total per block					3689.07	4160.73	1016.46	471.66															

AB109	1096.33	163.35	2	AB109P1	645.12	645.12	110.45	0.00	16.59	66.05	16.43	64.29											

				AB109P2	433.01	451.21	87.39	18.19															
Total per block					1078.14	1096.33	197.84	18.19															
AB110	475.44	150.51	6	AB110P1	133.34	133.34	49.59	0.00	7.61	67.15	6.62	69.14											
				AB110P2	89.02	89.02	37.95	0.00															
				AB110P3	34.81	34.81	29.39	0.00															
				AB110P4	58.38	58.38	33.88	0.00															
				AB110P5	52.00	52.00	29.30	0.00															
				AB110P6	107.89	107.89	46.84	0.00															
Total per block					475.44	475.44	226.95	0.00															
AB111	469.16	142.55	3	AB111P1	206.05	206.05	69.47	0.00	7.55	63.85	7.04	64.10											
				AB111P2	141.96	141.96	53.58	0.00															
				AB111P3	121.14	121.14	48.65	0.00															
Total per block					469.16	469.16	171.70	0.00															
AB112	5219.25	396.95	23	AB112P1	114.65	114.65	58.94	0.00	59.45	34.07	14.60	23.10	22.76	20.60	47.51	39.47	30.37	57.26	47.76				
				AB112P2	37.22	37.22	28.66	0.00															
				AB112P3	73.81	73.81	46.56	0.00															
				AB112P4	268.52	268.52	68.96	0.00															
				AB112P5	256.30	256.30	65.69	0.00															
				AB112P6	518.18	518.18	105.30	0.00															
				AB112P7	786.55	786.55	134.80	0.00															
				AB112P8	338.65	338.65	74.13	0.00															
				AB112P9	519.71	519.71	94.65	0.00															
				AB112P10	113.35	113.35	45.25	0.00															
				AB112P11	356.91	356.91	102.10	0.00															
				AB112P12	106.25	106.25	62.34	0.00															
				AB112P13	57.31	57.31	31.50	0.00															
				AB112P14	91.65	91.65	49.87	0.00															
				AB112P15	131.40	131.40	54.10	0.00															
				AB112P16	125.39	125.39	59.41	0.00															
				AB112P17	417.93	417.93	96.14	0.00															
				AB112P18	203.43	203.43	57.43	0.00															
				AB112P19	534.98	534.98	125.71	0.00															
				AB112P20	83.14	83.14	47.13	0.00															
				AB112P21	31.07	31.07	22.57	0.00															
				AB112P22	40.32	40.32	32.15	0.00															
				AB112P23	12.25	12.25	16.66	0.00															
Total per block					5218.97	5218.97	1480.04	0.00															
AB113	1695.75	176.18	8	AB113P1	239.24	239.24	74.34	0.00	33.80	46.71	42.74	52.93											
				AB113P2	537.33	537.33	98.42	0.00															
				AB113P3	217.40	217.40	63.32	0.00															
				AB113P4	164.91	164.91	52.78	0.00															
				AB113P5	142.04	142.04	49.97	0.00															
				AB113P6	181.09	181.09	55.13	0.00															
				AB113P7	115.66	115.66	50.82	0.00															
				AB113P8	97.97	97.97	45.79	0.00															
Total per block					1695.65	1695.65	490.58	0.00															
AB114	5030.71	340.24	17	AB114P1	1079.24	1079.24	133.62	0.00	37.21	17.26	103.06	28.43	47.69	36.27	70.31								
				AB114P2	956.54	956.54	154.56	0.00															
				AB114P3	249.40	249.40	71.58	0.00															
				AB114P4	356.86	356.86	93.57	0.00															
				AB114P5	62.23	62.23	32.85	0.00															
				AB114P6	119.70	119.70	45.39	0.00															
				AB114P7	115.80	115.80	47.79	0.00															
				AB114P8	280.96	280.96	68.99	0.00															
				AB114P9	109.68	109.68	47.93	0.00															
				AB114P10	204.69	204.69	57.85	0.00															
				AB114P11	89.31	89.31	41.88	0.00															
				AB114P12	50.22	50.22	28.52	0.00															
				AB114P13	254.95	254.95	91.63	0.00															
				AB114P14	206.65	206.65	64.17	0.00															
				AB114P15	390.36	390.36	83.52	0.00															
				AB114P16	217.59	217.59	69.87	0.00															
				AB114P17	201.76	201.76	57.11	0.00															
Total per block					4945.91	4945.91	1190.81	0.00															
AB115	1049.79	140.62	7	AB115P1	169.48	169.48	57.21	0.00	42.35	26.10	38.87	33.30											
				AB115P2	312.62	312.62	70.78	0.00															
				AB115P3	151.77	151.77	50.69	0.00															
				AB115P4	91.01	91.01	41.46	0.00															
				AB115P5	160.01	160.01	54.46	0.00															
				AB115P6	51.85	51.85	31.12	0.00															
				AB115P7	105.23	105.23	45.83	0.00															
Total per block					1041.97	1041.97	351.56	0.00															
AB116	1518.57	155.91	1	AB116P1	1518.57	1518.57	155.91	0.00	37.90	39.02	39.50	39.49											
Total per block					1518.57	1518.57	155.91	0.00															
AB117	1533.31	161.73	2	AB117P1	1271.50	1391.22	159.13	119.72	46.03	34.93	42.77	38.00											
				AB117P2	109.34	109.34	98.51	0.00															
Total per block					1380.84	1500.56	257.64	119.72															
AB118	251.46	93.81	2	AB118P1	159.99	159.99	60.98	0.00	8.40	40.02	5.34	40.05											
				AB118P2	77.67	77.67	38.81	0.00															
Total per block					237.66	237.66	99.79	0.00															
AB119	249.87	70.01	7	AB119P1	50.60	50.60	31.33	0.00	25.20	11.71	22.03	11.06											
				AB119P2	38.68	38.68	30.32	0.00															
				AB119P3	97.97	97.97	45.80	0.00															
				AB119P4	9.95	9.95	12.67	0.00															
				AB119P5	9.95	9.95	12.67	0.00															
				AB119P6	10.52	10.52	12.99	0.00															
				AB119P7	32.06	32.06	25.22	0.00															
Total per block					249.73	249.73	170.98	0.00															
AB120	203.73	61.76	1	AB120P1	203.36	203.36	62.16	0.00	16.42	11.45	18.70	15.19											
Total per block					203.36	203.36	62.16	0.00															
AB121	916.53	130.90	3	AB121P1	348.51	348.51	85.79	0.00	42.62	22.53	41.40	24.34											
				AB121P2	259.68	259.68	82.86	0.00															
				AB121P3	88.60	88.60	44.35	0.00															
Total per block					696.80	696.80	213.01	0.00															
AB122	1480.11	165.69	8	AB122P1	306.08	306.08	95.67	0.00	48.55	32.05	51.99	33.09											
				AB122P2	103.99	103.99	42.69	0.00															
				AB122P3	190.26	190.26	60.83	0.00															
				AB122P4	158.35	158.35	64.39	0.00															
				AB122P5	159.07	159.07	73.67	0.00															
				AB122P6	92.76	92.76	39.19	0.00															
				AB122P7	149.04	149.04	50.36	0.00															
				AB122P8	124.53	124.53	50.88	0.00															
Total per block					1284.08	1284.08	477.69	0.00															
AB123	1079.72	131.53	2	AB123P1	497.93	497.93	106.14	0.00	38.85	14.69	15.92	34.79	27.29										
				AB123P2	458.75	458.75	113.21	0.00															
Total per block					956.69	956.69	219.35	0.00															
AB124	3205.68	267.07	4	AB124P1	535.62	866.23	123.53	330.61	89.81	30.11	110.52	15.92	5.35	15.36									
				AB124P2	327.34	540.23	99.97	212.89															
				AB124P3	981.80	1187.33	139.82	205.53															
				AB124P4	444.12	473.94	90.55	29.81															
Total per block					2288.88	3067.72	453.86	778.84															
AB125	4844.18	288.75	8	AB125P1	681.00	681.00	103.78	0.00	89.01	59.71	84.75	18.78	36.50										
				AB125P2	2604.82	2604.82	232.05	0.00															
				AB125P3	574.51	600.71	108.91	26.20															
				AB125P4	106.85	106.85	42.64	0.00															
				AB125P5	118.47	118.47	44.88	0.00															
				AB125P6	217.98	217.98	57.73	0.00															
				AB125P7	211.00	211.00	80.82	0.00															
				AB125P8	68.75	68.75	36.17	0.00															
Total per block					4583.37	4609.57	706.98	26.20															
AB126	5050.17	307.25	8	AB126P1	93.69	93.69	40.54	0.00	91.88	43.52	18.7833	93.04	60.02										
				AB126P2	61.57	61.57	34.79	0.00															

				AB126P3	106.42	106.42	42.47	0.00															
				AB126P4	207.97	207.97	81.85	0.00															
				AB126P5	98.66	98.66	39.61	0.00															
				AB126P6	197.50	197.50	57.36	0.00															
				AB126P7	138.50	138.50	52.35	0.00															
				AB126P8	315.41	315.41	76.78	0.00															
Total per block					1219.72	1219.72	425.76	0.00															
AB127	766.93	136.65	3	AB127P1	181.60	181.60	55.20	0.00	18.73	9.89	8.78	15.07	30.45	12.33	3.93	7.15	30.32						
				AB127P2	240.70	240.70	62.25	0.00															
				AB127P3	192.07	192.07	59.62	0.00															
Total per block					614.36	614.36	177.07	0.00															
AB128	286.40	119.75	1	AB128P1	286.40	286.40	119.75	0.00	54.70	4.83	53.37	6.85											
					286.40	286.40	119.75	0.00															
AB129	7613.30	665.12	9	AB129P1	61.43	61.43	35.06	0.00	55.41	169.81	31.87	22.10	20.30	18.48	68.42	22.13	70.54	50.36	24.77	32.66	35.55	27.42	15.31
				AB129P2	169.98	169.98	64.83	0.00															
				AB129P3	108.20	108.20	41.79	0.00															
				AB129P4	236.06	282.29	71.76	46.23															
				AB129P5	140.70	140.70	49.14	0.00															
				AB129P6	92.41	92.41	48.34	0.00															
				AB129P7	118.36	118.36	47.73	0.00															
				AB129P8	89.47	89.47	38.48	0.00															
				AB129P9	34.23	34.23	24.44	0.00															
Total per block					1050.83	1097.07	421.55	46.23															
AB130	5921.93	574.03	8	AB130P1	903.34	903.34	129.64	0.00	71.94	30.52	20.98	20.95	45.71	31.54	61.22	37.35	54.98	37.25	36.92	35.56	37.20	26.49	25.40
				AB130P2	492.68	492.68	117.86	0.00															
				AB130P3	596.13	596.13	146.57	0.00															
				AB130P4	38.54	38.54	27.35	0.00															
				AB130P5	22.80	22.80	19.65	0.00															
				AB130P6	79.08	79.08	39.24	0.00															
				AB130P7	24.81	24.81	24.85	0.00															
				AB130P8	109.46	109.46	46.22	0.00															
Total per block					2266.83	2266.83	551.38	0.00															
AB131	2310.64	281.90	1	AB131P1	372.50	372.50	80.24	0.00	17.68	111.00	20.00	119.02	14.19										
Total per block					372.50	372.50	80.24	0.00															
AB132	5374.51	402.20	22	AB132P1	68.83	68.83	36.97	0.00	24.73	31.81	11.86	25.57	9.94	8.17	18.98	26.48	12.71	11.74	25.65	40.72	36.77	34.08	83.00
				AB132P2	101.49	101.49	42.18	0.00															
				AB132P3	104.52	104.52	41.81	0.00															
				AB132P4	161.57	161.57	52.94	0.00															
				AB132P5	126.55	126.55	48.50	0.00															
				AB132P6	566.36	566.36	166.77	0.00															
				AB132P7	613.17	613.17	214.52	0.00															
				AB132P8	189.93	207.80	58.23	17.87															
				AB132P9	76.57	85.40	38.14	8.83															
				AB132P10	75.20	75.20	36.42	0.00															
				AB132P11	116.43	127.46	59.81	11.03															
				AB132P12	137.94	137.94	49.74	0.00															
				AB132P13	46.59	46.59	28.41	0.00															
				AB132P14	64.15	64.15	35.42	0.00															
				AB132P15	110.29	110.29	49.12	0.00															
				AB132P16	57.96	57.96	32.64	0.00															
				AB132P17	129.62	129.62	49.01	0.00															
				AB132P18	101.85	131.87	49.27	30.02															
				AB132P19	68.85	75.91	36.71	7.06															
				AB132P20	95.98	95.98	50.43	0.00															
				AB132P21	183.30	183.30	72.62	0.00															
				AB132P22	0.00	1138.87	193.56	1138.87															
Total per block					3197.16	4410.84	1443.24	1213.69															
AB133	3438.40	280.63	2	AB133P1	266.59	350.28	76.96	83.69	34.79	23.13	13.28	8.77	13.28	29.52	15.96	7.75	50.22	11.72	72.19				
				AB133P2	295.77	458.78	89.92	163.01															
Total per block					562.35	809.06	166.88	246.70															
AB134	3207.15	287.94	5	AB134P1	138.64	166.32	58.32	27.68	45.53	19.06	8.66	11.20	19.97	6.27	42.75	61.33	13.87	18.08	41.22				
				AB134P2	298.78	358.42	75.61	59.64															
				AB134P3	178.71	219.48	61.39	40.76															
				AB134P4	108.42	108.42	45.16	0.00															
				AB134P5	144.90	144.90	54.69	0.00															
Total per block					869.45	997.53	295.16	128.08															
AB135	747.36	120.70	3	AB135P1	178.18	178.18	55.22	0.00	22.34	41.36	20.42	36.58											
				AB135P2	155.20	155.20	52.70	0.00															
				AB135P3	414.26	414.26	86.25	0.00															
Total per block					747.64	747.64	194.16	0.00															
AB136	928.72	138.23	4	AB136P1	84.23	99.72	43.55	15.49	9.55	9.28	9.52	47.11	18.13	57.27									
				AB136P2	97.34	125.16	49.49	27.82															
				AB136P3	0.00	581.43	116.41	581.43															
				AB136P4	121.04	121.04	45.45	0.00															
Total per block					302.61	927.35	254.90	624.74															
AB137	8311.15	488.91	1	AB137P1	0.00	8311.15	488.91	8311.15	67.49	208.36	213.05												
Total per block					0.00	8311.15	488.91	8311.15															
AB138	8296.58	469.98	1	AB138P1	0.00	8296.58	469.98	8296.58	65.25	208.88	195.85												
Total per block					0.00	8296.58	469.98	8296.58															

Number of Blocks	Total Area of Blocks	Total Blocks Perimeter	Total Number of Plots		Total Built-up Area	Total Plots Area	Total Plots Perimeter	The difference between the area of the plot and the built-up area		Area of Case Study
138	444757.98	39011.64	1753		329281.60	391615.93	102802.61	62142.24		502654.8246

Case Study B - The statistic of blocks and plots in a selected area - Circle (radius 400 m with area 502654.8246 m^2)

BBID	Block Area	Block Perimeter	Number of Plots per Block	Plot ID	Built up Area	Plot Area	Plot Perimeter	The difference between the area of the plot and the built-up area	Block Dimensions														
BB1	1974.71	209.51	20	BB1P1	155.79	155.79	49.69	0.00	78.91	24.61	80.10	25.89											
				BB1P2	63.85	63.85	36.68	0.00															
				BB1P3	101.51	101.51	42.15	0.00															
				BB1P4	0.00	123.57	44.99	123.57															
				BB1P5	94.98	94.98	40.63	0.00															
				BB1P6	107.83	107.83	42.89	0.00															
				BB1P7	57.35	57.35	36.12	0.00															
				BB1P8	68.59	68.59	37.58	0.00															
				BB1P9	66.68	66.68	36.67	0.00															
				BB1P10	89.12	89.12	39.88	0.00															
				BB1P11	97.73	106.64	41.98	8.91															
				BB1P12	68.86	68.86	36.01	0.00															
				BB1P13	81.59	81.59	38.83	0.00															
				BB1P14	46.78	46.78	31.89	0.00															
				BB1P15	127.46	127.46	45.27	0.00															
				BB1P16	126.14	126.14	45.05	0.00															
				BB1P17	66.48	66.48	35.13	0.00															
				BB1P18	72.56	72.56	36.14	0.00															
				BB1P19	129.76	129.76	45.66	0.00															
				BB1P20	123.14	123.14	44.18	0.00															
Total per block					1746.17	1878.65	807.40	132.48															
BB2	2258.29	233.76	19	BB2P1	156.59	156.59	53.67	0.00	81.96	18.31	90.96	18.95	23.58										
				BB2P2	145.85	145.85	51.19	0.00															
				BB2P3	124.10	124.10	46.66	0.00															
				BB2P4	101.96	115.05	44.52	13.09															
				BB2P5	114.90	125.55	47.59	10.65															
				BB2P6	129.70	129.70	49.97	0.00															
				BB2P7	131.07	146.83	59.08	15.76															
				BB2P8	0.00	276.38	70.42	276.38															
				BB2P9	109.97	109.97	42.78	0.00															
				BB2P10	85.33	85.33	38.72	0.00															
				BB2P11	72.63	72.63	36.09	0.00															
				BB2P12	83.02	83.02	39.50	0.00															
				BB2P13	105.40	108.00	43.37	2.59															
				BB2P14	130.84	130.84	46.20	0.00															
				BB2P15	58.31	58.31	35.35	0.00															
				BB2P16	70.11	70.11	37.31	0.00															
				BB2P17	186.41	186.41	58.64	0.00															
				BB2P18	47.89	47.89	33.16	0.00															
				BB2P19	64.59	72.86	38.31	8.26															
Total per block					1918.66	2245.40	872.53	326.74															
BB3	1348.30	148.40	6	BB3P1	110.08	136.28	49.98	26.20	28.37	36.38	36.51	47.15											
				BB3P2	157.33	157.33	51.43	0.00															
				BB3P3	107.83	107.83	41.05	0.00															
				BB3P4	58.37	58.37	33.18	0.00															
				BB3P5	79.76	79.76	38.33	0.00															
				BB3P6	62.72	62.72	36.16	0.00															
Total per block					576.09	602.29	250.12	26.20															
BB4	2928.49	289.28	9	BB4P1	82.80	105.52	42.44	22.72	47.66	56.50	36.50	23.86	14.25	9.51	11.79	12.12	16.11	28.10	32.87				
				BB4P2	103.23	108.60	43.35	5.37															
				BB4P3	137.67	137.67	57.93	0.00															
				BB4P4	184.33	184.33	58.95	0.00															
				BB4P5	125.63	125.63	49.82	0.00															
				BB4P6	148.24	148.24	48.88	0.00															
				BB4P7	256.28	278.19	74.54	21.91															
				BB4P8	145.36	157.97	52.44	12.61															
				BB4P9	175.13	202.82	56.51	27.69															
Total per block					1358.66	1448.96	484.86	90.30															
BB5	5957.57	366.90	20	BB5P1	249.13	278.21	65.28	29.09	32.29	65.34	71.17	69.12	40.30	32.32	56.36								
				BB5P2	202.78	225.43	60.09	22.65															
				BB5P3	117.94	144.01	48.68	26.07															
				BB5P4	343.49	648.32	117.43	304.83															
				BB5P5	634.87	1177.95	144.39	543.09															
				BB5P6	174.12	931.98	124.64	757.85															
				BB5P7	757.41	1207.15	139.73	449.74															
				BB5P8	65.01	65.01	32.46	0.00															
				BB5P9	130.17	130.17	45.96	0.00															
				BB5P10	52.39	52.39	31.02	0.00															
				BB5P11	94.99	94.99	39.14	0.00															
				BB5P12	110.14	110.14	42.17	0.00															
				BB5P13	96.22	103.43	40.68	7.21															
				BB5P14	87.15	87.15	37.43	0.00															
				BB5P15	92.46	92.46	38.86	0.00															
				BB5P16	90.36	103.60	42.84	13.24															
				BB5P17	167.24	176.01	53.59	8.77															
				BB5P18	99.62	99.62	44.27	0.00															
				BB5P19	99.12	112.12	42.90	13.00															
				BB5P20	104.43	113.54	45.31	9.12															
Total per block					3769.02	5953.67	1236.86	2184.65															
BB6	1261.33	155.49	8	BB6P1	76.35	76.35	38.29	0.00	26.40	56.06	21.58	51.46											
				BB6P2	90.10	99.38	40.92	9.28															
				BB6P3	100.47	111.03	42.53	10.56															
				BB6P4	114.95	114.95	43.03	0.00															
				BB6P5	398.32	500.32	87.96	101.99															
				BB6P6	104.87	104.87	40.97	0.00															
				BB6P7	90.70	105.29	41.07	14.59															
				BB6P8	138.29	144.42	47.73	6.12															
Total per block					1114.06	1256.61	382.51	142.55															
BB7	1022.43	125.45	6	BB7P1	249.37	263.93	67.90	14.57	31.37	33.52	30.45	30.11											
				BB7P2	162.92	162.92	53.15	0.00															
				BB7P3	131.92	134.96	48.68	3.04															
				BB7P4	103.55	112.69	44.71	9.14															
				BB7P5	174.88	178.07	54.94	3.19															
				BB7P6	146.53	159.63	50.53	13.10															
Total per block					969.17	1012.20	319.92	43.03															
BB8	1442.44	203.16	17	BB8P1	67.88	67.88	33.22	0.00	12.18	89.34	20.21	52.68	28.76										
				BB8P2	66.67	66.67	35.02	0.00															
				BB8P3	134.28	176.14	55.27	41.86															
				BB8P4	124.09	137.64	52.17	13.56															
				BB8P5	117.36	117.36	50.16	0.00															
				BB8P6	63.79	63.79	34.45	0.00															
				BB8P7	97.36	110.25	42.90	12.89															
				BB8P8	124.31	124.31	44.80	0.00															
				BB8P9	202.43	227.23	61.72	24.80															
				BB8P10	38.70	38.70	25.43	0.00															
				BB8P11	39.67	39.67	27.19	0.00															
				BB8P12	41.42	41.42	26.50	0.00															
				BB8P13	25.07	25.07	20.92	0.00															
				BB8P14	48.41	48.41	29.32	0.00															
				BB8P15	0.00	60.61	31.92	60.61															
				BB8P16	35.27	35.27	23.91	0.00															
				BB8P17	54.92	54.92	34.12	0.00															
Total per block					1281.64	1435.35	629.00	153.72															
BB9	1505.18	206.85	21	BB9P1	107.91	112.05	48.65	4.14	26.04	27.53	51.56	17.19	42.60	7.13	34.80								
				BB9P2	240.89	240.89	72.16	0.00															
				BB9P3	44.35	44.35	28.19	0.00															
				BB9P4	47.80	53.37	30.11	5.57															
				BB9P5	43.88	43.88	27.67	0.00															
				BB9P6	41.70	41.70	27.13	0.00															
				BB9P7	36.42	36.42	25.88	0.00															
				BB9P8	46.58	52.07	29.47	5.49															
				BB9P9	49.87	49.87	29.00	0.00															
				BB9P10	46.27	46.27	28.71	0.00															
				BB9P11	32.71	32.71	25.50	0.00															
				BB9P12	115.86	115.86	43.60	0.00															
				BB9P13	47.17	47.17	28.56	0.00															

				BB9P14	40.07	40.07	27.09	0.00															
				BB9P15	35.22	35.22	26.04	0.00															
				BB9P16	45.00	45.00	28.36	0.00															
				BB9P17	58.50	58.50	31.11	0.00															
				BB9P18	37.62	44.68	28.09	7.06															
				BB9P19	146.06	146.06	71.25	0.00															
				BB9P20	108.61	108.61	42.41	0.00															
				BB9P21	107.39	107.39	44.55	0.00															
Total per block					1479.88	1502.14	743.54	22.26															
BB10	501.46	104.59	9	BB10P1	50.64	50.64	29.49	0.00	45.64	7.13	38.77	13.05											
				BB10P2	26.60	29.76	23.09	3.17															
				BB10P3	53.65	61.33	34.18	7.68															
				BB10P4	40.27	51.52	28.75	11.25															
				BB10P5	67.79	67.79	33.97	0.00															
				BB10P6	70.56	80.59	38.91	10.03															
				BB10P7	53.10	53.10	29.17	0.00															
				BB10P8	50.35	50.35	28.41	0.00															
				BB10P9	53.73	53.73	29.35	0.00															
Total per block					466.69	498.82	275.32	32.13															
BB11	3175.20	233.59	10	BB11P1	286.73	294.43	71.95	7.69	53.24	57.97	71.20	51.18											
				BB11P2	59.94	59.94	32.57	0.00															
				BB11P3	48.44	53.65	31.58	5.21															
				BB11P4	43.29	49.09	30.92	5.80															
				BB11P5	54.77	54.77	32.13	0.00															
				BB11P6	55.69	67.05	34.50	11.36															
				BB11P7	84.01	84.01	38.48	0.00															
				BB11P8	550.34	621.80	104.92	71.46															
				BB11P9	0.00	969.50	128.38	969.50															
				BB11P10	921.79	921.79	135.54	0.00															
Total per block					2105.00	3176.02	640.96	1071.01															
BB12	2390.43	228.81	14	BB12P1	235.44	254.23	64.64	18.79	27.05	68.43	49.91	83.42											
				BB12P2	105.59	105.59	41.14	0.00															
				BB12P3	87.20	115.65	43.51	28.45															
				BB12P4	87.52	119.71	44.11	32.20															
				BB12P5	207.72	219.24	60.57	11.52															
				BB12P6	152.19	180.52	56.40	28.33															
				BB12P7	136.84	147.61	48.71	10.76															
				BB12P8	147.35	147.35	47.34	0.00															
				BB12P9	173.26	173.26	58.41	0.00															
				BB12P10	214.15	232.60	66.40	18.45															
				BB12P11	184.34	202.63	61.67	18.29															
				BB12P12	170.78	170.78	56.56	0.00															
				BB12P13	113.39	113.39	45.90	0.00															
				BB12P14	182.39	192.11	56.09	9.72															
Total per block					2198.16	2374.67	751.45	176.51															
BB13	4556.24	350.26	23	BB13P1	113.14	122.50	45.00	9.36	31.12	140.54	33.08	145.51											
				BB13P2	104.13	112.50	45.00	8.37															
				BB13P3	127.91	112.50	45.00	-15.41															
				BB13P4	99.26	112.50	45.00	13.24															
				BB13P5	79.61	112.50	45.00	32.89															
				BB13P6	108.08	112.50	45.00	4.42															
				BB13P7	109.76	112.50	45.00	2.74															
				BB13P8	87.78	112.50	45.00	24.73															
				BB13P9	103.60	112.50	45.00	8.90															
				BB13P10	109.74	112.50	45.00	2.76															
				BB13P11	99.59	112.50	45.00	12.91															
				BB13P12	146.30	193.18	65.94	46.88															
				BB13P13	74.58	74.58	33.80	0.00															
				BB13P14	122.50	112.50	45.00	-10.00															
				BB13P15	120.15	112.50	45.00	-7.65															
				BB13P16	71.54	71.54	33.32	0.00															
				BB13P17	51.47	51.47	29.25	0.00															
				BB13P18	41.18	41.18	26.95	0.00															
				BB13P19	114.45	112.50	45.00	-1.95															
				BB13P20	116.73	112.50	45.00	-4.23															
				BB13P21	44.22	112.50	45.00	68.28															
				BB13P22	114.11	112.50	45.00	-1.61															
				BB13P23	107.17	112.50	45.00	5.33															
Total per block					2267.00	2466.95	999.26	199.95															
BB14	3037.12	229.21	13	BB14P1	433.34	468.34	85.84	35.00	49.55	60.38	55.35	63.94											
				BB14P2	440.46	443.94	83.40	3.48															
				BB14P3	85.62	85.62	37.31	0.00															
				BB14P4	52.02	52.02	29.26	0.00															
				BB14P5	98.81	116.45	54.27	17.65															
				BB14P6	180.13	185.13	57.79	4.99															
				BB14P7	175.32	197.67	59.79	22.35															
				BB14P8	190.82	195.88	59.41	5.06															
				BB14P9	166.63	175.91	55.91	9.28															
				BB14P10	83.66	550.00	95.03	466.34															
				BB14P11	147.93	147.93	56.62	0.00															
				BB14P12	171.27	208.85	61.75	37.58															
				BB14P13	172.78	207.24	61.47	34.46															
Total per block					2398.78	3034.97	797.85	636.20															
BB15	4972.10	475.68	46	BB15P1	32.31	32.31	22.99	0.00	58.05	38.82	26.20	28.49	88.06	48.21	61.55	30.13	28.16	30.28	25.51	12.21			
				BB15P2	37.52	37.52	24.86	0.00															
				BB15P3	174.56	174.56	65.98	0.00															
				BB15P4	144.49	184.86	64.83	40.37															
				BB15P5	166.95	166.95	62.00	0.00															
				BB15P6	88.19	88.19	39.58	0.00															
				BB15P7	78.57	78.57	40.22	0.00															
				BB15P8	83.72	83.72	41.35	0.00															
				BB15P9	95.23	99.82	46.81	4.59															
				BB15P10	94.78	94.78	45.67	0.00															
				BB15P11	120.92	120.92	62.46	0.00															
				BB15P12	42.72	42.72	29.94	0.00															
				BB15P13	45.69	45.69	32.51	0.00															
				BB15P14	72.98	72.98	40.79	0.00															
				BB15P15	50.86	50.86	35.19	0.00															
				BB15P16	82.50	82.50	46.95	0.00															
				BB15P17	58.45	58.45	39.86	0.00															
				BB15P18	116.86	127.52	48.27	10.65															
				BB15P19	92.82	92.82	56.83	0.00															
				BB15P20	57.34	57.34	41.84	0.00															
				BB15P21	155.76	166.44	69.19	10.67															
				BB15P22	157.36	157.36	63.92	0.00															
				BB15P23	155.87	162.16	70.82	6.30															
				BB15P24	543.63	574.85	106.43	31.22															
				BB15P25	339.88	339.88	74.79	0.00															
				BB15P26	107.75	107.75	43.25	0.00															
				BB15P27	107.09	107.09	44.70	0.00															
				BB15P28	96.71	96.71	51.43	0.00															
				BB15P29	72.31	72.31	41.33	0.00															
				BB15P30	31.72	35.19	25.68	3.47															
				BB15P31	97.29	97.29	43.80	0.00															
				BB15P32	50.01	50.01	30.10	0.00															
				BB15P33	49.70	49.70	29.95	0.00															
				BB15P34	0.00	81.02	38.17	81.02															
				BB15P35	44.45	44.45	28.14	0.00															
				BB15P36	63.04	63.04	31.81	0.00															
				BB15P37	34.21	34.21	24.94	0.00															
				BB15P38	49.76	49.76	34.04	0.00															
				BB15P39	83.61	105.96	42.87	22.34															
				BB15P40	113.50	121.32	46.63	7.82															
				BB15P41	86.87	94.63	46.44	7.77															
				BB15P42	71.97	71.97	35.90	0.00															
				BB15P43	177.18	177.18	54.08	0.00															
				BB15P44	165.14	165.14	55.07	0.00															
				BB15P45	37.79	37.79	27.90	0.00															
				BB15P46	99.49	99.49	40.83	0.00															
Total per block					4729.57	4955.80	2091.16	226.22															
BB16	3998.48	419.41	27	BB16P1	295.69	411.51	85.95	115.82	24.79	82.59	21.35	19.05	7.02	13.74	57.75	73.13	10.78	37.13	44.33	9.40	18.35		
				BB16P2	103.16	103.16	44.42	0.00															
				BB16P3	41.42	41.42	27.24	0.00															
				BB16P4	72.03	72.03	34.41	0.00															
				BB16P5	78.22	78.22	36.42	0.00															
				BB16P6	35.15	35.15	28.37	0.00															
				BB16P7	85.30	85.30	40.53	0.00															

				BB16P8	81.22	81.22	41.58	0.00															
				BB16P9	82.78	82.78	35.93	0.00															
				BB16P10	77.10	77.10	41.68	0.00															
				BB16P11	142.08	147.90	57.34	5.82															
				BB16P12	162.06	167.44	57.62	5.38															
				BB16P13	75.34	75.34	42.05	0.00															
				BB16P14	49.07	49.07	36.48	0.00															
				BB16P15	0.00	111.68	43.32	111.68															
				BB16P16	0.00	300.98	76.69	300.98															
				BB16P17	183.92	191.16	68.97	7.23															
				BB16P18	759.60	776.67	123.16	17.07															
				BB16P19	131.90	131.90	50.12	0.00															
				BB16P20	0.00	170.28	63.06	170.28															
				BB16P21	96.96	96.96	46.86	0.00															
				BB16P22	72.29	150.47	60.12	78.18															
				BB16P23	55.28	67.34	36.03	12.06															
				BB16P24	96.28	117.39	44.91	21.11															
				BB16P25	104.82	109.71	43.44	4.89															
				BB16P26	95.26	95.26	41.26	0.00															
				BB16P27	97.84	97.84	41.22	0.00															
Total per block					3074.76	3925.27	1349.17	850.51															
BB17	2331.51	281.71	25	BB17P1	107.60	107.60	42.59	0.00	22.74	78.49	20.90	13.19	5.98	31.89	77.11	13.68	9.44	8.27					
				BB17P2	102.11	102.11	44.22	0.00															
				BB17P3	70.72	70.72	36.81	0.00															
				BB17P4	48.97	58.56	33.90	9.60															
				BB17P5	67.73	74.28	35.86	6.54															
				BB17P6	101.14	101.14	41.73	0.00															
				BB17P7	44.18	44.18	31.70	0.00															
				BB17P8	62.05	77.14	36.39	15.09															
				BB17P9	40.66	40.66	29.01	0.00															
				BB17P10	58.26	58.26	31.06	0.00															
				BB17P11	97.66	97.66	38.94	0.00															
				BB17P12	56.27	56.27	29.74	0.00															
				BB17P13	179.97	194.19	57.34	14.22															
				BB17P14	127.47	176.88	58.56	49.41															
				BB17P15	48.69	66.03	41.01	17.34															
				BB17P16	96.81	96.81	39.66	0.00															
				BB17P17	98.01	98.01	40.60	0.00															
				BB17P18	73.32	73.32	39.05	0.00															
				BB17P19	58.32	66.69	34.46	8.37															
				BB17P20	94.20	109.25	42.67	15.06															
				BB17P21	35.23	35.23	25.87	0.00															
				BB17P22	100.81	122.33	44.40	21.52															
				BB17P23	136.15	136.15	45.95	0.00															
				BB17P24	153.67	153.67	57.58	0.00															
				BB17P25	109.47	109.47	44.96	0.00															
Total per block					2169.48	2326.61	1004.07	157.14															
BB18	1910.57	247.42	26	BB18P1	0.00	93.55	41.46	93.55	23.26	100.18	12.72	33.22	77.78										
				BB18P2	29.26	29.26	25.01	0.00															
				BB18P3	41.88	41.88	27.87	0.00															
				BB18P4	25.60	25.60	23.09	0.00															
				BB18P5	48.13	58.45	30.90	10.31															
				BB18P6	45.86	56.32	30.76	10.46															
				BB18P7	86.84	114.89	42.85	28.05															
				BB18P8	105.46	115.26	43.01	9.80															
				BB18P9	0.00	104.01	42.02	104.01															
				BB18P10	54.03	66.56	36.90	12.54															
				BB18P11	169.63	169.63	52.83	0.00															
				BB18P12	76.08	76.08	35.58	0.00															
				BB18P13	79.25	79.25	36.48	0.00															
				BB18P14	74.64	74.64	36.03	0.00															
				BB18P15	0.00	48.41	31.04	48.41															
				BB18P16	36.49	51.13	32.12	14.64															
				BB18P17	41.59	49.53	31.73	7.94															
				BB18P18	144.04	144.04	48.73	0.00															
				BB18P19	46.69	46.69	30.37	0.00															
				BB18P20	51.69	51.69	31.70	0.00															
				BB18P21	78.53	87.54	38.61	9.01															
				BB18P22	63.85	79.73	37.25	15.88															
				BB18P23	42.78	42.78	28.98	0.00															
				BB18P24	0.00	78.37	36.32	78.37															
				BB18P25	68.71	68.71	33.59	0.00															
				BB18P26	56.24	56.24	31.72	0.00															
Total per block					1467.27	1910.23	916.93	442.96															
BB19	1791.75	331.40	17	BB19P1	181.40	181.40	54.56	0.00	11.52	100.08	3.15	9.96	3.70	38.39	22.94	50.07	17.09	3.30	71.21				
				BB19P2	88.02	88.02	39.03	0.00															
				BB19P3	96.74	96.74	40.64	0.00															
				BB19P4	86.07	86.07	37.46	0.00															
				BB19P5	110.82	110.82	43.82	0.00															
				BB19P6	108.73	108.73	42.98	0.00															
				BB19P7	106.30	118.71	43.94	12.41															
				BB19P8	70.58	70.58	38.98	0.00															
				BB19P9	115.17	144.37	51.42	29.20															
				BB19P10	118.71	125.61	45.21	6.90															
				BB19P11	85.41	85.41	43.85	0.00															
				BB19P12	89.65	89.65	45.79	0.00															
				BB19P13	142.79	142.79	50.68	0.00															
				BB19P14	101.66	101.66	40.44	0.00															
				BB19P15	57.86	57.86	29.76	0.00															
				BB19P16	90.98	90.98	46.05	0.00															
				BB19P17	78.42	86.19	46.69	7.76															
Total per block					1729.33	1785.60	741.30	56.27															
BB20	5289.16	599.35	41	BB20P1	150.50	150.50	50.14	0.00	24.86	98.45	20.93	25.55	20.08	21.63	9.64	46.87	54.39	22.15	27.24	89.02	14.45	61.26	62.83
				BB20P2	357.72	357.72	76.67	0.00															
				BB20P3	103.13	103.13	49.29	0.00															
				BB20P4	140.51	140.51	52.25	0.00															
				BB20P5	67.11	67.11	35.04	0.00															
				BB20P6	93.18	93.18	39.24	0.00															
				BB20P7	89.30	103.37	40.90	14.07															
				BB20P8	117.16	127.55	46.50	10.40															
				BB20P9	117.76	117.76	56.21	0.00															
				BB20P10	185.11	185.11	63.51	0.00															
				BB20P11	107.03	107.03	41.48	0.00															
				BB20P12	94.48	101.82	40.52	7.35															
				BB20P13	137.06	137.06	47.46	0.00															
				BB20P14	90.09	90.09	39.35	0.00															
				BB20P15	93.09	95.62	39.24	2.53															
				BB20P16	63.72	63.72	32.56	0.00															
				BB20P17	70.13	70.13	34.38	0.00															
				BB20P18	145.44	145.44	54.11	0.00															
				BB20P19	117.60	117.60	43.43	0.00															
				BB20P20	243.50	243.50	65.95	0.00															
				BB20P21	80.26	86.75	39.00	6.49															
				BB20P22	87.91	87.91	37.90	0.00															
				BB20P23	97.57	97.57	39.67	0.00															
				BB20P24	107.08	122.14	52.51	15.06															
				BB20P25	146.63	152.94	52.29	6.31															
				BB20P26	0.00	270.38	66.33	270.38															
				BB20P27	128.41	128.41	49.89	0.00															
				BB20P28	0.00	317.37	108.27	317.37															
				BB20P29	160.32	160.32	53.65	0.00															
				BB20P30	114.34	133.43	48.55	19.09															
				BB20P31	72.43	72.43	37.77	0.00															
				BB20P32	158.46	158.46	50.78	0.00															
				BB20P33	114.69	114.69	44.09	0.00															
				BB20P34	73.68	73.68	36.67	0.00															
				BB20P35	44.04	44.04	29.59	0.00															
				BB20P36	52.04	52.04	31.79	0.00															
				BB20P37	59.88	70.01	36.18	10.13															
				BB20P38	83.51	83.51	37.75	0.00															
				BB20P39	160.08	178.49	65.55	18.41															
				BB20P40	66.97	66.97	37.30	0.00															
				BB20P41	251.66	251.66	64.79	0.00															
Total per block					4643.54	5341.13	1968.53	697.59															
BB21	8714.17	502.04	9	BB21P1	740.05	740.05	164.90	0.00	29.49	196.30	74.87	162.77	8.63	10.00	4.86	15.11							
				BB21P2	792.61	792.61	161.68	0.00															
				BB21P3	435.44	435.44	86.56	0.00															
				BB21P4	836.76	836.76	177.23	0.00															
				BB21P5	756.57	756.57	167.12	0.00															

				BB21P6	757.13	757.13	167.46	0.00															
				BB21P7	183.29	944.91	201.83	761.62															
				BB21P8	725.71	2243.19	268.25	1517.48															
				BB21P9	396.03	396.03	206.01	0.00															
Total per block					5623.59	7902.70	1601.05	2279.11															
BB22	9994.47	807.19	18	BB22P1	73.00	73.00	44.50	0.00	31.52	64.66	48.80	70.63	19.65	23.80	25.72	77.66	169.26	84.07	83.22	46.06	62.13		
				BB22P2	744.97	744.97	164.27	0.00															
				BB22P3	767.78	767.78	167.60	0.00															
				BB22P4	181.36	181.36	103.38	0.00															
				BB22P5	132.92	141.71	58.25	8.80															
				BB22P6	114.59	121.27	49.10	6.68															
				BB22P7	102.10	107.16	44.49	5.07															
				BB22P8	481.93	481.93	114.60	0.00															
				BB22P9	609.52	756.55	127.34	147.02															
				BB22P10	185.42	185.42	58.35	0.00															
				BB22P11	47.08	47.08	28.84	0.00															
				BB22P12	140.73	140.73	49.44	0.00															
				BB22P13	428.60	556.39	103.51	127.79															
				BB22P14	783.14	783.14	164.47	0.00															
				BB22P15	764.24	764.24	163.29	0.00															
				BB22P16	713.33	713.33	159.63	0.00															
				BB22P17	350.30	350.30	77.39	0.00															
				BB22P18	750.05	750.05	166.55	0.00															
Total per block					7371.06	7666.41	1845.00	295.36															
BB23	1339.52	149.70	2	BB23P1	337.00	337.00	76.00	0.00	42.02	28.74	21.99	23.80	19.65	13.56									
				BB23P2	330.00	330.00	73.00	0.00															
Total per block					667.00	667.00	149.00	0.00															
BB24	723.68	111.85	1	BB24P1	0.00	723.68	111.85	723.68	33.62	32.00	18.51	27.72											
Total per block					0.00	723.68	111.85	723.68															
BB25	2374.46	240.78	5	BB25P1	0.00	894.98	122.32	894.98	33.38	19.64	4.43	20.14	3.11	36.98	26.54	14.37	37.39	11.22	33.58				
				BB25P2	283.90	329.41	91.84	45.51															
				BB25P3	307.03	307.03	83.64	0.00															
				BB25P4	276.32	276.32	70.64	0.00															
				BB25P5	220.99	220.99	59.75	0.00															
Total per block					1088.24	2028.74	428.19	940.50															
BB26	5132.40	411.81	24	BB26P1	259.36	259.36	65.43	0.00	40.04	122.27	71.47	43.06	62.37	72.59									
				BB26P2	284.90	284.90	68.64	0.00															
				BB26P3	354.39	354.39	106.84	0.00															
				BB26P4	86.22	132.93	46.26	46.71															
				BB26P5	238.08	285.37	67.83	47.29															
				BB26P6	156.17	156.17	52.16	0.00															
				BB26P7	158.12	158.12	54.88	0.00															
				BB26P8	199.98	199.98	60.11	0.00															
				BB26P9	100.19	100.19	46.36	0.00															
				BB26P10	223.22	233.09	62.09	9.87															
				BB26P11	200.91	207.86	61.72	6.95															
				BB26P12	287.45	287.45	70.33	0.00															
				BB26P13	193.42	240.44	67.55	47.02															
				BB26P14	259.22	329.40	73.99	70.18															
				BB26P15	239.63	239.63	64.28	0.00															
				BB26P16	178.49	180.64	56.10	2.14															
				BB26P17	193.10	197.35	57.74	4.25															
				BB26P18	158.72	183.41	57.61	24.69															
				BB26P19	164.26	194.50	58.62	30.24															
				BB26P20	132.62	186.08	58.87	53.46															
				BB26P21	222.35	222.35	68.65	0.00															
				BB26P22	145.10	145.10	49.25	0.00															
				BB26P23	162.41	162.41	51.71	0.00															
				BB26P24	139.99	139.99	50.08	0.00															
Total per block					4738.31	5081.11	1477.09	342.80															
BB27	1683.86	179.18	12	BB27P1	148.57	168.91	51.33	20.34	25.49	63.42	26.00	64.26											
				BB27P2	129.53	130.00	46.00	0.47															
				BB27P3	128.73	130.00	46.00	1.27															
				BB27P4	112.71	130.00	46.00	17.29															
				BB27P5	129.87	130.00	46.00	0.13															
				BB27P6	149.11	149.11	48.94	0.00															
				BB27P7	149.11	149.11	48.94	0.00															
				BB27P8	129.87	130.00	46.00	0.13															
				BB27P9	127.07	130.00	46.00	2.93															
				BB27P10	129.94	130.00	46.00	0.06															
				BB27P11	130.24	130.00	46.00	-0.24															
				BB27P12	172.82	172.82	51.84	0.00															
Total per block					1637.56	1679.95	569.05	42.39															
BB28	1672.22	177.31	12	BB28P1	167.16	167.16	51.28	0.00	27.62	61.55	25.67	62.47											
				BB28P2	106.87	130.00	46.00	23.13															
				BB28P3	117.67	130.00	46.00	12.33															
				BB28P4	120.01	130.00	46.00	9.99															
				BB28P5	101.68	130.00	46.00	28.32															
				BB28P6	148.94	148.94	48.29	0.00															
				BB28P7	148.48	148.48	48.13	0.00															
				BB28P8	130.00	130.00	46.00	0.00															
				BB28P9	130.00	130.00	46.00	0.00															
				BB28P10	118.32	130.00	46.00	11.68															
				BB28P11	107.47	130.00	46.00	22.53															
				BB28P12	145.54	165.54	50.59	20.00															
Total per block					1542.12	1670.11	566.28	127.99															
BB29	1361.67	175.23	13	BB29P1	136.54	136.54	46.36	0.00	18.75	68.37	21.6343	66.47											
				BB29P2	89.53	100.00	40.00	10.47															
				BB29P3	86.45	100.00	40.00	13.55															
				BB29P4	100.00	100.00	40.00	0.00															
				BB29P5	100.00	100.00	40.00	0.00															
				BB29P6	137.24	137.24	45.57	0.00															
				BB29P7	128.55	128.55	44.61	0.00															
				BB29P8	100.00	100.00	40.00	0.00															
				BB29P9	100.00	100.00	40.00	0.00															
				BB29P10	94.90	100.00	40.00	5.10															
				BB29P11	100.00	100.00	40.00	0.00															
				BB29P12	39.00	66.00	34.00	27.00															
				BB29P13	69.63	69.63	34.30	0.00															
Total per block					1281.84	1337.96	524.84	56.12															
BB30	3305.34	313.33	21	BB30P1	131.85	131.85	45.20	0.00	20.94	69.80	26.66	36.53	49.35	110.05									
				BB30P2	0.00	110.00	42.00	110.00															
				BB30P3	105.51	110.00	42.00	4.49															
				BB30P4	54.00	66.00	34.00	12.00															
				BB30P5	44.00	44.00	30.00	0.00															
				BB30P6	66.11	66.11	34.02	0.00															
				BB30P7	55.00	55.00	32.00	0.00															
				BB30P8	184.10	189.02	60.01	4.92															
				BB30P9	110.00	110.00	42.00	0.00															
				BB30P10	285.45	418.49	84.21	133.04															
				BB30P11	615.87	809.17	115.44	193.30															
				BB30P12	294.95	294.95	70.93	0.00															
				BB30P13	119.64	255.30	68.00	135.66															
				BB30P14	47.12	50.00	30.00	2.88															
				BB30P15	50.00	50.00	30.00	0.00															
				BB30P16	110.00	110.00	42.00	0.00															
				BB30P17	100.00	100.00	40.00	0.00															
				BB30P18	108.07	108.07	47.50	0.00															
				BB30P19	100.00	100.00	40.00	0.00															
				BB30P20	39.50	50.00	30.00	10.50															
				BB30P21	72.61	72.61	34.59	0.00															
Total per block					2693.79	3300.57	993.89	606.78															
BB31	2471.56	261.03	24	BB31P1	111.28	111.28	41.61	0.00	28.24	103.33	20.87	28.13	80.45										
				BB31P2	78.00	78.00	38.00	0.00															
				BB31P3	91.00	91.00	40.00	0.00															
				BB31P4	78.00	78.00	38.00	0.00															
				BB31P5	78.00	78.00	38.00	0.00															
				BB31P6	91.00	91.00	40.00	0.00															
				BB31P7	78.00	78.00	38.00	0.00															
				BB31P8	104.00	104.00	42.00	0.00															
				BB31P9	78.00	78.00	38.00	0.00															
				BB31P10	78.00	78.00	38.00	0.00															
				BB31P11	104.45	109.31	42.10	4.87															
				BB31P12	458.39	484.43	87.85	26.04															

				BB31P13	72.03	76.54	36.96	4.51															
				BB31P14	88.10	97.42	40.34	9.32															
				BB31P15	115.05	115.05	43.77	0.00															
				BB31P16	64.50	72.00	36.00	7.50															
				BB31P17	72.00	72.00	36.00	0.00															
				BB31P18	72.08	84.00	38.00	11.93															
				BB31P19	76.91	72.00	36.00	-4.91															
				BB31P20	72.00	72.00	36.00	0.00															
				BB31P21	84.00	84.00	38.00	0.00															
				BB31P22	72.00	72.00	36.00	0.00															
				BB31P23	96.00	96.00	40.00	0.00															
				BB31P24	83.46	96.72	41.08	13.26															
Total per block					2396.24	2468.76	979.71	72.51															
BB32	2526.45	255.39	20	BB32P1	91.00	91.00	40.00	0.00	26.61	98.53	26.57	103.68											
				BB32P2	78.00	78.00	38.00	0.00															
				BB32P3	78.00	78.00	38.00	0.00															
				BB32P4	90.65	97.65	41.00	7.00															
				BB32P5	56.86	56.86	34.90	0.00															
				BB32P6	117.00	117.00	44.00	0.00															
				BB32P7	90.00	90.00	40.00	0.00															
				BB32P8	125.74	125.74	46.04	0.00															
				BB32P9	153.77	153.77	50.11	0.00															
				BB32P10	332.17	332.17	74.31	0.00															
				BB32P11	146.37	146.37	50.58	0.00															
				BB32P12	84.26	90.64	38.39	6.38															
				BB32P13	82.75	82.75	37.78	0.00															
				BB32P14	75.46	80.36	37.45	4.90															
				BB32P15	56.73	56.73	32.99	0.00															
				BB32P16	69.00	69.00	35.00	0.00															
				BB32P17	57.39	57.39	33.00	0.00															
				BB32P18	46.11	46.11	31.00	0.00															
				BB32P19	71.16	71.16	36.01	0.00															
				BB32P20	66.00	66.00	35.00	0.00															
Total per block					1968.43	1986.72	813.56	18.29															
BB33	2534.49	258.53	11	BB33P1	74.00	84.00	38.00	10.00	25.00	105.64	25.93	101.96											
				BB33P2	84.00	84.00	38.00	0.00															
				BB33P3	61.87	61.87	34.97	0.00															
				BB33P4	84.07	84.07	38.01	0.00															
				BB33P5	74.04	74.04	36.94	0.00															
				BB33P6	66.00	66.00	35.00	0.00															
				BB33P7	734.44	938.54	131.82	204.11															
				BB33P8	72.46	82.46	38.37	10.00															
				BB33P9	73.47	73.47	38.06	0.00															
				BB33P10	75.31	75.31	37.91	0.00															
				BB33P11	65.00	65.00	36.00	0.00															
Total per block					1464.66	1688.76	503.09	224.11															
BB34	2205.37	244.72	5	BB34P1	127.15	132.00	46.00	4.85	22.00	100.14	24.36	98.22											
				BB34P2	110.00	110.00	42.00	0.00															
				BB34P3	692.92	692.92	107.23	0.00															
				BB34P4	110.00	110.00	42.00	0.00															
				BB34P5	127.50	132.00	46.00	4.50															
Total per block					1167.57	1176.92	283.23	9.35															
BB35	2042.92	237.52	3	BB35P1	539.95	539.95	92.19	0.00	21.18	97.09	21.25	98.00											
				BB35P2	121.96	121.96	44.99	0.00															
				BB35P3	87.68	119.41	44.26	31.73															
Total per block					749.60	781.32	181.44	31.73															
BB36	3763.33	269.59	1	BB36P1	257.46	257.46	62.81	0.00	41.18	95.27	39.91	93.24											
Total per block					257.46	257.46	62.81	0.00															
BB37	1495.93	163.31	4	BB37P1	1037.98	1037.98	146.35	0.00	54.07	27.81	54.18	27.25											
				BB37P2	92.42	92.42	41.37	0.00															
				BB37P3	90.95	94.58	39.41	3.63															
				BB37P4	246.81	246.81	73.57	0.00															
Total per block					1468.16	1471.79	300.70	3.63															
BB38	885.02	140.19	7	BB38P1	437.23	449.48	88.14	12.25	21.74	32.08	27.37	32.20	6.74	10.52	9.53								
				BB38P2	93.98	93.98	41.52	0.00															
				BB38P3	118.64	118.64	44.21	0.00															
				BB38P4	66.22	66.22	32.66	0.00															
				BB38P5	46.52	46.52	26.96	0.00															
				BB38P6	51.60	51.60	29.13	0.00															
				BB38P7	56.51	56.51	30.47	0.00															
Total per block					870.69	882.94	293.10	12.25															
BB39	749.03	135.88	11	BB39P1	64.36	64.36	32.37	0.00	26.65	30.28	26.20	18.37	12.87	13.29	8.22								
				BB39P2	45.88	45.88	27.53	0.00															
				BB39P3	47.60	47.60	28.19	0.00															
				BB39P4	66.14	66.14	33.20	0.00															
				BB39P5	81.23	81.23	40.09	0.00															
				BB39P6	98.63	98.63	42.61	0.00															
				BB39P7	68.00	68.00	37.13	0.00															
				BB39P8	73.82	73.82	35.39	0.00															
				BB39P9	49.40	49.40	29.63	0.00															
				BB39P10	62.20	62.20	31.62	0.00															
				BB39P11	64.36	64.36	32.37	0.00															
Total per block					721.62	721.62	370.14	0.00															
BB40	1707.70	175.55	10	BB40P1	505.18	656.87	103.11	151.69	55.74	32.26	54.02	33.53											
				BB40P2	173.96	318.54	76.24	144.59															
				BB40P3	196.80	196.80	56.23	0.00															
				BB40P4	0.00	87.18	37.66	87.18															
				BB40P5	59.54	59.54	31.56	0.00															
				BB40P6	57.53	57.53	30.66	0.00															
				BB40P7	56.11	56.11	30.10	0.00															
				BB40P8	103.13	103.13	45.49	0.00															
				BB40P9	104.54	104.54	45.40	0.00															
				BB40P10	61.07	61.07	34.07	0.00															
Total per block					1317.85	1701.31	490.52	383.45															
BB41	5640.49	403.66	27	BB41P1	213.09	227.66	61.46	14.56	38.41	140.42	33.63	181.09	10.12										
				BB41P2	360.40	360.40	80.42	0.00															
				BB41P3	465.21	580.88	107.70	115.68															
				BB41P4	114.04	114.04	48.46	0.00															
				BB41P5	74.68	74.68	43.35	0.00															
				BB41P6	63.96	447.57	98.43	383.61															
				BB41P7	101.55	119.34	43.73	17.79															
				BB41P8	86.62	86.62	37.56	0.00															
				BB41P9	308.64	673.39	123.90	364.75															
				BB41P10	126.89	126.89	47.23	0.00															
				BB41P11	132.49	132.49	46.85	0.00															
				BB41P12	548.72	548.72	103.61	0.00															
				BB41P13	63.93	63.93	34.12	0.00															
				BB41P14	46.22	46.22	27.97	0.00															
				BB41P15	63.77	63.77	32.55	0.00															
				BB41P16	152.28	152.28	48.76	0.00															
				BB41P17	97.89	97.89	45.38	0.00															
				BB41P18	166.03	166.03	56.60	0.00															
				BB41P19	200.19	200.19	60.23	0.00															
				BB41P20	74.75	74.75	38.18	0.00															
				BB41P21	54.71	65.74	35.53	11.03															
				BB41P22	125.28	125.28	45.12	0.00															
				BB41P23	159.73	159.73	61.65	0.00															
				BB41P24	62.87	62.87	36.67	0.00															
				BB41P25	425.26	448.09	92.11	22.83															
				BB41P26	175.47	244.97	67.35	69.50															
				BB41P27	163.51	163.51	52.10	0.00															
Total per block					4628.14	5627.90	1577.01	999.77															
BB42	4002.87	318.99	22	BB42P1	153.71	153.71	52.78	0.00	135.60	3.54	15.29	4.01	25.56	103.05	31.94								
				BB42P2	107.36	107.36	49.63	0.00															
				BB42P3	257.02	273.96	68.75	16.94															
				BB42P4	176.56	198.55	58.56	22.00															
				BB42P5	129.70	150.14	53.64	20.44															
				BB42P6	207.57	207.57	58.61	0.00															
				BB42P7	0.00	117.19	49.92	117.19															
				BB42P8	127.38	127.38	50.74	0.00															
				BB42P9	107.93	107.93	47.49	0.00															
				BB42P10	125.30	139.78	50.35	14.48															
				BB42P11	124.18	130.46	48.35	6.28															

				BB42P12	0.00	568.30	106.28	568.30															
				BB42P13	102.98	102.98	44.26	0.00															
				BB42P14	276.76	344.61	74.20	67.85															
				BB42P15	79.17	119.46	48.99	40.30															
				BB42P16	111.77	111.77	47.61	0.00															
				BB42P17	0.00	100.98	45.40	100.98															
				BB42P18	0.00	220.40	60.97	220.40															
				BB42P19	138.22	143.03	50.85	4.81															
				BB42P20	194.31	194.31	57.10	0.00															
				BB42P21	175.17	185.34	54.55	10.17															
				BB42P22	172.25	172.25	53.04	0.00															
Total per block					2767.30	3977.45	1232.07	1210.15															

BB43	5415.12	389.16	23	BB43P1	49.60	49.60	28.95	0.00	98.14	7.64	10.61	3.79	30.09	4.18	85.28	12.17	41.20	19.20	19.99	57.75			
				BB43P2	15.02	15.02	15.54	0.00															
				BB43P3	395.52	395.52	170.38	0.00															
				BB43P4	421.28	1002.52	127.08	581.24															
				BB43P5	495.38	495.38	100.45	0.00															
				BB43P6	565.49	565.49	98.30	0.00															
				BB43P7	175.04	194.02	58.66	18.98															
				BB43P8	115.23	115.23	48.62	0.00															
				BB43P9	0.00	1703.49	274.10	1703.49															
				BB43P10	60.73	60.73	32.99	0.00															
				BB43P11	43.98	43.98	30.17	0.00															
				BB43P12	62.64	62.64	33.40	0.00															
				BB43P13	50.06	50.06	30.72	0.00															
				BB43P14	87.61	87.61	37.20	0.00															
				BB43P15	56.60	84.54	47.15	27.94															
				BB43P16	65.05	65.05	33.90	0.00															
				BB43P17	35.12	35.12	24.26	0.00															
				BB43P18	95.90	95.90	43.18	0.00															
				BB43P19	68.95	68.95	34.17	0.00															
				BB43P20	62.88	69.31	33.60	6.43															
				BB43P21	46.47	46.47	28.69	0.00															
				BB43P22	44.58	44.58	28.96	0.00															
				BB43P23	45.97	57.51	31.04	11.55															
Total per block					3059.09	5408.71	1391.53	2349.62															

BB44	1737.71	184.25	20	BB44P1	74.25	74.25	35.82	0.00	56.71	32.07	59.14	36.32											
				BB44P2	143.14	143.14	48.66	0.00															
				BB44P3	158.54	158.54	49.78	0.00															
				BB44P4	97.83	97.83	46.32	0.00															
				BB44P5	58.70	58.70	31.17	0.00															
				BB44P6	35.73	35.73	26.76	0.00															
				BB44P7	56.47	56.47	38.34	0.00															
				BB44P8	83.74	91.59	44.27	7.85															
				BB44P9	105.36	113.09	46.90	7.73															
				BB44P10	51.78	51.78	28.79	0.00															
				BB44P11	73.33	73.33	35.51	0.00															
				BB44P12	44.77	44.77	27.16	0.00															
				BB44P13	46.89	46.89	27.17	0.00															
				BB44P14	107.90	107.90	45.30	0.00															
				BB44P15	124.52	140.46	49.22	15.94															
				BB44P16	66.27	66.27	34.14	0.00															
				BB44P17	44.50	44.50	28.97	0.00															
				BB44P18	49.25	49.25	29.34	0.00															
				BB44P19	92.83	92.83	40.77	0.00															
				BB44P20	0.00	176.57	59.71	176.57															
Total per block					1515.81	1723.91	774.09	208.10															

BB45	776.67	113.63	10	BB45P1	49.94	49.94	30.03	0.00	26.07	27.91	27.31	32.34											
				BB45P2	162.58	186.26	57.18	23.69															
				BB45P3	107.77	107.77	43.76	0.00															
				BB45P4	41.78	41.78	29.78	0.00															
				BB45P5	47.64	47.64	30.94	0.00															
				BB45P6	86.22	92.92	40.34	6.70															
				BB45P7	69.43	69.43	34.17	0.00															
				BB45P8	43.82	43.82	27.68	0.00															
				BB45P9	63.96	63.96	34.15	0.00															
				BB45P10	62.33	62.33	32.68	0.00															
Total per block					735.47	765.85	360.71	30.38															

BB46	1001.17	122.72	1	BB46P1	1001.17	1001.17	122.72	0.00	33.92	28.21	32.10	28.49											
Total per block					1001.17	1001.17	122.72	0.00															

BB47	1442.78	163.07	4	BB47P1	0.00	481.80	90.99	481.80	53.03	28.85	55.69	25.49											
				BB47P2	442.34	470.81	93.54	28.48															
				BB47P3	302.91	302.91	76.83	0.00															
				BB47P4	168.07	175.04	56.61	6.97															
Total per block					913.32	1430.56	317.96	517.24															

BB48	1445.55	161.35	13	BB48P1	166.92	182.44	57.34	15.51	53.52	25.09	52.24	30.51											
				BB48P2	119.02	123.64	43.87	4.62															
				BB48P3	118.35	118.35	43.98	0.00															
				BB48P4	75.56	75.56	35.82	0.00															
				BB48P5	74.19	80.65	36.79	6.46															
				BB48P6	83.98	89.79	38.73	5.81															
				BB48P7	62.12	62.12	31.44	0.00															
				BB48P8	31.58	31.58	24.28	0.00															
				BB48P9	147.77	147.77	48.71	0.00															
				BB48P10	80.37	80.37	38.33	0.00															
				BB48P11	197.45	208.02	58.50	10.58															
				BB48P12	201.88	207.47	58.02	5.59															
				BB48P13	31.35	31.35	22.46	0.00															
Total per block					1390.53	1439.11	538.27	48.58															

BB49	1613.95	174.42	20	BB49P1	75.02	83.46	37.50	8.44	55.17	29.60	55.49	34.16											
				BB49P2	260.76	260.76	73.84	0.00															
				BB49P3	65.79	65.79	33.64	0.00															
				BB49P4	43.08	46.43	27.51	3.35															
				BB49P5	44.56	44.56	26.98	0.00															
				BB49P6	30.32	33.51	24.06	3.18															
				BB49P7	45.62	47.36	28.41	1.74															
				BB49P8	54.15	54.15	30.74	0.00															
				BB49P9	49.51	49.51	29.56	0.00															
				BB49P10	79.26	79.26	35.81	0.00															
				BB49P11	49.81	49.81	30.76	0.00															
				BB49P12	256.59	256.59	72.30	0.00															
				BB49P13	52.15	52.15	30.04	0.00															
				BB49P14	42.21	42.21	25.92	0.00															
				BB49P15	71.94	71.94	35.58	0.00															
				BB49P16	72.38	72.38	35.56	0.00															
				BB49P17	74.00	74.00	36.88	0.00															
				BB49P18	77.06	77.06	37.00	0.00															
				BB49P19	75.37	75.37	36.09	0.00															
				BB49P20	71.91	71.91	35.54	0.00															
Total per block					1591.47	1608.18	723.71	16.71															

BB50	2197.27	195.38	11	BB50P1	63.05	63.05	32.22	0.00	54.65	39.96	55.63	44.70											
				BB50P2	198.05	221.83	65.62	23.77															
				BB50P3	890.93	1465.54	173.19	574.61															
				BB50P4	48.03	48.03	28.48	0.00															
				BB50P5	53.01	53.01	30.42	0.00															
				BB50P6	32.34	32.34	25.63	0.00															
				BB50P7	38.27	38.27	26.89	0.00															
				BB50P8	73.71	73.71	35.06	0.00															
				BB50P9	80.15	80.15	36.45	0.00															
				BB50P10	0.00	61.04	31.78	61.04															
				BB50P11	57.33	57.33	31.06	0.00															
Total per block					1534.87	2194.30	516.80	659.42															

BB51	1426.74	164.56	5	BB51P1	350.37	350.37	73.93	0.00	58.31	36.49	45.69	24.07											
				BB51P2	163.09	163.09	54.60	0.00															
				BB51P3	619.56	678.42	112.74	58.86															
				BB51P4	47.93	47.93	28.24	0.00															
				BB51P5	0.00	185.11	56.10	185.11															
Total per block					1180.96	1424.92	325.61	243.97															

BB52	2102.35	295.40	9	BB52P1	336.65	336.65	76.50	0.00	7.24	61.34	20.41	24.98	10.06	6.79	5.32	27.12	25.24	21.16	19.76	12.18	17.84	19.08	16.88
				BB52P2	275.72	375.11	88.37	99.39															
				BB52P3	73.91	73.91	36.33	0.00															
				BB52P4	220.72	220.72	75.61	0.00															
				BB52P5	149.39	171.56	54.64	22.17															
				BB52P6	442.06	476.01	99.70	33.95															

				BB52P7	169.81	169.81	51.23	0.00															
				BB52P8	82.06	82.06	43.99	0.00															
				BB52P9	192.85	192.85	55.21	0.00															
Total per block					1943.17	2098.68	581.57	155.51															
BB53	1231.56	145.03	14	BB53P1	98.10	98.10	42.10	0.00	32.42	34.58	35.40	42.64											
				BB53P2	95.62	95.62	39.65	0.00															
				BB53P3	64.51	64.51	33.20	0.00															
				BB53P4	67.24	67.24	33.55	0.00															
				BB53P5	0.00	77.06	38.58	77.06															
				BB53P6	82.30	82.30	38.58	0.00															
				BB53P7	79.12	79.12	36.26	0.00															
				BB53P8	73.73	73.73	35.99	0.00															
				BB53P9	247.41	247.41	68.98	0.00															
				BB53P10	63.29	63.29	33.45	0.00															
				BB53P11	61.92	61.92	31.35	0.00															
				BB53P12	83.01	83.01	41.43	0.00															
				BB53P13	51.27	51.27	34.59	0.00															
				BB53P14	69.60	69.60	37.31	0.00															
Total per block					1137.12	1214.18	545.00	77.06															
BB54	2536.27	253.88	15	BB54P1	130.48	130.48	45.33	0.00	78.75	14.88	12.18	10.83	19.17	83.42	34.66								
				BB54P2	542.25	542.25	98.82	0.00															
				BB54P3	544.78	583.22	102.74	38.44															
				BB54P4	370.67	370.67	92.03	0.00															
				BB54P5	211.62	211.62	66.76	0.00															
				BB54P6	43.66	43.66	29.98	0.00															
				BB54P7	56.53	56.53	31.39	0.00															
				BB54P8	58.93	58.93	33.35	0.00															
				BB54P9	72.67	72.67	35.65	0.00															
				BB54P10	97.17	97.17	41.11	0.00															
				BB54P11	40.43	40.43	28.37	0.00															
				BB54P12	42.17	42.17	28.64	0.00															
				BB54P13	69.40	69.40	34.78	0.00															
				BB54P14	66.97	66.97	33.64	0.00															
				BB54P15	144.65	149.70	49.03	5.05															
Total per block					2492.40	2535.89	751.63	43.49															
BB55	693.05	111.41	6	BB55P1	283.25	303.58	77.21	20.33	33.65	18.00	36.87	22.89											
				BB55P2	63.55	63.55	32.80	0.00															
				BB55P3	85.86	85.86	37.51	0.00															
				BB55P4	78.43	78.43	36.59	0.00															
				BB55P5	66.37	66.37	33.94	0.00															
				BB55P6	86.46	86.46	37.27	0.00															
Total per block					663.91	684.23	255.31	20.33															
BB56	4365.29	414.93	49	BB56P1	334.90	334.90	75.93	0.00	21.00	91.95	23.51	65.13	42.24	168.90									
				BB56P2	58.05	58.05	32.48	0.00															
				BB56P3	33.23	33.23	24.33	0.00															
				BB56P4	43.80	43.80	27.74	0.00															
				BB56P5	122.98	122.98	46.08	0.00															
				BB56P6	46.82	46.82	30.23	0.00															
				BB56P7	76.18	76.18	34.78	0.00															
				BB56P8	60.45	60.45	32.26	0.00															
				BB56P9	51.83	51.83	30.33	0.00															
				BB56P10	0.00	46.32	27.96	46.32															
				BB56P11	162.30	173.84	52.35	11.54															
				BB56P12	157.14	168.28	54.50	11.13															
				BB56P13	192.02	459.12	109.27	267.10															
				BB56P14	85.89	85.89	37.46	0.00															
				BB56P15	41.39	49.71	28.87	8.32															
				BB56P16	49.32	49.32	28.43	0.00															
				BB56P17	99.30	103.75	41.74	4.45															
				BB56P18	100.83	100.83	46.22	0.00															
				BB56P19	52.88	52.88	29.53	0.00															
				BB56P20	64.16	64.16	32.23	0.00															
				BB56P21	21.55	21.55	18.80	0.00															
				BB56P22	114.90	114.90	43.60	0.00															
				BB56P23	84.11	87.18	38.10	3.07															
				BB56P24	75.98	75.98	35.25	0.00															
				BB56P25	67.05	67.05	33.20	0.00															
				BB56P26	64.60	64.60	32.77	0.00															
				BB56P27	76.39	76.39	36.52	0.00															
				BB56P28	48.63	48.63	30.33	0.00															
				BB56P29	47.77	47.77	32.48	0.00															
				BB56P30	127.56	148.33	50.20	20.76															
				BB56P31	61.76	69.94	35.37	8.17															
				BB56P32	55.70	60.40	33.39	4.70															
				BB56P33	98.41	98.41	40.09	0.00															
				BB56P34	59.26	59.26	34.74	0.00															
				BB56P35	96.60	96.60	41.31	0.00															
				BB56P36	67.50	67.50	33.71	0.00															
				BB56P37	52.29	52.29	29.36	0.00															
				BB56P38	50.69	50.69	28.53	0.00															
				BB56P39	56.86	56.86	30.29	0.00															
				BB56P40	42.56	42.56	26.84	0.00															
				BB56P41	73.34	73.34	35.27	0.00															
				BB56P42	92.48	92.48	38.48	0.00															
				BB56P43	45.03	45.03	28.94	0.00															
				BB56P44	64.73	64.73	33.34	0.00															
				BB56P45	91.96	91.96	38.76	0.00															
				BB56P46	64.71	64.71	32.42	0.00															
				BB56P47	60.62	60.62	31.49	0.00															
				BB56P48	67.91	67.91	33.25	0.00															
				BB56P49	134.25	134.25	48.10	0.00															
Total per block					3898.69	4284.26	1827.62	385.57															
BB57	2180.49	231.60	22	BB57P1	56.75	56.75	30.14	0.00	30.55	83.36	21.85	95.85											
				BB57P2	42.62	42.62	27.70	0.00															
				BB57P3	0.00	74.65	40.26	74.65															
				BB57P4	125.69	125.69	46.87	0.00															
				BB57P5	150.05	163.59	55.55	13.55															
				BB57P6	67.45	67.45	40.98	0.00															
				BB57P7	89.76	89.76	43.10	0.00															
				BB57P8	106.00	106.00	43.99	0.00															
				BB57P9	301.67	301.67	76.56	0.00															
				BB57P10	88.31	88.31	37.79	0.00															
				BB57P11	93.53	93.53	39.85	0.00															
				BB57P12	59.45	59.45	33.66	0.00															
				BB57P13	80.57	80.57	38.48	0.00															
				BB57P14	71.52	71.52	35.21	0.00															
				BB57P15	91.52	91.52	40.53	0.00															
				BB57P16	57.03	57.03	34.20	0.00															
				BB57P17	54.89	54.89	34.37	0.00															
				BB57P18	48.17	48.17	32.92	0.00															
				BB57P19	57.99	57.99	35.79	0.00															
				BB57P20	74.84	106.49	42.50	31.65															
				BB57P21	220.35	246.36	63.24	26.01															
				BB57P22	72.98	80.10	37.58	7.12															
Total per block					2011.13	2164.10	911.30	152.97															
BB58	1067.30	147.59	7	BB58P1	490.32	490.32	86.87	0.00	19.51	55.64	19.05	53.40											
				BB58P2	63.07	63.07	32.14	0.00															
				BB58P3	267.81	267.81	66.50	0.00															
				BB58P4	63.24	63.24	32.19	0.00															
				BB58P5	0.00	50.88	29.71	50.88															
				BB58P6	47.43	47.43	27.93	0.00															
				BB58P7	79.54	79.54	36.69	0.00															
Total per block					1011.41	1062.29	312.04	50.88															
BB59	1911.58	254.06	20	BB59P1	107.42	107.42	41.35	0.00	94.71	7.33	11.70	11.74	105.60	22.98									
				BB59P2	115.07	115.07	43.46	0.00															
				BB59P3	43.91	43.91	30.74	0.00															
				BB59P4	200.52	211.42	66.41	10.90															
				BB59P5	172.06	172.06	59.15	0.00															
				BB59P6	146.35	162.00	54.43	15.65															
				BB59P7	57.53	60.78	35.34	3.25															
				BB59P8	58.38	58.38	35.65	0.00															
				BB59P9	116.01	123.78	45.27	7.77															
				BB59P10	71.58	71.58	34.77	0.00															
				BB59P11	66.95	66.95	33.81	0.00															
				BB59P12	30.26	30.26	22.17	0.00															
				BB59P13	75.53	75.53	36.27	0.00															
				BB59P14	64.03	64.03	33.95	0.00															

				BB59P15	78.65	78.65	37.54	0.00															
				BB59P16	65.02	65.02	32.47	0.00															
				BB59P17	82.15	82.15	37.19	0.00															
				BB59P18	70.57	75.17	41.82	4.59															
				BB59P19	141.89	141.89	53.35	0.00															
				BB59P20	104.41	104.41	41.48	0.00															
Total per block					1868.27	1910.43	816.61	42.16															

BB60	3835.64	393.55	36	BB60P1	95.81	100.72	43.41	4.91	172.15	16.35	12.03	158.18	34.84										
				BB60P2	126.02	149.26	49.39	23.24															
				BB60P3	86.04	86.04	39.35	0.00															
				BB60P4	86.18	86.18	40.94	0.00															
				BB60P5	65.02	65.02	35.20	0.00															
				BB60P6	46.33	46.33	30.45	0.00															
				BB60P7	43.86	43.86	30.24	0.00															
				BB60P8	0.00	60.34	32.46	60.34															
				BB60P9	64.19	64.19	32.72	0.00															
				BB60P10	63.53	63.53	32.26	0.00															
				BB60P11	56.30	56.30	30.57	0.00															
				BB60P12	55.25	55.25	30.60	0.00															
				BB60P13	92.98	95.39	39.74	2.41															
				BB60P14	75.20	75.20	35.66	0.00															
				BB60P15	68.10	86.15	37.09	18.05															
				BB60P16	59.70	59.70	31.26	0.00															
				BB60P17	70.37	75.37	35.24	5.00															
				BB60P18	96.42	101.93	45.22	5.51															
				BB60P19	96.06	96.06	46.74	0.00															
				BB60P20	81.63	87.19	41.91	5.56															
				BB60P21	69.23	69.23	34.33	0.00															
				BB60P22	77.46	77.46	36.18	0.00															
				BB60P23	98.00	98.00	40.34	0.00															
				BB60P24	85.13	85.13	37.58	0.00															
				BB60P25	59.28	66.01	34.09	6.73															
				BB60P26	94.89	94.89	40.02	0.00															
				BB60P27	64.32	69.73	35.03	5.41															
				BB60P28	66.35	66.35	33.99	0.00															
				BB60P29	60.45	60.45	32.60	0.00															
				BB60P30	34.96	34.96	28.72	0.00															
				BB60P31	100.83	102.84	40.41	2.00															
				BB60P32	55.48	55.48	31.54	0.00															
				BB60P33	111.39	111.39	42.66	0.00															
				BB60P34	61.73	61.73	34.82	0.00															
				BB60P35	104.79	112.38	43.33	7.59															
				BB60P36	91.90	100.38	42.20	8.47															
Total per block					2665.15	2820.39	1328.29	155.24															

BB61	379.71	145.17	2	BB61P1	0.00	189.79	57.60	189.79	68.83	63.57	8.04	4.73											
				BB61P2	144.43	151.16	65.17	6.73															
Total per block					144.43	340.96	122.76	196.52															

BB62	1744.51	268.37	5	BB62P1	0.00	515.66	93.36	515.66	113.81	23.91	58.16	9.67	62.83										
				BB62P2	595.00	595.00	128.00	0.00															
				BB62P3	0.00	152.11	53.92	152.11															
				BB62P4	54.00	54.00	30.00	0.00															
				BB62P5	0.00	71.37	50.40	71.37															
Total per block					649.00	1388.15	355.68	739.14															

BB63	6549.91	385.22	2	BB63P1	736.48	1381.25	146.96	644.76	50.83	141.34	39.33	8.04	34.75	13.84	56.55	4.16	36.39						
				BB63P2	0.00	5153.66	309.38	5153.66															
Total per block					736.48	6534.91	456.34	5798.42															

BB64	460.08	84.66	4	BB64P1	112.21	112.21	42.33	0.00	22.88	21.83	21.46	18.50											
				BB64P2	144.04	144.04	51.62	0.00															
				BB64P3	92.24	92.24	45.25	0.00															
				BB64P4	97.47	111.59	42.78	14.12															
Total per block					445.95	460.08	181.98	14.12															

BB65	2795.59	281.44	22	BB65P1	83.12	97.57	39.22	14.45	25.87	118.60	23.75	113.22											
				BB65P2	89.75	89.75	43.05	0.00															
				BB65P3	114.35	140.49	48.06	26.14															
				BB65P4	43.66	43.66	32.71	0.00															
				BB65P5	39.40	39.40	32.23	0.00															
				BB65P6	95.28	95.28	41.47	0.00															
				BB65P7	84.38	84.38	39.16	0.00															
				BB65P8	98.76	98.76	42.32	0.00															
				BB65P9	166.55	166.55	52.42	0.00															
				BB65P10	233.11	244.85	69.63	11.74															
				BB65P11	407.77	407.77	82.55	0.00															
				BB65P12	269.24	269.24	70.46	0.00															
				BB65P13	156.16	156.16	61.05	0.00															
				BB65P14	109.02	109.02	41.84	0.00															
				BB65P15	79.44	79.44	37.56	0.00															
				BB65P16	83.68	83.68	38.11	0.00															
				BB65P17	170.92	170.92	52.54	0.00															
				BB65P18	146.05	150.68	49.67	4.63															
				BB65P19	72.93	72.93	36.04	0.00															
				BB65P20	50.00	50.00	30.80	0.00															
				BB65P21	67.63	67.63	35.08	0.00															
				BB65P22	58.05	58.05	32.95	0.00															
Total per block					2719.24	2776.20	1008.91	56.96															

BB66	17195.34	601.72	7	BB66P1	5841.83	12498.38	481.54	6656.55	38.45	176.28	156.96	230.02											
				BB66P2	130.46	130.46	52.13	0.00															
				BB66P3	258.51	258.51	65.93	0.00															
				BB66P4	3547.22	3577.22	253.21	30.00															
				BB66P5	169.33	169.33	52.76	0.00															
				BB66P6	271.77	271.77	66.22	0.00															
				BB66P7	283.25	283.25	69.53	0.00															
Total per block					10502.38	17188.93	1041.32	6686.55															

BB67	915.63	141.35	5	BB67P1	165.11	165.11	58.80	0.00	8.17	37.61	4.90	4.09	33.57	10.47	42.54								
				BB67P2	111.07	111.07	51.10	0.00															
				BB67P3	190.96	190.96	60.16	0.00															
				BB67P4	374.03	386.27	80.49	12.24															
				BB67P5	64.89	64.89	34.84	0.00															
Total per block					906.06	918.30	285.39	12.24															

BB68	2474.55	348.24	23	BB68P1	95.94	95.94	39.79	0.00	25.12	72.48	6.14	19.99	5.94	50.07	17.89	60.17	5.65	8.23	3.16	73.40			
				BB68P2	35.57	35.57	24.72	0.00															
				BB68P3	189.67	206.57	58.09	16.90															
				BB68P4	57.77	57.77	38.67	0.00															
				BB68P5	135.01	135.01	50.03	0.00															
				BB68P6	134.17	150.70	51.81	16.53															
				BB68P7	132.33	156.57	52.75	24.24															
				BB68P8	108.25	108.25	50.49	0.00															
				BB68P9	45.37	45.37	27.88	0.00															
				BB68P10	57.16	57.16	34.49	0.00															
				BB68P11	66.94	66.94	36.67	0.00															
				BB68P12	107.90	107.90	42.89	0.00															
				BB68P13	132.15	132.15	47.63	0.00															
				BB68P14	224.44	228.60	61.99	4.16															
				BB68P15	111.09	115.93	44.77	4.84															
				BB68P16	178.17	178.17	53.05	0.00															
				BB68P17	66.71	66.71	32.44	0.00															
				BB68P18	53.06	53.06	29.63	0.00															
				BB68P19	134.93	134.93	48.57	0.00															
				BB68P20	124.70	140.50	48.87	15.80															
				BB68P21	83.32	83.32	37.46	0.00															
				BB68P22	43.80	43.80	27.42	0.00															
				BB68P23	65.59	65.59	33.18	0.00															
Total per block					2384.01	2466.46	973.29	82.45															

BB69	1219.18	251.21	13	BB69P1	61.48	61.48	33.89	0.00	16.49	74.13	31.89	18.16	13.74	3.49	93.33								
				BB69P2	42.31	42.31	28.96	0.00															
				BB69P3	94.41	94.41	40.40	0.00															
				BB69P4	68.24	68.24	37.88	0.00															
				BB69P5	53.29	53.29	30.33	0.00															
				BB69P6	62.54	62.54	33.05	0.00															
				BB69P7	105.09	105.09	42.98	0.00															
				BB69P8	163.86	163.86	53.24	0.00															
				BB69P9	128.52	128.52	46.08	0.00															
				BB69P10	114.49	114.49	43.56	0.00															
				BB69P11	134.90	134.90	47.60	0.00															
				BB69P12	116.04	116.04	44.51	0.00															

				BB69P13	67.37	71.35	35.41	3.98															
Total per block					1212.53	1216.52	517.89	3.98															

BB70	3507.87	378.72	43	BB70P1	91.34	91.34	37.75	0.00	16.25	37.73	25.32	22.40	22.02	60.11	21.02	16.50	39.60	17.34	20.37	20.23	20.38	20.31	19.14
				BB70P2	68.05	68.05	34.41	0.00															
				BB70P3	75.89	75.89	37.50	0.00															
				BB70P4	51.81	51.81	31.80	0.00															
				BB70P5	45.31	45.31	31.41	0.00															
				BB70P6	49.39	49.39	32.79	0.00															
				BB70P7	82.50	82.50	35.87	0.00															
				BB70P8	35.21	35.21	26.80	0.00															
				BB70P9	23.81	62.31	32.78	38.51															
				BB70P10	53.33	53.33	31.19	0.00															
				BB70P11	95.97	95.97	40.33	0.00															
				BB70P12	60.93	60.93	38.67	0.00															
				BB70P13	85.29	85.29	41.25	0.00															
				BB70P14	90.54	90.54	41.86	0.00															
				BB70P15	80.20	80.20	40.32	0.00															
				BB70P16	91.49	91.49	41.60	0.00															
				BB70P17	70.62	70.62	35.67	0.00															
				BB70P18	30.13	30.13	24.35	0.00															
				BB70P19	33.25	33.25	25.02	0.00															
				BB70P20	53.50	53.50	30.19	0.00															
				BB70P21	84.46	91.54	39.30	7.08															
				BB70P22	73.99	79.36	37.07	5.37															
				BB70P23	56.36	59.33	31.72	2.97															
				BB70P24	151.20	151.20	52.53	0.00															
				BB70P25	79.61	79.61	35.96	0.00															
				BB70P26	56.26	56.26	30.05	0.00															
				BB70P27	57.40	57.40	31.79	0.00															
				BB70P28	0.00	444.10	99.70	444.10															
				BB70P29	79.97	79.97	37.73	0.00															
				BB70P30	57.39	57.39	35.34	0.00															
				BB70P31	59.14	59.14	35.22	0.00															
				BB70P32	39.81	39.81	25.38	0.00															
				BB70P33	32.91	32.91	23.34	0.00															
				BB70P34	73.70	73.70	34.87	0.00															
				BB70P35	85.20	112.79	51.17	27.59															
				BB70P36	137.50	137.50	55.64	0.00															
				BB70P37	0.00	151.49	52.05	151.49															
				BB70P38	106.39	106.39	41.26	0.00															
				BB70P39	54.38	54.38	33.94	0.00															
				BB70P40	58.53	58.53	34.26	0.00															
				BB70P41	66.89	66.89	41.46	0.00															
				BB70P42	80.64	80.64	43.09	0.00															
				BB70P43	70.13	70.13	35.60	0.00															
Total per block					2830.41	3507.51	1630.04	677.10															

BB71	635.36	106.90	9	BB71P1	42.88	42.88	27.43	0.00	12.23	35.23	20.02	39.42											
				BB71P2	155.90	162.27	52.05	6.37															
				BB71P3	161.70	187.49	55.67	25.79															
				BB71P4	25.23	25.23	22.72	0.00															
				BB71P5	92.73	92.73	45.82	0.00															
				BB71P6	24.77	24.77	21.81	0.00															
				BB71P7	36.39	36.39	24.42	0.00															
				BB71P8	34.63	34.63	24.54	0.00															
				BB71P9	28.57	28.57	22.69	0.00															
Total per block					602.80	634.96	297.14	32.16															

BB72	1835.67	303.85	31	BB72P1	59.44	59.44	31.08	0.00	65.53	19.02	37.72	37.74	15.13	15.31	5.67	14.09	3.31	24.62	16.50	3.24	15.35	14.38	16.94
				BB72P2	77.28	77.28	39.73	0.00															
				BB72P3	42.48	42.48	26.08	0.00															
				BB72P4	55.44	55.44	31.48	0.00															
				BB72P5	34.01	34.01	27.13	0.00															
				BB72P6	43.53	43.53	28.93	0.00															
				BB72P7	48.36	48.36	33.10	0.00															
				BB72P8	67.87	67.87	36.87	0.00															
				BB72P9	57.46	57.46	34.05	0.00															
				BB72P10	69.55	69.55	39.17	0.00															
				BB72P11	56.81	56.81	30.75	0.00															
				BB72P12	50.11	50.11	30.28	0.00															
				BB72P13	27.50	27.50	21.11	0.00															
				BB72P14	0.00	123.09	50.80	123.09															
				BB72P15	77.79	83.96	39.29	6.17															
				BB72P16	56.08	56.08	33.82	0.00															
				BB72P17	46.77	50.80	29.47	4.03															
				BB72P18	79.76	79.76	41.10	0.00															
				BB72P19	36.50	36.50	24.23	0.00															
				BB72P20	29.89	29.89	23.91	0.00															
				BB72P21	68.26	68.26	38.98	0.00															
				BB72P22	138.39	150.90	49.01	12.51															
				BB72P23	82.37	82.37	41.80	0.00															
				BB72P24	23.06	23.06	22.86	0.00															
				BB72P25	61.26	61.26	31.56	0.00															
				BB72P26	61.69	61.69	34.67	0.00															
				BB72P27	28.36	28.36	21.84	0.00															
				BB72P28	78.19	78.19	36.96	0.00															
				BB72P29	21.31	21.31	22.57	0.00															
				BB72P30	52.74	52.74	29.45	0.00															
				BB72P31	55.32	55.32	29.80	0.00															
Total per block					1687.58	1833.39	1011.88	145.81															

BB73	1083.04	169.72	13	BB73P1	0.00	37.43	26.68	37.43	37.15	37.95	11.58	10.06	13.93	9.38	7.56	7.60	34.51						
				BB73P2	92.70	92.70	41.78	0.00															
				BB73P3	68.99	68.99	34.95	0.00															
				BB73P4	74.58	74.58	41.15	0.00															
				BB73P5	75.41	75.41	34.88	0.00															
				BB73P6	62.76	62.76	32.09	0.00															
				BB73P7	112.21	112.21	44.91	0.00															
				BB73P8	0.00	141.74	51.32	141.74															
				BB73P9	65.75	65.75	41.38	0.00															
				BB73P10	104.47	104.47	46.00	0.00															
				BB73P11	126.80	130.36	52.17	3.56															
				BB73P12	71.48	71.48	40.16	0.00															
				BB73P13	45.13	45.13	29.23	0.00															
Total per block					900.28	1083.01	516.70	182.73															

BB74	2178.80	289.24	28	BB74P1	105.83	105.83	43.15	0.00	43.62	20.51	23.28	23.13	14.24	21.26	7.78	29.59	27.27	73.56					
				BB74P2	125.02	125.02	45.07	0.00															
				BB74P3	113.69	113.69	45.50	0.00															
				BB74P4	117.10	117.10	45.50	0.00															
				BB74P5	91.38	91.38	39.69	0.00															
				BB74P6	99.78	110.69	43.11	10.91															
				BB74P7	123.31	123.31	46.60	0.00															
				BB74P8	101.51	114.74	45.06	13.23															
				BB74P9	65.35	65.35	34.44	0.00															
				BB74P10	39.29	39.29	30.62	0.00															
				BB74P11	43.47	43.47	30.39	0.00															
				BB74P12	61.09	61.09	33.32	0.00															
				BB74P13	51.79	51.79	31.41	0.00															
				BB74P14	46.03	46.03	30.53	0.00															
				BB74P15	39.27	44.99	31.31	5.72															
				BB74P16	57.89	57.89	33.13	0.00															
				BB74P17	63.09	63.09	34.00	0.00															
				BB74P18	59.01	59.01	33.21	0.00															
				BB74P19	64.04	64.04	34.29	0.00															
				BB74P20	57.55	57.55	29.97	0.00															
				BB74P21	39.33	39.33	25.83	0.00															
				BB74P22	73.99	73.99	34.89	0.00															
				BB74P23	97.17	97.17	97.17	0.00															
				BB74P24	44.77	44.77	30.32	0.00															
				BB74P25	38.17	38.17	26.94	0.00															
				BB74P26	108.69	114.15	47.64	5.47															
				BB74P27	104.62	110.73	48.59	6.10															
				BB74P28	96.74	102.94	45.72	6.20															
Total per block					2128.96	2176.59	1097.41	47.62															

BB75	2004.51	218.31	29	BB75P1	41.41	41.41	25.90	0.00	44.00	42.83	46.46	21.06	18.44	17.85	27.66								
				BB75P2	40.75	42.43	28.75	1.68															
				BB75P3	57.59	57.59	32.09	0.00															
				BB75P4	63.53	63.53	33.54	0.00															
				BB75P5	94.92	94.92	39.65	0.00															
				BB75P6	82.33	82.33	40.41	0.00															
				BB75P7	80.57	80.57	39.37	0.00															

				BB75P8	60.86	60.86	32.97	0.00															
				BB75P9	50.51	50.51	31.07	0.00															
				BB75P10	52.88	52.88	31.58	0.00															
				BB75P11	50.34	50.34	31.90	0.00															
				BB75P12	40.64	40.64	30.36	0.00															
				BB75P13	69.80	69.80	33.90	0.00															
				BB75P14	56.84	56.84	30.33	0.00															
				BB75P15	49.76	49.76	30.55	0.00															
				BB75P16	35.31	35.31	26.88	0.00															
				BB75P17	45.40	45.40	29.33	0.00															
				BB75P18	394.91	409.35	82.55	14.45															
				BB75P19	105.36	105.36	42.42	0.00															
				BB75P20	58.69	58.69	31.59	0.00															
				BB75P21	57.33	57.33	30.57	0.00															
				BB75P22	75.45	75.45	34.79	0.00															
				BB75P23	32.56	32.56	25.92	0.00															
				BB75P24	76.15	76.15	35.99	0.00															
				BB75P25	52.34	52.34	31.45	0.00															
				BB75P26	45.22	45.22	30.01	0.00															
				BB75P27	40.32	40.32	28.77	0.00															
				BB75P28	53.73	53.73	31.04	0.00															
				BB75P29	19.58	19.58	19.48	0.00															
Total per block					1985.07	2001.20	973.18	16.13															
BB76	1273.56	179.16	23	BB76P1	55.25	55.25	29.76	0.00	27.03	46.71	30.61	22.68	15.02	14.91	22.21								
				BB76P2	41.65	41.65	29.92	0.00															
				BB76P3	44.89	44.89	30.53	0.00															
				BB76P4	134.12	134.12	46.36	0.00															
				BB76P5	58.22	58.22	34.08	0.00															
				BB76P6	60.47	60.47	34.46	0.00															
				BB76P7	64.50	64.50	35.01	0.00															
				BB76P8	58.90	58.90	34.14	0.00															
				BB76P9	61.70	61.70	34.74	0.00															
				BB76P10	38.88	38.88	29.37	0.00															
				BB76P11	71.83	76.55	36.83	4.71															
				BB76P12	61.34	61.34	33.94	0.00															
				BB76P13	63.92	63.92	33.44	0.00															
				BB76P14	50.02	50.02	31.03	0.00															
				BB76P15	47.42	47.42	31.59	0.00															
				BB76P16	39.63	39.63	30.30	0.00															
				BB76P17	51.00	51.00	32.53	0.00															
				BB76P18	58.82	58.82	36.39	0.00															
				BB76P19	23.79	49.40	31.18	25.60															
				BB76P20	43.89	43.89	29.98	0.00															
				BB76P21	41.43	41.43	29.43	0.00															
				BB76P22	37.88	37.88	29.00	0.00															
				BB76P23	29.73	29.73	23.17	0.00															
Total per block					1239.28	1269.59	747.18	30.32															
BB77	4659.66	442.59	35	BB77P1	43.27	43.27	26.58	0.00	38.73	11.50	9.62	43.22	36.07	32.53	55.37	45.64	21.44	14.29	13.55	21.62	18.60	18.62	61.79
				BB77P2	206.26	206.26	58.67	0.00															
				BB77P3	51.62	69.21	34.03	17.59															
				BB77P4	175.09	175.09	53.55	0.00															
				BB77P5	0.00	1114.37	170.55	1114.37															
				BB77P6	285.83	285.83	83.26	0.00															
				BB77P7	150.07	214.61	82.74	64.54															
				BB77P8	255.39	255.39	75.60	0.00															
				BB77P9	0.00	204.23	72.67	204.23															
				BB77P10	178.43	178.43	55.54	0.00															
				BB77P11	101.50	197.99	75.23	96.49															
				BB77P12	56.11	56.11	33.03	0.00															
				BB77P13	132.74	132.74	48.58	0.00															
				BB77P14	81.51	91.99	44.92	10.48															
				BB77P15	62.13	62.13	38.02	0.00															
				BB77P16	154.60	154.60	51.19	0.00															
				BB77P17	50.42	50.42	29.16	0.00															
				BB77P18	37.27	37.27	27.04	0.00															
				BB77P19	45.86	45.86	29.24	0.00															
				BB77P20	39.87	39.87	29.61	0.00															
				BB77P21	47.43	47.43	29.68	0.00															
				BB77P22	66.30	66.30	32.98	0.00															
				BB77P23	104.19	104.19	41.25	0.00															
				BB77P24	67.89	67.89	36.03	0.00															
				BB77P25	55.61	55.61	33.34	0.00															
				BB77P26	66.54	66.54	35.77	0.00															
				BB77P27	67.52	67.52	35.93	0.00															
				BB77P28	53.35	53.35	30.77	0.00															
				BB77P29	134.66	134.66	51.38	0.00															
				BB77P30	42.18	42.18	29.94	0.00															
				BB77P31	55.53	55.53	34.04	0.00															
				BB77P32	53.08	53.08	30.64	0.00															
				BB77P33	72.66	72.66	37.65	0.00															
				BB77P34	65.63	65.63	36.27	0.00															
				BB77P35	85.79	85.79	45.82	0.00															
Total per block					3146.31	4654.01	1660.70	1507.70															
BB78	2551.13	226.95	10	BB78P1	142.36	142.36	48.24	0.00	46.06	49.91	21.76	60.39	14.57	21.60	12.66								
				BB78P2	819.80	1647.48	168.98	827.69															
				BB78P3	182.00	204.37	58.84	22.37															
				BB78P4	75.57	75.57	39.96	0.00															
				BB78P5	62.84	62.84	35.02	0.00															
				BB78P6	51.16	55.90	34.60	4.73															
				BB78P7	37.83	46.77	28.25	8.94															
				BB78P8	74.30	74.30	34.78	0.00															
				BB78P9	64.34	64.34	35.54	0.00															
				BB78P10	175.20	175.20	53.33	0.00															
Total per block					1685.40	2549.14	537.54	863.73															
BB79	2410.15	326.86	44	BB79P1	16.46	16.46	20.35	0.00	25.80	81.38	23.38	39.33	21.85	16.57	40.28	25.13	22.35	30.81					
				BB79P2	53.62	53.62	29.70	0.00															
				BB79P3	48.02	48.02	29.77	0.00															
				BB79P4	42.65	42.65	29.18	0.00															
				BB79P5	44.42	44.42	29.82	0.00															
				BB79P6	48.74	48.74	31.12	0.00															
				BB79P7	43.66	43.66	29.85	0.00															
				BB79P8	49.04	49.04	30.86	0.00															
				BB79P9	51.64	51.64	31.32	0.00															
				BB79P10	34.62	34.62	28.22	0.00															
				BB79P11	56.27	56.27	32.05	0.00															
				BB79P12	53.33	53.33	31.36	0.00															
				BB79P13	44.05	44.05	29.46	0.00															
				BB79P14	41.94	41.94	28.41	0.00															
				BB79P15	53.21	53.21	30.95	0.00															
				BB79P16	46.96	53.80	31.42	6.84															
				BB79P17	37.64	37.64	25.74	0.00															
				BB79P18	30.89	30.89	24.24	0.00															
				BB79P19	18.54	18.54	19.53	0.00															
				BB79P20	66.52	66.52	36.23	0.00															
				BB79P21	66.60	66.60	35.02	0.00															
				BB79P22	58.77	58.77	32.55	0.00															
				BB79P23	43.61	43.61	29.31	0.00															
				BB79P24	38.03	38.03	26.96	0.00															
				BB79P25	44.08	47.09	28.55	3.01															
				BB79P26	40.93	45.17	27.49	4.24															
				BB79P27	47.60	47.60	27.85	0.00															
				BB79P28	76.84	81.76	40.41	4.92															
				BB79P29	47.60	47.60	29.24	0.00															
				BB79P30	40.31	40.31	26.41	0.00															
				BB79P31	38.52	38.52	25.83	0.00															
				BB79P32	46.33	49.95	30.90	3.61															
				BB79P33	111.31	132.12	48.26	20.80															
				BB79P34	82.90	82.90	38.10	0.00															
				BB79P35	91.45	91.45	39.99	0.00															
				BB79P36	56.04	56.04	34.20	0.00															
				BB79P37	43.57	43.57	31.17	0.00															
				BB79P38	72.91	72.91	37.97	0.00															
				BB79P39	86.71	86.71	37.87	0.00															
				BB79P40	57.96	57.96	32.80	0.00															
				BB79P41	109.88	115.22	49.62	5.34															
				BB79P42	61.01	61.01	34.81	0.00															
				BB79P43	64.18	64.18	36.18	0.00															
				BB79P44	45.73	45.73	30.86	0.00															
Total per block					2355.12	2403.87	1391.97	48.76															

BB80	7137.04	588.85	50	BB80P1	302.74	322.87	77.84	20.13	30.27	61.74	33.31	19.43	31.58	20.98	20.48	47.29	44.26	45.27	23.83	57.64	106.26	23.61	22.95
				BB80P2	112.75	142.51	59.29	29.76															
				BB80P3	63.73	63.73	35.45	0.00															
				BB80P4	168.74	168.74	78.43	0.00															
				BB80P5	135.96	168.16	65.37	32.21															
				BB80P6	103.88	103.88	41.83	0.00															
				BB80P7	60.69	60.69	32.15	0.00															
				BB80P8	84.30	84.30	37.39	0.00															
				BB80P9	49.81	49.81	32.15	0.00															
				BB80P10	44.99	44.99	29.47	0.00															
				BB80P11	96.20	96.20	39.73	0.00															
				BB80P12	186.06	186.06	57.16	0.00															
				BB80P13	92.11	92.11	51.38	0.00															
				BB80P14	101.24	127.67	56.02	26.43															
				BB80P15	234.71	234.71	66.22	0.00															
				BB80P16	0.00	173.00	57.39	173.00															
				BB80P17	53.71	59.20	30.88	5.50															
				BB80P18	51.60	57.87	30.48	6.28															
				BB80P19	328.54	328.54	81.59	0.00															
				BB80P20	87.63	106.54	42.97	18.91															
				BB80P21	73.81	73.81	35.05	0.00															
				BB80P22	121.01	131.22	48.24	10.21															
				BB80P23	137.29	140.10	52.30	2.81															
				BB80P24	140.27	171.26	54.76	31.00															
				BB80P25	58.59	58.59	31.10	0.00															
				BB80P26	71.86	71.86	36.83	0.00															
				BB80P27	102.00	102.00	51.07	0.00															
				BB80P28	62.16	62.16	38.98	0.00															
				BB80P29	106.21	106.21	41.39	0.00															
				BB80P30	79.47	79.47	36.76	0.00															
				BB80P31	79.41	79.41	40.93	0.00															
				BB80P32	74.37	74.37	41.06	0.00															
				BB80P33	75.55	100.41	48.88	24.87															
				BB80P34	64.81	75.30	39.69	10.49															
				BB80P35	81.25	81.25	40.68	0.00															
				BB80P36	117.05	127.06	47.25	10.01															
				BB80P37	68.53	68.53	35.61	0.00															
				BB80P38	148.54	188.35	54.89	39.81															
				BB80P39	215.69	301.62	71.25	85.93															
				BB80P40	66.16	76.02	42.06	9.86															
				BB80P41	143.62	148.25	61.08	4.63															
				BB80P42	49.23	54.74	31.80	5.51															
				BB80P43	173.83	183.79	58.93	9.96															
				BB80P44	0.00	378.56	86.87	378.56															
				BB80P45	374.66	551.77	104.47	177.11															
				BB80P46	117.46	136.43	55.64	18.98															
				BB80P47	275.22	289.78	68.87	14.56															
				BB80P48	122.16	122.16	48.74	0.00															
				BB80P49	100.03	100.03	40.89	0.00															
				BB80P50	285.00	319.46	74.21	34.45															
Total per block					5944.60	7125.56	2523.47	1180.96															

BB81	7175.21	730.95	55	BB81P1	64.76	64.76	32.23	0.00	91.52	40.27	32.57	36.59	39.12	25.89	44.17	46.91	56.06	51.87	49.89	77.38	37.89	29.88	70.97
				BB81P2	71.82	84.77	36.95	12.95															
				BB81P3	53.01	53.01	30.99	0.00															
				BB81P4	74.08	74.08	41.23	0.00															
				BB81P5	109.97	109.97	41.52	0.00															
				BB81P6	76.35	76.35	40.84	0.00															
				BB81P7	82.17	82.17	36.52	0.00															
				BB81P8	122.60	142.51	61.79	19.90															
				BB81P9	77.03	77.03	39.18	0.00															
				BB81P10	117.05	117.05	44.84	0.00															
				BB81P11	156.38	171.24	56.03	14.86															
				BB81P12	152.27	205.88	60.09	53.61															
				BB81P13	187.43	187.43	60.99	0.00															
				BB81P14	350.63	350.63	88.49	0.00															
				BB81P15	122.83	122.83	46.99	0.00															
				BB81P16	328.16	343.25	85.84	15.09															
				BB81P17	151.72	234.08	67.71	82.36															
				BB81P18	137.46	172.92	55.09	35.46															
				BB81P19	360.38	360.38	100.54	0.00															
				BB81P20	71.60	71.60	37.30	0.00															
				BB81P21	91.53	91.53	40.08	0.00															
				BB81P22	268.41	276.04	72.64	7.62															
				BB81P23	43.52	51.63	31.10	8.11															
				BB81P24	133.11	170.43	53.68	37.32															
				BB81P25	54.33	60.96	33.37	6.63															
				BB81P26	71.21	85.65	38.04	14.43															
				BB81P27	95.94	103.00	40.49	7.06															
				BB81P28	115.31	119.08	46.92	3.77															
				BB81P29	85.29	85.29	44.77	0.00															
				BB81P30	50.08	50.08	31.37	0.00															
				BB81P31	66.72	66.72	39.12	0.00															
				BB81P32	0.00	496.32	121.26	496.32															
				BB81P33	94.79	94.79	41.33	0.00															
				BB81P34	0.00	113.48	43.63	113.48															
				BB81P35	61.18	170.97	53.78	109.79															
				BB81P36	182.56	205.62	58.37	23.05															
				BB81P37	32.33	107.69	51.72	75.37															
				BB81P38	108.53	108.53	51.52	0.00															
				BB81P39	102.00	102.00	46.39	0.00															
				BB81P40	66.40	66.40	35.30	0.00															
				BB81P41	98.44	106.70	42.55	8.26															
				BB81P42	127.20	127.20	45.81	0.00															
				BB81P43	98.34	98.34	39.91	0.00															
				BB81P44	135.99	154.23	51.97	18.23															
				BB81P45	105.99	105.99	45.46	0.00															
				BB81P46	72.27	72.27	36.75	0.00															
				BB81P47	61.08	69.53	35.87	8.45															
				BB81P48	52.51	57.98	31.39	5.47															
				BB81P49	0.00	44.23	26.50	44.23															
				BB81P50	44.30	44.30	26.88	0.00															
				BB81P51	69.92	69.92	34.02	0.00															
				BB81P52	172.27	172.27	57.81	0.00															
				BB81P53	132.72	132.72	53.04	0.00															
				BB81P54	115.47	115.47	44.34	0.00															
				BB81P55	64.61	64.61	38.46	0.00															
Total per block					5942.06	7163.91	2650.82	1221.85															

BB82	3289.76	357.43	32	BB82P1	171.71	191.35	62.20	19.65	117.46	23.16	49.61	23.95	7.74	11.68	16.07	4.00	20.08	8.19	16.39	9.45	6.05	19.16	24.42
				BB82P2	0.00	90.99	38.54	90.99															
				BB82P3	67.45	67.45	33.89	0.00															
				BB82P4	56.15	56.15	31.61	0.00															
				BB82P5	107.23	107.23	41.66	0.00															
				BB82P6	88.72	88.72	40.12	0.00															
				BB82P7	108.69	116.22	45.10	7.53															
				BB82P8	87.23	87.23	38.63	0.00															
				BB82P9	156.09	167.78	57.08	11.69															
				BB82P10	0.00	118.59	50.81	118.59															
				BB82P11	206.33	275.57	75.38	69.24															
				BB82P12	128.08	128.08	46.14	0.00															
				BB82P13	67.27	67.27	40.78	0.00															
				BB82P14	75.33	99.66	45.83	24.33															
				BB82P15	30.57	30.57	22.72	0.00															
				BB82P16	59.20	59.20	41.58	0.00															
				BB82P17	47.33	47.33	28.62	0.00															
				BB82P18	67.02	70.44	37.23	3.42															
				BB82P19	70.32	70.32	33.53	0.00															
				BB82P20	50.53	50.53	30.81	0.00															
				BB82P21	128.67	143.78	52.70	15.11															
				BB82P22	225.97	225.97	69.38	0.00															
				BB82P23	107.72	120.08	48.56	12.37															
				BB82P24	101.12	101.12	45.26	0.00															
				BB82P25	54.54	54.54	31.40	0.00															
				BB82P26	57.19	57.19	32.34	0.00															
				BB82P27	82.54	82.54	39.46	0.00															
				BB82P28	81.81	81.81	38.81	0.00															
				BB82P29	69.32	84.21	37.91	14.89															
				BB82P30	173.34	184.92	54.60	11.57															
				BB82P31	88.16	88.16	40.32	0.00															
				BB82P32	69.08	72.80	34.53	3.71															
Total per block					2884.72	3287.81	1367.55	403.09															

BB83	4365.67	465.46	43	BB83P1	92.31	92.31	38.89	0.00	27.66	54.37	34.60	28.98	36.78	21.12	13.49	16.37	18.87	23.52	38.87	36.80	31.76	37.66	44.61

				BB83P2	155.00	155.00	53.61	0.00															
				BB83P3	96.33	97.77	97.77	1.44															
				BB83P4	120.76	120.76	49.77	0.00															
				BB83P5	60.27	60.27	33.86	0.00															
				BB83P6	43.07	52.22	33.82	9.15															
				BB83P7	62.61	62.61	34.69	0.00															
				BB83P8	102.53	102.53	41.21	0.00															
				BB83P9	73.06	73.06	37.87	0.00															
				BB83P10	137.07	178.64	55.60	41.56															
				BB83P11	100.60	111.72	47.82	11.12															
				BB83P12	69.12	74.14	35.05	5.02															
				BB83P13	65.52	71.73	34.64	6.21															
				BB83P14	22.73	22.73	20.31	0.00															
				BB83P15	16.52	16.52	16.42	0.00															
				BB83P16	115.89	128.14	45.94	12.25															
				BB83P17	119.36	119.36	45.14	0.00															
				BB83P18	136.83	136.83	56.51	0.00															
				BB83P19	0.00	219.19	67.55	219.19															
				BB83P20	84.02	84.02	37.19	0.00															
				BB83P21	82.70	82.70	36.76	0.00															
				BB83P22	43.52	43.52	27.97	0.00															
				BB83P23	30.39	30.39	24.38	0.00															
				BB83P24	78.85	78.85	43.08	0.00															
				BB83P25	74.33	74.33	34.91	0.00															
				BB83P26	55.31	55.31	31.38	0.00															
				BB83P27	229.02	253.34	63.89	24.32															
				BB83P28	148.86	148.86	51.23	0.00															
				BB83P29	64.87	64.87	35.23	0.00															
				BB83P30	71.13	71.13	38.57	0.00															
				BB83P31	65.28	65.28	35.55	0.00															
				BB83P32	50.67	50.67	32.69	0.00															
				BB83P33	133.63	157.92	50.63	24.29															
				BB83P34	196.52	196.52	59.94	0.00															
				BB83P35	131.12	154.18	49.94	23.07															
				BB83P36	87.67	94.68	39.40	7.02															
				BB83P37	94.99	100.33	40.21	5.34															
				BB83P38	82.70	98.88	40.54	16.19															
				BB83P39	0.00	148.37	48.71	148.37															
				BB83P40	137.85	146.80	48.35	8.94															
				BB83P41	94.04	104.93	41.40	10.89															
				BB83P42	115.51	115.51	43.22	0.00															
				BB83P43	45.38	45.38	31.26	0.00															
Total per block					3787.92	4362.29	1832.92	574.37															

BB84	3256.24	346.44	31	BB84P1	176.70	236.24	64.13	59.54	23.85	5.66	6.51	55.77	40.78	39.93	16.19	15.84	12.88	10.92	12.60	47.74	57.77		
				BB84P2	75.61	75.61	46.15	0.00															
				BB84P3	89.42	89.42	46.95	0.00															
				BB84P4	72.86	72.86	49.02	0.00															
				BB84P5	114.97	118.55	55.79	3.58															
				BB84P6	132.07	132.07	48.23	0.00															
				BB84P7	58.00	58.00	38.37	0.00															
				BB84P8	74.81	74.81	40.73	0.00															
				BB84P9	100.28	100.28	41.10	0.00															
				BB84P10	56.91	56.91	33.05	0.00															
				BB84P11	36.60	36.60	27.86	0.00															
				BB84P12	33.95	33.95	26.41	0.00															
				BB84P13	94.96	108.67	53.68	13.71															
				BB84P14	167.32	175.42	67.05	8.10															
				BB84P15	81.82	159.33	51.32	77.50															
				BB84P16	68.12	73.39	34.53	5.27															
				BB84P17	72.64	72.64	34.27	0.00															
				BB84P18	130.21	130.21	47.48	0.00															
				BB84P19	88.38	88.38	41.18	0.00															
				BB84P20	82.52	82.52	40.20	0.00															
				BB84P21	104.10	111.83	43.35	7.73															
				BB84P22	157.54	157.54	60.19	0.00															
				BB84P23	45.16	45.16	32.82	0.00															
				BB84P24	60.38	60.38	34.36	0.00															
				BB84P25	150.17	161.64	50.98	11.46															
				BB84P26	87.96	87.96	38.87	0.00															
				BB84P27	156.42	156.42	60.51	0.00															
				BB84P28	58.66	58.66	33.35	0.00															
				BB84P29	219.62	231.23	65.82	11.61															
				BB84P30	73.38	73.38	39.04	0.00															
				BB84P31	132.27	132.27	47.61	0.00															
Total per block					3053.81	3252.32	1394.40	198.51															

BB85	3499.83	391.39	33	BB85P1	62.71	62.71	40.88	0.00	44.64	19.56	24.36	63.79	18.21	23.34	27.86	17.25	19.13	18.87	10.90	24.43	47.74	12.42	18.89
				BB85P2	60.60	76.27	41.03	15.66															
				BB85P3	67.66	67.66	40.90	0.00															
				BB85P4	56.59	64.22	33.15	7.63															
				BB85P5	138.74	138.74	60.16	0.00															
				BB85P6	158.12	158.12	72.74	0.00															
				BB85P7	37.35	43.25	26.92	5.90															
				BB85P8	69.00	69.00	33.36	0.00															
				BB85P9	0.00	200.52	59.01	200.52															
				BB85P10	80.39	80.39	36.29	0.00															
				BB85P11	78.38	82.41	41.94	4.03															
				BB85P12	142.14	157.05	56.29	14.92															
				BB85P13	98.29	98.29	43.17	0.00															
				BB85P14	88.20	92.10	42.53	3.90															
				BB85P15	81.37	81.37	36.57	0.00															
				BB85P16	106.78	120.09	45.01	13.31															
				BB85P17	141.24	141.24	52.94	0.00															
				BB85P18	224.44	258.38	71.96	33.94															
				BB85P19	152.19	172.74	53.88	20.56															
				BB85P20	167.44	175.01	55.93	7.57															
				BB85P21	44.63	44.63	27.16	0.00															
				BB85P22	52.92	52.92	32.53	0.00															
				BB85P23	138.40	138.40	49.90	0.00															
				BB85P24	207.10	207.10	57.76	0.00															
				BB85P25	85.22	85.22	37.51	0.00															
				BB85P26	50.66	50.66	30.02	0.00															
				BB85P27	31.95	31.95	26.09	0.00															
				BB85P28	136.64	154.86	52.59	18.22															
				BB85P29	57.13	57.13	31.39	0.00															
				BB85P30	62.43	62.43	31.91	0.00															
				BB85P31	46.45	46.45	28.88	0.00															
				BB85P32	141.09	141.09	49.26	0.00															
				BB85P33	81.60	81.60	36.38	0.00															
Total per block					3147.86	3494.00	1436.05	346.15															

BB86	3842.13	457.12	39	BB86P1	88.70	88.70	37.51	0.00	75.04	23.36	28.11	7.24	42.35	25.37	24.68	22.44	36.05	26.18	43.55	21.11	33.02	32.66	15.95
				BB86P2	116.27	116.27	49.63	0.00															
				BB86P3	85.37	85.37	40.20	0.00															
				BB86P4	109.04	109.04	49.83	0.00															
				BB86P5	93.17	116.84	48.40	23.67															
				BB86P6	108.18	120.04	44.62	11.86															
				BB86P7	120.19	124.73	46.05	4.54															
				BB86P8	64.53	64.53	35.24	0.00															
				BB86P9	46.21	46.21	29.61	0.00															
				BB86P10	74.59	74.59	39.14	0.00															
				BB86P11	59.47	59.47	33.77	0.00															
				BB86P12	51.71	51.71	30.42	0.00															
				BB86P13	68.02	68.02	33.21	0.00															
				BB86P14	88.01	88.01	37.91	0.00															
				BB86P15	0.00	90.81	39.62	90.81															
				BB86P16	101.12	101.12	45.19	0.00															
				BB86P17	89.49	89.49	39.00	0.00															
				BB86P18	138.09	150.99	52.37	12.90															
				BB86P19	77.63	77.63	40.62	0.00															
				BB86P20	48.08	48.08	33.56	0.00															
				BB86P21	84.34	143.59	57.64	59.26															
				BB86P22	42.33	42.33	27.96	0.00															
				BB86P23	38.82	38.82	31.29	0.00															
				BB86P24	89.34	104.96	42.71	15.62															
				BB86P25	122.13	122.13	44.32	0.00															
				BB86P26	108.17	119.65	49.36	11.48															
				BB86P27	40.97	40.97	26.97	0.00															
				BB86P28	112.47	112.47	47.49	0.00															
				BB86P29	85.53	85.53	41.47	0.00															
				BB86P30	83.45	83.45	37.94	0.00															
				BB86P31	93.72	93.72	43.20	0.00															
				BB86P32	146.09	156.40	54.59	10.31															

				BB86P33	57.35	57.35	30.59	0.00															
				BB86P34	67.21	67.21	33.15	0.00															
				BB86P35	219.61	266.64	66.82	47.03															
				BB86P36	293.73	330.04	77.38	36.31															
				BB86P37	77.37	77.37	37.27	0.00															
				BB86P38	74.25	74.25	36.67	0.00															
				BB86P39	45.25	45.25	27.42	0.00															
Total per block					3509.96	3833.77	1620.14	323.80															

BB87	6119.20	374.80	8	BB87P1	177.83	183.96	57.48	6.13	86.74	65.07	17.75	136.93	68.32										
				BB87P2	207.81	207.81	74.19	0.00															
				BB87P3	213.57	240.88	72.61	27.32															
				BB87P4	3185.36	3185.36	365.97	0.00															
				BB87P5	728.01	728.01	112.39	0.00															
				BB87P6	643.84	643.84	149.38	0.00															
				BB87P7	207.45	207.45	59.18	0.00															
				BB87P8	238.98	238.98	64.92	0.00															
Total per block					5602.83	5636.28	956.12	33.45															

BB88	4557.15	474.49	47	BB88P1	61.78	73.08	35.47	11.30	9.81	112.61	33.02	40.82	46.26	24.59	11.30	4.69	27.17	23.84	14.38	13.35	112.65		
				BB88P2	116.29	116.29	44.51	0.00															
				BB88P3	74.41	77.68	38.99	3.27															
				BB88P4	95.27	102.06	42.39	6.79															
				BB88P5	31.61	31.61	24.88	0.00															
				BB88P6	58.14	58.14	31.66	0.00															
				BB88P7	55.11	71.88	37.36	16.78															
				BB88P8	96.46	130.10	49.20	33.64															
				BB88P9	117.61	133.13	46.32	15.52															
				BB88P10	65.41	65.41	43.13	0.00															
				BB88P11	104.17	112.00	49.53	7.83															
				BB88P12	97.99	106.53	45.95	8.54															
				BB88P13	132.49	132.49	50.14	0.00															
				BB88P14	128.62	128.62	48.91	0.00															
				BB88P15	132.54	132.54	50.56	0.00															
				BB88P16	149.27	157.26	52.85	7.99															
				BB88P17	210.02	245.63	67.92	35.61															
				BB88P18	66.13	66.13	35.52	0.00															
				BB88P19	45.19	45.19	33.29	0.00															
				BB88P20	48.32	48.32	34.49	0.00															
				BB88P21	94.82	94.82	43.53	0.00															
				BB88P22	39.95	39.95	26.67	0.00															
				BB88P23	74.46	74.46	46.49	0.00															
				BB88P24	126.23	129.49	55.53	3.26															
				BB88P25	64.72	64.72	34.00	0.00															
				BB88P26	42.17	42.17	28.64	0.00															
				BB88P27	231.02	231.02	65.53	0.00															
				BB88P28	110.56	110.56	41.75	0.00															
				BB88P29	84.63	92.88	42.00	8.25															
				BB88P30	110.50	110.50	45.43	0.00															
				BB88P31	158.26	187.95	56.58	29.69															
				BB88P32	70.81	75.19	44.62	4.38															
				BB88P33	61.76	68.01	45.87	6.25															
				BB88P34	90.54	90.54	40.42	0.00															
				BB88P35	115.16	115.16	42.98	0.00															
				BB88P36	110.56	110.56	42.65	0.00															
				BB88P37	120.87	120.87	50.99	0.00															
				BB88P38	125.93	142.46	53.53	16.53															
				BB88P39	169.06	185.17	54.59	16.11															
				BB88P40	53.99	64.87	37.64	10.88															
				BB88P41	37.86	46.47	31.64	8.61															
				BB88P42	73.80	79.61	36.45	5.80															
				BB88P43	83.35	83.35	41.66	0.00															
				BB88P44	44.32	48.58	31.33	4.26															
				BB88P45	34.34	34.34	25.29	0.00															
				BB88P46	33.05	33.05	23.80	0.00															
				BB88P47	34.96	34.96	23.83	0.00															
Total per block					4284.48	4545.77	1976.49	261.29															

BB89	3869.98	333.52	37	BB89P1	208.46	225.66	60.06	17.20	21.13	146.32	21.57	5.23	139.26										
				BB89P2	57.52	57.52	32.77	0.00															
				BB89P3	81.51	114.28	49.02	32.77															
				BB89P4	95.63	115.31	50.99	19.68															
				BB89P5	78.18	82.68	48.45	4.51															
				BB89P6	82.43	82.43	47.27	0.00															
				BB89P7	86.37	86.37	47.11	0.00															
				BB89P8	156.95	156.95	54.63	0.00															
				BB89P9	92.18	92.18	46.51	0.00															
				BB89P10	74.67	74.67	42.06	0.00															
				BB89P11	106.14	106.14	45.58	0.00															
				BB89P12	108.77	108.77	45.55	0.00															
				BB89P13	120.32	120.32	44.91	0.00															
				BB89P14	77.33	77.33	37.89	0.00															
				BB89P15	74.97	74.97	36.56	0.00															
				BB89P16	54.46	54.46	31.52	0.00															
				BB89P17	53.53	53.53	30.73	0.00															
				BB89P18	53.86	65.04	34.68	11.18															
				BB89P19	94.67	102.46	43.55	7.80															
				BB89P20	97.75	97.75	43.08	0.00															
				BB89P21	80.36	80.36	36.50	0.00															
				BB89P22	118.46	131.45	46.16	12.99															
				BB89P23	127.49	127.49	49.79	0.00															
				BB89P24	118.20	118.20	50.24	0.00															
				BB89P25	141.84	141.84	51.97	0.00															
				BB89P26	80.00	80.00	41.48	0.00															
				BB89P27	86.25	86.25	42.76	0.00															
				BB89P28	127.43	127.43	52.09	0.00															
				BB89P29	103.14	103.14	51.24	0.00															
				BB89P30	160.26	168.24	56.02	7.98															
				BB89P31	174.51	184.34	57.68	9.84															
				BB89P32	106.31	106.31	48.31	0.00															
				BB89P33	77.24	82.04	45.05	4.80															
				BB89P34	101.49	101.49	43.47	0.00															
				BB89P35	59.52	59.52	34.01	0.00															
				BB89P36	133.95	133.95	50.12	0.00															
				BB89P37	81.60	81.60	50.12	0.00															
Total per block					3733.73	3862.47	1679.89	128.74															

BB90	7053.11	640.88	40	BB90P1	199.95	199.95	71.81	0.00	45.80	129.89	6.97	17.11	36.78	26.00	11.67	24.01	47.33	53.40	44.00	45.74	22.38	22.91	106.12
				BB90P2	0.00	308.03	81.22	308.03															
				BB90P3	387.65	387.65	87.28	0.00															
				BB90P4	50.24	151.13	49.68	100.89															
				BB90P5	0.00	142.92	61.94	142.92															
				BB90P6	270.37	270.37	80.59	0.00															
				BB90P7	555.59	561.59	98.36	6.00															
				BB90P8	105.79	176.32	57.86	70.53															
				BB90P9	423.01	435.01	87.51	12.00															
				BB90P10	0.00	210.96	59.90	210.96															
				BB90P11	0.00	276.91	65.83	276.91															
				BB90P12	56.70	65.39	42.10	8.69															
				BB90P13	179.29	179.29	59.50	0.00															
				BB90P14	157.32	164.48	57.87	7.16															
				BB90P15	37.52	37.52	26.89	0.00															
				BB90P16	70.46	70.46	34.88	0.00															
				BB90P17	31.31	31.31	25.81	0.00															
				BB90P18	33.20	33.20	27.94	0.00															
				BB90P19	19.88	19.88	17.88	0.00															
				BB90P20	50.51	50.51	29.90	0.00															
				BB90P21	64.62	64.62	35.19	0.00															
				BB90P22	76.76	76.76	40.20	0.00															
				BB90P23	38.97	38.97	25.90	0.00															
				BB90P24	100.00	100.00	40.70	0.00															
				BB90P25	104.51	104.51	43.15	0.00															
				BB90P26	0.00	241.16	78.52	241.16															
				BB90P27	327.67	656.16	104.00	328.49															
				BB90P28	141.66	141.66	64.29	0.00															
				BB90P29	108.70	123.47	47.78	14.77															
				BB90P30	42.54	46.22	29.96	3.68															
				BB90P31	65.84	79.55	43.60	13.71															
				BB90P32	32.65	32.65	23.79	0.00															
				BB90P33	290.76	335.85	81.52	45.09															
				BB90P34	82.07	82.07	35.78	0.00															
				BB90P35	28.35	36.11	30.16	7.76															
				BB90P36	40.49	40.49	27.28	0.00															
				BB90P37	227.87	227.87	68.89	0.00															

				BB90P38	296.28	305.46	84.44	9.18															
				BB90P39	546.10	546.10	97.60	0.00															
				BB90P40	108.71	108.71	45.01	0.00															
Total per block					5353.33	7161.27	2172.50	1807.93															
BB91	4375.57	336.94	19	BB91P1	169.13	169.13	55.41	0.00	81.54	67.90	54.69	46.17	86.64										
				BB91P2	303.29	303.29	79.68	0.00															
				BB91P3	327.71	327.71	87.36	0.00															
				BB91P4	247.47	247.47	67.23	0.00															
				BB91P5	536.28	536.28	97.31	0.00															
				BB91P6	361.97	798.66	115.24	436.70															
				BB91P7	142.53	142.53	49.02	0.00															
				BB91P8	37.01	37.01	30.96	0.00															
				BB91P9	136.01	136.01	52.31	0.00															
				BB91P10	241.48	256.86	71.26	15.38															
				BB91P11	111.36	116.15	43.71	4.78															
				BB91P12	103.39	103.39	41.16	0.00															
				BB91P13	31.19	31.19	24.54	0.00															
				BB91P14	19.99	19.99	19.66	0.00															
				BB91P15	51.17	51.17	30.38	0.00															
				BB91P16	396.52	417.12	99.54	20.60															
				BB91P17	375.66	375.66	89.78	0.00															
				BB91P18	174.95	185.54	60.35	10.58															
				BB91P19	99.35	119.47	45.18	20.11															
Total per block					3866.46	4374.62	1160.10	508.16															
BB92	1832.55	183.11	1	BB92P1	1225.25	1832.55	183.11	607.31	29.22	7.24	8.10	36.96	7.21	6.89	27.09	60.40							
Total per block					1225.25	1832.55	183.11	607.31															
BB93	503.92	116.32	4	BB93P1	162.37	162.37	59.49	0.00	18.62	50.20	47.50												
				BB93P2	79.64	79.64	37.33	0.00															
				BB93P3	78.83	78.83	37.36	0.00															
				BB93P4	180.85	180.85	54.12	0.00															
Total per block					501.68	501.68	188.30	0.00															
BB94	582.60	97.76	1	BB94P1	578.61	578.61	101.70	0.00	32.23	28.18	18.98	18.38											
Total per block					578.61	578.61	101.70	0.00															
BB95	3125.89	274.53	13	BB95P1	134.23	161.99	53.90	27.76	103.67	17.63	29.57	85.57	38.10										
				BB95P2	0.00	602.82	98.74	602.82															
				BB95P3	548.99	548.99	108.38	0.00															
				BB95P4	146.49	146.49	52.05	0.00															
				BB95P5	360.87	360.87	87.40	0.00															
				BB95P6	405.90	405.90	94.35	0.00															
				BB95P7	143.81	143.81	50.13	0.00															
				BB95P8	145.43	145.43	53.99	0.00															
				BB95P9	100.61	100.61	43.10	0.00															
				BB95P10	71.85	71.85	34.02	0.00															
				BB95P11	83.08	83.08	37.58	0.00															
				BB95P12	37.19	37.19	24.42	0.00															
				BB95P13	249.34	304.41	69.60	55.07															
Total per block					2427.77	3113.42	807.66	685.65															
BB96	1458.51	170.35	9	BB96P1	165.23	257.07	91.25	91.84	60.96	45.86	63.53												
				BB96P2	197.50	513.57	103.18	316.07															
				BB96P3	0.00	162.21	57.56	162.21															
				BB96P4	76.21	78.62	38.20	2.41															
				BB96P5	124.39	124.39	49.36	0.00															
				BB96P6	136.52	136.52	46.44	0.00															
				BB96P7	71.19	71.19	34.46	0.00															
				BB96P8	71.88	71.88	36.75	0.00															
				BB96P9	42.63	42.63	30.48	0.00															
Total per block					885.54	1458.06	487.67	572.51															
BB97	1674.35	237.69	17	BB97P1	0.00	43.85	26.50	43.85	45.21	7.50	30.95	32.55	26.89	53.20	34.94	6.45							
				BB97P2	26.78	26.78	21.16	0.00															
				BB97P3	40.43	40.43	26.06	0.00															
				BB97P4	0.00	243.20	62.85	243.20															
				BB97P5	139.81	139.81	48.19	0.00															
				BB97P6	46.94	46.94	28.91	0.00															
				BB97P7	72.85	72.85	34.38	0.00															
				BB97P8	122.96	138.26	63.12	15.30															
				BB97P9	161.12	161.12	59.65	0.00															
				BB97P10	0.00	88.33	39.15	88.33															
				BB97P11	82.11	82.11	36.91	0.00															
				BB97P12	77.78	87.31	40.08	9.53															
				BB97P13	57.90	57.90	30.67	0.00															
				BB97P14	27.80	27.80	21.15	0.00															
				BB97P15	0.00	212.60	60.16	212.60															
				BB97P16	109.05	109.05	45.58	0.00															
				BB97P17	90.71	90.71	49.49	0.00															
Total per block					1056.23	1669.06	694.00	612.83															
BB98	10873.15	508.50	1	BB98P1	7153.84	10873.15	508.50	3719.32	40.96	24.86	41.58	71.44	36.67	3.74	25.13	17.63	61.73	184.75					
Total per block					7153.84	10873.15	508.50	3719.32															
BB99	2773.00	376.80	5	BB99P1	425.14	764.47	112.87	339.33	77.04	26.52	14.00	7.00	148.69	21.86	34.27	22.69	12.76	11.97					
				BB99P2	674.01	674.01	155.50	0.00															
				BB99P3	769.63	769.63	167.50	0.00															
				BB99P4	180.00	180.00	98.00	0.00															
				BB99P5	164.00	164.00	78.00	0.00															
Total per block					2212.77	2552.10	611.88	339.33															
BB100	2625.30	362.09	4	BB100P1	751.61	751.61	169.49	0.00	131.40	37.12	162.82	19.00	7.00	4.75									
				BB100P2	752.02	752.02	166.00	0.00															
				BB100P3	750.92	750.92	166.21	0.00															
				BB100P4	176.01	176.01	96.01	0.00															
Total per block					2430.55	2430.55	597.70	0.00															
BB101	2163.26	280.34	4	BB101P1	380.06	380.06	87.00	0.00	91.04	37.50	58.25	8.00	47.00	18.00	10.80	9.75							
				BB101P2	711.75	711.75	162.00	0.00															
				BB101P3	732.19	732.19	164.50	0.00															
				BB101P4	138.80	138.80	77.40	0.00															
Total per block					1962.80	1962.80	490.90	0.00															
BB102	2867.13	250.81	1	BB102P1	281.72	2867.13	250.81	2585.41	80.79	12.25	15.55	97.34	44.87										
Total per block					281.72	2867.13	250.81	2585.41															
BB103	13297.60	519.02	1	BB103P1	0.00	13297.60	519.02	13297.60	219.11	181.55	21.02	97.34											
Total per block					0.00	13297.60	519.02	13297.60															
BB104	22788.34	942.95	1	BB104P1	0.00	22788.34	942.95	22788.34	458.25	484.69													
Total per block					0.00	22788.34	942.95	22788.34															
BB105	6072.39	359.14	1	BB105P1	0.00	6072.39	359.14	6072.39	15.84	99.56	55.17	6.37	32.90	57.34	53.07	13.43	25.47						
Total per block					0.00	6072.39	359.14	6072.39															
BB106	3838.23	247.41	1	BB106P1	0.00	3838.23	247.41	3838.23	47.59	31.12	54.32	63.47	50.91										
Total per block					0.00	3838.23	247.41	3838.23															
BB107	4560.96	450.92	29	BB107P1	84.38	84.38	37.14	0.00	96.86	31.78	20.38	19.44	18.03	39.81	19.57	15.03	11.95	11.90	35.88	27.13	41.77	38.58	22.81
				BB107P2	204.40	217.25	69.36	12.85															
				BB107P3	465.94	465.94	98.05	0.00															
				BB107P4	424.48	430.02	116.97	5.55															
				BB107P5	95.90	95.90	44.64	0.00															
				BB107P6	214.59	219.45	65.57	4.86															
				BB107P7	323.21	323.21	75.27	0.00															
				BB107P8	153.68	153.68	48.88	0.00															
				BB107P9	96.40	156.77	53.40	60.37															
				BB107P10	184.02	184.02	57.41	0.00															
				BB107P11	116.72	120.74	59.05	4.02															
				BB107P12	77.23	77.23	41.97	0.00															
				BB107P13	131.68	148.23	56.05	16.54															
				BB107P14	105.69	149.30	59.22	43.61															
				BB107P15	132.60	161.65	60.31	29.06															
				BB107P16	126.49	126.49	47.51	0.00															
				BB107P17	71.73	71.73	35.09	0.00															
				BB107P18	66.32	66.32	35.29	0.00															
				BB107P19	58.68	58.68	38.01	0.00															
				BB107P20	163.97	172.77	51.99	8.80															
				BB107P21	47.59	53.28	32.22	5.69															
				BB107P22	85.03	85.03	38.93	0.00															
				BB107P23	0.00	336.16	79.45	336.16															
				BB107P24	60.43	60.43	30.53	0.00															

				BB107P25	77.54	77.54	36.94	0.00															
				BB107P26	86.18	86.18	38.25	0.00															
				BB107P27	103.40	103.40	41.15	0.00															
				BB107P28	32.73	32.73	23.38	0.00															
				BB107P29	97.59	123.33	50.43	25.74															
Total per block					3888.60	4441.83	1522.45	553.23															

BB108	3237.95	301.44	24	BB108P1	263.37	310.95	80.37	47.58	94.81	44.26	53.89	14.71	15.81	46.85	31.12								
				BB108P2	100.62	100.62	47.04	0.00															
				BB108P3	55.42	55.42	32.13	0.00															
				BB108P4	95.37	110.80	44.83	15.43															
				BB108P5	128.50	128.50	57.42	0.00															
				BB108P6	111.77	144.90	56.59	33.13															
				BB108P7	0.00	213.23	64.00	213.23															
				BB108P8	140.08	146.21	50.08	6.12															
				BB108P9	47.79	47.79	29.19	0.00															
				BB108P10	168.30	172.62	60.70	4.32															
				BB108P11	97.11	97.11	43.13	0.00															
				BB108P12	121.91	135.47	54.75	13.56															
				BB108P13	201.12	201.12	58.54	0.00															
				BB108P14	38.97	44.45	29.15	5.48															
				BB108P15	203.20	227.71	66.89	24.51															
				BB108P16	122.58	138.32	59.13	15.74															
				BB108P17	90.28	90.28	39.63	0.00															
				BB108P18	123.59	123.59	48.80	0.00															
				BB108P19	97.62	97.62	44.03	0.00															
				BB108P20	106.43	124.16	45.12	17.73															
				BB108P21	155.84	205.21	68.15	49.37															
				BB108P22	123.91	132.11	50.32	8.20															
				BB108P23	82.89	94.12	40.83	11.23															
				BB108P24	73.06	91.87	38.89	18.81															
Total per block					2749.74	3234.17	1209.69	484.44															

BB109	7665.79	579.19	37	BB109P1	261.94	270.95	70.43	9.01	22.62	7.15	63.73	61.64	95.84	35.05	9.35	33.38	24.44	9.31	45.65	4.40	64.43	53.01	49.19
				BB109P2	0.00	361.50	85.13	361.50															
				BB109P3	164.43	210.66	63.71	46.23															
				BB109P4	116.98	160.18	57.36	43.20															
				BB109P5	76.81	76.81	35.17	0.00															
				BB109P6	83.18	83.18	36.89	0.00															
				BB109P7	123.54	123.54	45.19	0.00															
				BB109P8	249.11	265.08	72.34	15.97															
				BB109P9	113.87	142.76	52.55	28.89															
				BB109P10	774.40	855.51	189.71	81.10															
				BB109P11	239.31	252.20	78.08	12.89															
				BB109P12	263.83	363.58	81.14	99.75															
				BB109P13	0.00	88.69	41.71	88.69															
				BB109P14	93.06	93.06	42.55	0.00															
				BB109P15	0.00	240.32	84.58	240.32															
				BB109P16	141.64	158.32	51.23	16.68															
				BB109P17	60.89	60.89	32.31	0.00															
				BB109P18	197.16	197.16	56.84	0.00															
				BB109P19	238.64	262.19	85.26	23.55															
				BB109P20	0.00	219.57	67.76	219.57															
				BB109P21	106.16	113.80	46.58	7.64															
				BB109P22	72.80	72.80	36.00	0.00															
				BB109P23	141.41	141.41	52.96	0.00															
				BB109P24	124.96	135.92	48.44	10.96															
				BB109P25	0.00	248.72	68.18	248.72															
				BB109P26	0.00	299.12	87.84	299.12															
				BB109P27	0.00	171.71	65.70	171.71															
				BB109P28	209.17	209.17	64.84	0.00															
				BB109P29	0.00	256.00	71.21	256.00															
				BB109P30	188.59	227.23	64.04	38.65															
				BB109P31	384.35	418.62	92.55	34.26															
				BB109P32	0.00	191.78	78.93	191.78															
				BB109P33	88.43	96.83	40.62	8.40															
				BB109P34	155.05	155.05	55.76	0.00															
				BB109P35	49.26	49.26	29.52	0.00															
				BB109P36	129.57	140.75	50.67	11.18															
				BB109P37	195.04	245.56	62.27	50.52															
Total per block					5043.60	7659.87	2346.04	2616.28															

BB110	1250.39	152.96	1	BB110P1	324.08	348.61	104.16	24.53	43.71	24.06	26.22	14.72	10.90	16.46	16.91								
Total per block					324.08	348.61	104.16	24.53															

BB111	3462.55	266.72	2	BB111P1	1241.09	1241.09	315.93	0.00	91.98	41.20	92.35	41.19											
				BB111P2	712.29	1323.61	146.51	611.32															
Total per block					1953.38	2564.70	462.43	611.32															

BB112	1145.81	149.93	7	BB112P1	116.43	116.43	45.63	0.00	49.40	20.67	32.00	27.38	20.47										
				BB112P2	110.29	110.29	47.33	0.00															
				BB112P3	390.60	390.60	83.49	0.00															
				BB112P4	60.64	60.64	33.86	0.00															
				BB112P5	200.04	200.04	60.39	0.00															
				BB112P6	53.22	53.22	31.36	0.00															
				BB112P7	207.38	207.38	69.10	0.00															
Total per block					1138.61	1138.61	371.16	0.00															

BB113	1796.62	187.82	3	BB113P1	829.75	1279.84	164.70	450.08	25.22	41.80	54.09	18.54	33.31	14.86									
				BB113P2	0.00	349.68	83.52	349.68															
				BB113P3	167.10	167.10	79.03	0.00															
Total per block					996.86	1796.62	327.25	799.77															

BB114	6174.02	501.85	24	BB114P1	55.06	55.06	32.70	0.00	29.81	24.07	10.14	11.74	9.53	21.21	28.87	82.52	100.10	54.97	13.63	14.54	30.22	30.79	39.71
				BB114P2	145.37	168.61	53.17	23.24															
				BB114P3	187.44	187.44	63.78	0.00															
				BB114P4	159.46	166.88	52.93	7.41															
				BB114P5	133.80	133.80	51.21	0.00															
				BB114P6	83.71	83.71	40.53	0.00															
				BB114P7	570.05	578.81	114.09	8.76															
				BB114P8	197.24	250.19	62.90	52.95															
				BB114P9	276.98	276.98	72.60	0.00															
				BB114P10	293.11	293.11	85.11	0.00															
				BB114P11	128.29	128.29	47.19	0.00															
				BB114P12	58.23	58.23	29.95	0.00															
				BB114P13	148.94	148.94	55.48	0.00															
				BB114P14	96.44	103.98	47.73	7.55															
				BB114P15	249.82	249.82	70.55	0.00															
				BB114P16	369.33	369.33	89.10	0.00															
				BB114P17	290.90	290.90	76.05	0.00															
				BB114P18	793.95	793.95	153.26	0.00															
				BB114P19	112.17	112.17	61.01	0.00															
				BB114P20	98.38	98.38	41.71	0.00															
				BB114P21	823.35	964.93	133.70	141.58															
				BB114P22	348.68	391.32	83.00	42.65															
				BB114P23	129.13	147.23	49.37	18.10															
				BB114P24	109.43	109.43	43.30	0.00															
Total per block					5859.25	6161.48	1610.42	302.23															

BB115	2333.93	224.24	8	BB115P1	476.91	476.91	97.45	0.00	37.60	31.72	12.07	13.36	5.97	2.38	12.72	8.34	55.16	44.92					
				BB115P2	146.16	155.36	54.99	9.20															
				BB115P3	53.39	53.39	31.34	0.00															
				BB115P4	100.09	104.25	48.15	4.16															
				BB115P5	53.25	53.25	36.15	0.00															
				BB115P6	206.58	206.58	68.06	0.00															
				BB115P7	180.62	180.62	53.33	0.00															
				BB115P8	759.04	824.51	145.47	65.47															
Total per block					1976.05	2054.87	534.95	78.82															

BB116	6361.96	454.66	6	BB116P1	136.02	136.02	83.03	0.00	85.60	35.72	23.16	18.55	16.98	15.47	19.91	24.36	11.33	30.78	15.67	68.74	88.39		
				BB116P2	619.19	619.19	137.66	0.00															
				BB116P3	242.13	242.13	69.27	0.00															
				BB116P4	898.16	898.16	135.40	0.00															
				BB116P5	773.94	773.94	114.36	0.00															
				BB116P6	595.23	689.64	148.57	94.42															
Total per block					3264.66	3359.08	688.29	94.42															

BB117	1160.07	161.42	3	BB117P1	185.52	185.52	60.35	0.00	57.10	22.51	56.99	24.82											
				BB117P2	95.70	95.70	39.30	0.00															
				BB117P3	186.97	195.94	59.47	8.98															
Total per block					468.19	477.17	159.12	8.98															

BB118	615.75	87.96	1	BB118P1	0.00	615.75	87.96	615.75	circle	circle	circle	circle	circle	circle	circle	circle	circle	circle	circle	circle	circle	circle	circle
Total per block					0.00	615.75	87.96	615.75															

BB119	451.56	114.97	1	BB119P1	0.00	451.56	114.97	451.56	19.82	39.82	13.41	41.92										
Total per block					0.00	451.56	114.97	451.56														
BB120	389.52	86.51	1	BB120P1	0.00	389.52	86.51	389.52	29.54	31.07	25.90											
Total per block					0.00	389.52	86.51	389.52														
BB121	2717.62	273.55	22	BB121P1	349.97	681.97	118.55	332.00	25.50	84.53	27.63	32.80	103.09									
				BB121P2	147.00	147.00	49.00	0.00														
				BB121P3	60.00	60.00	34.00	0.00														
				BB121P4	72.00	72.00	36.00	0.00														
				BB121P5	72.00	72.00	36.00	0.00														
				BB121P6	48.00	48.00	32.00	0.00														
				BB121P7	64.68	72.00	36.00	7.32														
				BB121P8	53.85	60.00	34.00	6.15														
				BB121P9	120.00	120.00	44.00	0.00														
				BB121P10	84.00	84.00	38.00	0.00														
				BB121P11	60.00	60.00	34.00	0.00														
				BB121P12	96.00	69.00	40.00	-27.00														
				BB121P13	60.00	60.00	34.00	0.00														
				BB121P14	175.50	175.50	53.00	0.00														
				BB121P15	81.00	81.00	39.00	0.00														
				BB121P16	65.00	87.75	40.00	22.75														
				BB121P17	128.25	128.25	46.00	0.00														
				BB121P18	120.00	120.00	44.00	0.00														
				BB121P19	60.00	60.00	34.00	0.00														
				BB121P20	61.60	72.00	36.00	10.40														
				BB121P21	108.00	108.00	42.00	0.00														
				BB121P22	132.00	132.00	46.00	0.00														
Total per block					2218.85	2570.47	945.55	351.62														
BB122	1185.54	219.86	16	BB122P1	159.80	159.80	51.34	0.00	13.94	94.64	19.63	79.61	12.03									
				BB122P2	43.88	43.88	30.21	0.00														
				BB122P3	63.58	68.58	35.83	5.00														
				BB122P4	49.60	49.60	32.05	0.00														
				BB122P5	39.91	39.91	29.46	0.00														
				BB122P6	68.89	84.70	37.69	15.81														
				BB122P7	82.74	82.74	37.67	0.00														
				BB122P8	93.94	93.94	40.57	0.00														
				BB122P9	135.42	135.42	48.69	0.00														
				BB122P10	57.17	57.17	33.08	0.00														
				BB122P11	48.84	48.84	30.89	0.00														
				BB122P12	42.97	42.97	31.67	0.00														
				BB122P13	81.44	81.44	41.17	0.00														
				BB122P14	63.76	63.76	38.38	0.00														
				BB122P15	0.00	65.89	34.93	65.89														
				BB122P16	65.51	65.51	35.46	0.00														
Total per block					1097.45	1184.15	589.11	86.70														
BB123	2516.19	266.58	3	BB123P1	56.40	56.40	31.04	0.00	17.09	29.16	27.27	20.67	64.49	35.25	72.65							
				BB123P2	77.46	77.46	34.71	0.00														
				BB123P3	63.70	63.70	32.31	0.00														
Total per block					197.55	197.55	98.05	0.00														
BB124	2735.24	289.35	16	BB124P1	556.01	556.01	94.07	0.00	33.62	26.77	38.56	32.51	20.14	18.95	46.40	72.41						
				BB124P2	520.71	520.71	90.80	0.00														
				BB124P3	97.07	97.07	43.63	0.00														
				BB124P4	135.77	135.77	48.81	0.00														
				BB124P5	128.72	128.72	48.54	0.00														
				BB124P6	72.15	72.15	39.87	0.00														
				BB124P7	315.78	315.78	70.69	0.00														
				BB124P8	201.75	201.75	57.04	0.00														
				BB124P9	62.84	62.84	34.73	0.00														
				BB124P10	74.00	74.00	36.89	0.00														
				BB124P11	91.67	110.01	43.34	18.34														
				BB124P12	114.04	114.04	47.36	0.00														
				BB124P13	103.01	113.46	46.66	10.45														
				BB124P14	94.95	94.95	40.03	0.00														
				BB124P15	67.04	67.04	36.10	0.00														
				BB124P16	70.89	70.89	37.66	0.00														
Total per block					2706.39	2735.17	816.23	28.79														
BB125	7175.97	354.55	2	BB125P1	405.41	405.41	79.43	0.00	100.17	52.70	114.51	87.17										
				BB125P2	902.60	902.60	147.24	0.00														
Total per block					1308.01	1308.01	226.66	0.00														

Number of Blocks	Total Area of Blocks	Total Blocks Perimeter	Total Number of Plots		Total Built-up Area	Total Plots Area	Total Plots Perimeter	The difference between the area of the plot and the built-up area		Area of Case Study
125	404789.00	35988.27	1976		263779.19	371732.40	99886.58	107953.22		502654.8246

Case Study C - The statistic of blocks and plots in a selected area - Circle (radius 400 m with area 502654.8246 m^2)

CBID	Block Area	Block Perimeter	Number of Plots per Block	Plot ID	Built up Area	Plot Area	Plot Perimeter	The difference between the area of the plot and the built-up area	Block Dimensions														
CB1	6756.74	345.00	14	CB1P1	312.54	600.00	100.00	287.46	117.69	4.90	57.02	101.60	63.79										
				CB1P2	101.42	698.27	106.72	596.85															
				CB1P3	211.30	760.44	110.78	549.15															
				CB1P4	189.18	247.17	76.42	57.99															
				CB1P5	220.25	864.75	119.04	644.50															
				CB1P6	288.61	690.05	108.08	401.44															
				CB1P7	183.45	301.67	81.44	118.22															
				CB1P8	275.09	652.16	104.03	377.07															
				CB1P9	214.13	364.66	85.38	150.53															
				CB1P10	144.55	292.59	80.69	148.05															
				CB1P11	353.09	471.93	92.38	118.84															
				CB1P12	93.51	155.46	71.39	61.95															
				CB1P13	277.53	347.64	73.64	70.12															
				CB1P14	96.96	281.52	68.71	184.56															
Total per block					2961.60	6728.32	1278.70	3766.71															
CB2	8133.78	388.57	15	CB2P1	110.14	112.64	50.70	2.50	62.91	139.86	5.09	48.32	10.37	122.03									
				CB2P2	157.77	359.91	75.96	202.14															
				CB2P3	232.00	290.36	68.98	58.36															
				CB2P4	299.18	630.83	102.39	331.65															
				CB2P5	306.20	598.71	100.05	292.50															
				CB2P6	193.03	515.56	94.34	322.54															
				CB2P7	142.38	208.63	73.61	66.25															
				CB2P8	505.93	768.88	112.47	262.95															
				CB2P9	397.53	1076.67	132.99	679.15															
				CB2P10	264.09	739.40	109.35	475.31															
				CB2P11	286.32	600.00	100.00	313.68															
				CB2P12	284.91	600.00	100.00	315.09															
				CB2P13	176.83	337.04	73.97	160.20															
				CB2P14	398.20	489.43	87.16	91.23															
				CB2P15	381.01	792.56	121.41	411.55															
Total per block					4135.51	8120.63	1403.39	3985.11															
CB3	9411.65	436.41	21	CB3P1	160.10	250.61	65.38	90.51	146.62	62.64	167.10	60.05											
				CB3P2	122.63	165.97	61.46	43.34															
				CB3P3	103.52	210.18	74.06	106.66															
				CB3P4	182.17	600.00	100.00	417.83															
				CB3P5	182.11	600.00	100.00	417.89															
				CB3P6	283.98	600.00	100.00	316.02															
				CB3P7	182.05	600.00	100.00	417.95															
				CB3P8	145.71	537.75	96.02	392.04															
				CB3P9	235.56	580.19	100.14	344.63															
				CB3P10	142.52	242.07	68.73	99.54															
				CB3P11	286.80	582.50	99.20	295.69															
				CB3P12	184.24	600.00	100.00	415.76															
				CB3P13	217.17	600.00	100.00	382.83															
				CB3P14	254.08	600.00	100.00	345.92															
				CB3P15	199.00	600.00	100.00	401.00															
				CB3P16	218.79	450.39	90.08	231.60															
				CB3P17	174.29	390.34	86.07	216.04															
				CB3P18	136.94	641.86	101.53	504.92															
				CB3P19	198.68	289.34	78.14	90.66															
				CB3P20	68.01	122.16	53.71	54.15															
				CB3P21	137.24	144.16	54.93	6.93															
Total per block					3815.60	9407.51	1829.46	5591.91															
CB4	10639.72	477.80	22	CB4P1	420.88	600.00	100.00	179.12	57.64	188.65	62.53	168.89											
				CB4P2	177.93	207.50	72.91	29.57															
				CB4P3	131.68	294.41	78.91	162.73															
				CB4P4	214.82	306.64	79.75	91.82															
				CB4P5	264.85	600.00	100.00	335.15															
				CB4P6	223.59	600.00	100.00	376.41															
				CB4P7	189.60	600.00	100.00	410.40															
				CB4P8	317.66	600.00	100.00	282.34															
				CB4P9	114.24	300.00	80.00	185.76															
				CB4P10	144.96	300.00	80.00	155.04															
				CB4P11	347.39	766.36	112.34	418.96															
				CB4P12	186.40	301.09	82.83	114.69															
				CB4P13	385.69	359.56	148.89	-26.14															
				CB4P14	318.97	600.00	100.00	281.03															
				CB4P15	179.13	600.00	100.00	420.87															
				CB4P16	288.12	600.00	100.00	311.88															
				CB4P17	151.51	300.00	80.00	148.49															
				CB4P18	164.01	300.00	80.00	135.99															
				CB4P19	199.24	600.00	100.00	400.76															
				CB4P20	243.68	600.00	100.00	356.32															
				CB4P21	404.90	426.14	86.00	21.25															
				CB4P22	0.00	424.63	86.62	424.63															
Total per block					5069.25	10286.32	2068.25	5217.08															
CB5	5685.95	312.18	7	CB5P1	303.96	805.14	112.81	501.18	62.09	84.18	59.70	106.21											
				CB5P2	312.70	814.55	115.63	501.84															
				CB5P3	230.01	600.00	100.00	369.99															
				CB5P4	160.00	300.00	80.00	140.00															
				CB5P5	160.00	300.00	80.00	140.00															
				CB5P6	292.75	683.42	105.66																
				CB5P7	361.16	657.76	103.54	296.60															
Total per block					1820.58	4160.87	697.64	1949.61															
CB6	12406.81	559.90	28	CB6P1	229.54	729.05	**111.27**	499.52	220.46	84.60	200.01	54.83											
				CB6P2	128.25	173.48	74.70	45.22															
				CB6P3	127.84	196.65	75.71	68.81															
				CB6P4	220.94	488.40	94.42	267.46															
				CB6P5	203.11	829.83	114.55	626.71															
				CB6P6	486.41	788.73	115.12	302.31															
				CB6P7	230.46	576.33	99.64	345.87															
				CB6P8	130.24	732.14	108.86	601.91															
				CB6P9	147.25	257.31	74.99	110.05															
				CB6P10	93.55	399.70	84.18	306.14															
				CB6P11	248.68	342.15	78.93	93.47															
				CB6P12	190.05	321.59	76.44	131.54															
				CB6P13	138.00	371.24	79.56	233.24															
				CB6P14	84.09	290.33	72.25	206.23															
				CB6P15	136.68	170.15	62.22	33.47															
				CB6P16	228.81	777.19	110.63	548.37															
				CB6P17	215.87	221.22	63.24	5.35															
				CB6P18	101.25	136.10	57.37	34.85															
				CB6P19	161.85	244.92	67.19	83.07															
				CB6P20	168.77	204.69	63.97	35.92															
				CB6P21	230.01	391.70	80.30	161.69															
				CB6P22	239.51	285.09	71.52	45.57															
				CB6P23	223.73	332.26	75.73	108.53															
				CB6P24	245.24	564.05	95.24	318.81															
				CB6P25	314.79	614.50	99.46	299.70															
				CB6P26	316.91	598.82	99.50	281.91															
				CB6P27	275.80	603.13	101.37	327.33															
				CB6P28	327.63	766.37	113.93	438.73															
Total per block					5845.30	12407.09	2422.26	6561.79															
CB7	1227.05	144.57	1	CB7P1	94.90	1227.05	144.57	1132.15	24.95	52.90	23.22	43.50											
Total per block					94.90	1227.05	144.57	1132.15															
CB8	11486.74	566.06	15	CB8P1	193.79	772.59	110.70	578.80	204.90	49.74	159.67	115.70	36.05										
				CB8P2	1093.47	1578.53	201.68	485.05															
				CB8P3	1153.68	2146.43	210.03	992.76															
				CB8P4	742.90	1609.37	170.68	866.48															
				CB8P5	106.51	220.44	78.82	113.93															
				CB8P6	269.17	552.70	100.41	283.52															
				CB8P7	283.60	554.87	94.33	271.27															
				CB8P8	187.08	264.02	68.06	76.95															

				CB8P9	282.54	853.61	125.59	571.07															
				CB8P10	318.81	835.77	122.17	516.96															
				CB8P11	319.88	825.25	119.27	505.37															
				CB8P12	176.85	355.33	91.18	178.48															
				CB8P13	181.43	342.97	88.71	161.54															
				CB8P14	133.94	286.06	82.65	152.12															
				CB8P15	136.03	288.81	82.54	152.78															
Total per block					5579.67	11486.74	1746.82	5907.07															
CB9	2462.28	198.47	1	CB9P1	761.53	2462.28	198.47	1700.75	53.17	50.51	5.88	35.39	53.52										
Total per block					761.53	2462.28	198.47	1700.75															
CB10	3027.25	221.37	5	CB10P1	335.07	718.76	106.82	383.69	39.50	62.01	46.07	73.79											
				CB10P2	232.53	547.98	95.10	315.45															
				CB10P3	0.00	575.83	98.54	575.83															
				CB10P4	119.31	261.17	64.48	141.85															
				CB10P5	425.44	923.52	125.75	498.08															
Total per block					1112.35	3027.25	490.70	1914.90															
CB11	3050.00	220.99	8	CB11P1	304.50	521.14	90.27	216.64	45.91	60.84	61.17	53.07											
				CB11P2	218.59	362.31	80.55	143.72															
				CB11P3	239.10	368.33	78.50	129.22															
				CB11P4	102.75	224.34	68.38	121.60															
				CB11P5	245.84	279.42	74.73	33.59															
				CB11P6	140.83	291.43	77.87	150.61															
				CB11P7	209.61	814.58	116.07	604.96															
				CB11P8	121.91	188.12	65.16	66.21															
Total per block					1583.12	3049.67	651.55	1466.55															
CB12	5921.70	325.51	12	CB12P1	157.97	268.84	67.03	110.87	112.38	40.39	74.29	98.45											
				CB12P2	225.70	348.80	74.94	123.11															
				CB12P3	111.51	200.11	60.20	88.60															
				CB12P4	175.02	648.88	102.00	473.86															
				CB12P5	282.30	985.84	140.59	703.55															
				CB12P6	285.80	864.50	124.29	578.70															
				CB12P7	261.37	760.54	120.18	499.18															
				CB12P8	196.24	477.52	91.44	281.28															
				CB12P9	130.10	189.53	59.81	59.43															
				CB12P10	155.95	208.12	61.63	52.17															
				CB12P11	135.85	188.67	59.79	52.82															
				CB12P12	500.44	788.40	119.81	287.96															
Total per block					2618.24	5929.76	1081.71	3311.52															
CB13	1403.02	147.20	6	CB13P1	124.95	150.00	50.00	25.05	36.15	40.42	16.13	27.02	27.48										
				CB13P2	102.16	134.72	47.94	32.56															
				CB13P3	268.85	366.07	78.70	97.22															
				CB13P4	139.32	334.13	80.28	194.81															
				CB13P5	142.12	238.82	64.55	96.70															
				CB13P6	0.00	179.00	59.10	179.00															
Total per block					777.41	1402.74	380.56	625.33															
CB14	2062.79	222.36	8	CB14P1	175.07	278.57	67.84	103.49	90.18	39.01	83.16	10.01											
				CB14P2	119.02	235.12	62.68	116.11															
				CB14P3	111.97	279.52	70.80	167.54															
				CB14P4	127.15	312.03	79.60	184.88															
				CB14P5	151.89	296.79	74.05	144.90															
				CB14P6	166.41	324.90	73.73	158.50															
				CB14P7	192.97	251.72	63.47	58.75															
				CB14P8	81.25	86.45	39.62	5.20															
Total per block					1125.73	2065.10	531.78	939.37															
CB15	6131.15	467.96	35	CB15P1	185.52	438.56	85.10	253.04	209.24	20.51	208.21	30.00											
				CB15P2	144.90	285.17	77.34	140.27															
				CB15P3	245.29	308.37	82.38	63.08															
				CB15P4	122.02	155.00	51.00	32.98															
				CB15P5	122.55	155.00	51.00	32.45															
				CB15P6	119.82	155.00	51.00	35.18															
				CB15P7	140.23	155.00	51.00	14.77															
				CB15P8	98.41	155.00	51.00	56.59															
				CB15P9	102.81	150.00	50.00	47.19															
				CB15P10	131.66	150.00	50.00	18.34															
				CB15P11	130.32	150.00	50.00	19.68															
				CB15P12	135.46	150.00	50.00	14.54															
				CB15P13	124.34	150.00	50.00	25.66															
				CB15P14	116.15	155.00	51.00	38.85															
				CB15P15	122.92	155.00	51.00	32.08															
				CB15P16	138.52	155.00	51.00	16.48															
				CB15P17	140.20	155.00	51.00	14.80															
				CB15P18	135.56	155.00	51.00	19.44															
				CB15P19	173.16	275.79	66.98	102.63															
				CB15P20	117.43	273.43	66.46	156.00															
				CB15P21	128.47	150.00	50.00	21.53															
				CB15P22	108.37	150.00	50.00	41.63															
				CB15P23	130.50	150.00	50.00	19.50															
				CB15P24	140.15	150.00	50.00	9.85															
				CB15P25	136.59	150.00	50.00	13.41															
				CB15P26	132.52	150.00	50.00	17.48															
				CB15P27	131.69	150.00	50.00	18.31															
				CB15P28	140.57	150.00	50.00	9.43															
				CB15P29	127.42	150.00	50.00	22.58															
				CB15P30	137.24	150.00	50.00	12.76															
				CB15P31	138.72	150.00	50.00	11.28															
				CB15P32	134.45	150.00	50.00	15.55															
				CB15P33	109.18	150.00	50.00	40.82															
				CB15P34	130.23	150.00	50.00	19.77															
				CB15P35	110.50	150.00	50.00	39.50															
Total per block					4683.85	6131.32	1888.25	1447.47															
CB16	6190.43	472.70	38	CB16P1	154.11	267.04	65.62	112.93	206.59	30.00	206.11	30.00											
				CB16P2	134.55	150.00	50.00	15.45															
				CB16P3	135.54	150.00	50.00	14.46															
				CB16P4	119.99	150.00	50.00	30.01															
				CB16P5	136.40	150.00	50.00	13.60															
				CB16P6	124.21	150.00	50.00	25.80															
				CB16P7	134.86	150.00	50.00	15.14															
				CB16P8	132.95	150.00	50.00	17.05															
				CB16P9	150.08	150.00	50.00	-0.08															
				CB16P10	116.41	150.00	50.00	33.59															
				CB16P11	99.53	150.00	50.00	50.47															
				CB16P12	144.70	150.00	50.00	5.30															
				CB16P13	131.21	150.00	50.00	18.79															
				CB16P14	122.60	150.00	50.00	27.40															
				CB16P15	138.31	150.00	50.00	11.69															
				CB16P16	112.44	150.00	50.00	37.56															
				CB16P17	131.95	150.00	50.00	18.05															
				CB16P18	136.82	150.00	50.00	13.18															
				CB16P19	173.87	275.91	66.78	102.04															
				CB16P20	157.99	279.00	67.21	121.00															
				CB16P21	118.42	150.00	50.00	31.58															
				CB16P22	112.50	150.00	50.00	37.50															
				CB16P23	126.42	150.00	50.00	23.58															
				CB16P24	125.15	150.00	50.00	24.85															
				CB16P25	131.25	150.00	50.00	18.75															
				CB16P26	136.24	150.00	50.00	13.76															
				CB16P27	129.52	150.00	50.00	20.48															
				CB16P28	103.36	150.00	50.00	46.64															
				CB16P29	102.01	150.00	50.00	47.99															
				CB16P30	121.97	150.00	50.00	28.03															
				CB16P31	114.36	150.00	50.00	35.64															
				CB16P32	135.41	150.00	50.00	14.59															
				CB16P33	135.42	150.00	50.00	14.58															
				CB16P34	125.84	150.00	50.00	24.16															
				CB16P35	141.44	150.00	50.00	8.56															
				CB16P36	130.11	150.00	50.00	19.89															
				CB16P37	117.02	150.00	50.00	32.98															
				CB16P38	164.83	267.54	65.68	102.71															
Total per block					4959.78	6189.49	1965.28	1229.71															
CB17	3194.51	443.20	20	CB17P1	171.70	276.26	66.65	104.57	206.10	15.50	206.09	15.50											

				CB17P2	113.01	155.00	51.00	41.99															
				CB17P3	99.44	155.00	51.00	55.56															
				CB17P4	110.69	155.00	51.00	44.31															
				CB17P5	138.93	155.00	51.00	16.07															
				CB17P6	124.73	155.00	51.00	30.27															
				CB17P7	110.73	155.00	51.00	44.27															
				CB17P8	106.98	155.00	51.00	48.02															
				CB17P9	110.73	155.00	51.00	44.27															
				CB17P10	152.02	155.00	51.00	2.98															
				CB17P11	115.00	155.00	51.00	40.00															
				CB17P12	112.39	155.00	51.00	42.61															
				CB17P13	123.83	155.00	51.00	31.17															
				CB17P14	116.87	155.00	51.00	38.13															
				CB17P15	124.20	155.00	51.00	30.80															
				CB17P16	127.72	155.00	51.00	27.28															
				CB17P17	132.19	155.00	51.00	22.81															
				CB17P18	118.18	155.00	51.00	36.82															
				CB17P19	134.16	200.78	58.51	66.61															
				CB17P20	54.89	82.14	45.51	27.25															
Total per block					2398.39	3194.18	1037.66	795.79															
CB18	6192.21	474.21	38	CB18P1	180.00	252.48	63.66	72.48	30.00	205.15	31.81	207.25											
				CB18P2	129.49	150.00	50.00	20.51															
				CB18P3	112.48	150.00	50.00	37.52															
				CB18P4	133.87	150.00	50.00	16.13															
				CB18P5	116.38	150.00	50.00	33.62															
				CB18P6	103.39	150.00	50.00	46.61															
				CB18P7	130.32	150.00	50.00	19.68															
				CB18P8	113.73	150.00	50.00	36.27															
				CB18P9	120.07	150.00	50.00	29.93															
				CB18P10	125.20	150.00	50.00	24.80															
				CB18P11	127.92	150.00	50.00	22.08															
				CB18P12	139.23	150.00	50.00	10.77															
				CB18P13	123.02	150.00	50.00	26.98															
				CB18P14	119.51	165.00	52.00	45.49															
				CB18P15	106.45	150.00	50.00	43.55															
				CB18P16	121.89	150.00	50.00	28.11															
				CB18P17	105.46	135.00	48.00	29.54															
				CB18P18	115.70	150.00	50.00	34.30															
				CB18P19	225.11	311.49	70.68	86.39															
				CB18P20	125.46	275.76	66.77	150.30															
				CB18P21	132.22	150.00	50.00	17.78															
				CB18P22	120.55	135.00	48.00	14.45															
				CB18P23	119.65	150.00	50.00	30.35															
				CB18P24	128.34	150.00	50.00	21.66															
				CB18P25	133.21	165.00	52.00	31.79															
				CB18P26	104.18	150.00	50.00	45.82															
				CB18P27	139.24	150.00	50.00	10.76															
				CB18P28	123.59	150.00	50.00	26.41															
				CB18P29	131.79	150.00	50.00	18.21															
				CB18P30	120.04	150.00	50.00	29.96															
				CB18P31	120.72	150.00	50.00	29.28															
				CB18P32	133.46	150.00	50.00	16.54															
				CB18P33	104.93	150.00	50.00	45.07															
				CB18P34	124.12	150.00	50.00	25.88															
				CB18P35	104.93	150.00	50.00	45.07															
				CB18P36	124.99	150.00	50.00	25.01															
				CB18P37	128.85	150.00	50.00	21.15															
				CB18P38	154.12	252.48	63.66	98.36															
Total per block					4823.61	6192.21	1964.78	1368.59															
CB19	3476.93	234.47	9	CB19P1	1055.25	1671.89	174.12	616.65	60.69	54.28	61.18	58.32											
				CB19P2	198.21	341.72	93.96	143.51															
				CB19P3	194.34	683.07	107.10	488.73															
				CB19P4	118.21	126.22	54.10	8.01															
				CB19P5	101.66	101.66	40.81	0.00															
				CB19P6	101.46	107.11	40.69	5.65															
				CB19P7	171.13	193.51	58.08	22.38															
				CB19P8	73.39	94.81	47.93	21.42															
				CB19P9	111.02	111.02	49.94	0.00															
Total per block					2124.66	3431.01	666.73	1306.35															
CB20	3431.18	234.51	10	CB20P1	254.11	642.60	103.43	388.49	61.36	56.20	60.01	56.94											
				CB20P2	203.73	315.81	72.90	112.08															
				CB20P3	222.73	372.90	78.56	150.17															
				CB20P4	165.82	610.76	101.33	444.94															
				CB20P5	68.21	75.86	37.61	7.65															
				CB20P6	176.32	214.28	58.75	37.96															
				CB20P7	334.51	374.76	80.10	40.25															
				CB20P8	183.23	219.47	59.54	36.24															
				CB20P9	164.35	428.30	88.60	263.96															
				CB20P10	76.60	175.77	72.22	99.17															
Total per block					1849.60	3430.51	753.03	1580.91															
CB21	3374.59	230.86	12	CB21P1	158.77	346.37	76.20	187.60	51.72	61.71	56.48	60.96											
				CB21P2	130.43	353.59	77.16	223.17															
				CB21P3	194.88	194.88	63.97	0.00															
				CB21P4	257.73	548.62	93.71	290.89															
				CB21P5	266.95	712.39	107.76	445.45															
				CB21P6	112.34	112.34	44.34	0.00															
				CB21P7	120.20	129.77	46.92	9.57															
				CB21P8	121.12	121.12	44.22	0.00															
				CB21P9	110.33	110.33	42.09	0.00															
				CB21P10	65.71	91.97	39.21	26.26															
				CB21P11	330.02	495.04	94.89	165.02															
				CB21P12	103.34	161.56	71.42	58.22															
Total per block					1971.80	3377.98	801.91	1406.18															
CB22	2760.57	280.14	11	CB22P1	185.79	454.01	87.03	268.22	25.76	9.37	121.41	29.11	94.49										
				CB22P2	139.63	239.48	67.76	99.86															
				CB22P3	160.61	245.25	68.32	84.64															
				CB22P4	167.44	239.06	67.87	71.62															
				CB22P5	170.07	241.19	68.10	71.12															
				CB22P6	228.38	243.21	68.30	14.83															
				CB22P7	155.25	235.73	67.84	80.48															
				CB22P8	199.90	246.32	68.66	46.42															
				CB22P9	165.34	242.81	68.55	77.47															
				CB22P10	123.20	166.68	60.88	43.48															
				CB22P11	115.50	207.64	61.11	92.14															
Total per block					1811.10	2761.37	754.43	950.27															
CB23	40426.03	907.61	26	CB23P1	192.07	362.66	76.47	170.60	236.85	123.13	90.59	95.15	361.89										
				CB23P2	116.50	208.91	62.66	92.41															
				CB23P3	292.80	311.24	85.24	18.44															
				CB23P4	106.06	210.55	61.82	104.50															
				CB23P5	164.06	280.32	68.41	116.26															
				CB23P6	401.66	906.65	134.78	504.98															
				CB23P7	0.00	13819.53	558.95	13819.53															
				CB23P8	448.67	600.00	110.00	151.33															
				CB23P9	391.50	600.00	110.00	208.50															
				CB23P10	570.00	800.00	120.00	230.00															
				CB23P11	388.55	800.00	120.00	411.45															
				CB23P12	394.08	600.00	110.00	205.92															
				CB23P13	0.00	7414.52	383.53	7414.52															
				CB23P14	96.00	180.00	54.00	84.00															
				CB23P15	217.50	574.74	107.19	357.24															
				CB23P16	257.00	713.65	109.57	456.64															
				CB23P17	158.23	213.95	63.00	55.71															
				CB23P18	174.65	237.95	64.15	63.30															
				CB23P19	177.46	342.63	74.42	165.17															
				CB23P20	78.64	174.97	61.42	96.33															
				CB23P21	146.01	372.63	79.12	226.62															
				CB23P22	113.76	192.97	64.24	79.21															
				CB23P23	241.36	279.88	74.54	38.53															
				CB23P24	320.38	358.84	77.93	38.46															
				CB23P25	109.19	486.72	92.01	377.53															
				CB23P26	58.50	124.75	46.13	66.25															
Total per block					5614.63	31168.06	2969.58	25553.43															

CB24	1745.70	198.49	10	CB24P1	191.69	205.74	60.11	14.04	81.58	67.16	49.75		
				CB24P2	136.95	171.76	53.21	34.81					
				CB24P3	133.18	171.13	53.03	37.95					
				CB24P4	144.51	167.62	52.76	23.10					
				CB24P5	101.11	161.68	54.14	60.57					
				CB24P6	103.75	164.58	57.01	60.83					
				CB24P7	117.35	133.66	50.24	16.31					
				CB24P8	122.86	206.64	60.38	83.78					
				CB24P9	120.20	155.45	49.27	35.25					
				CB24P10	148.66	156.91	54.22	8.25					
Total per block					1320.26	1695.17	544.38	374.91					

CB25	3969.57	315.65	24	CB25P1	147.15	214.73	58.02	67.58	30.32	113.22	22.79	17.63	131.69
				CB25P2	139.46	160.00	52.00	20.54					
				CB25P3	149.12	160.00	52.00	10.88					
				CB25P4	155.27	160.00	52.00	4.73					
				CB25P5	147.23	160.00	52.00	12.77					
				CB25P6	140.57	160.00	52.00	19.43					
				CB25P7	121.60	160.00	52.00	38.40					
				CB25P8	156.46	160.00	52.00	3.54					
				CB25P9	137.05	160.00	52.00	22.95					
				CB25P10	136.12	160.00	52.00	23.88					
				CB25P11	126.03	160.00	52.00	33.97					
				CB25P12	109.62	179.51	59.62	69.90					
				CB25P13	160.26	272.97	66.40	112.71					
				CB25P14	125.32	150.00	50.00	24.68					
				CB25P15	126.10	150.00	50.00	23.90					
				CB25P16	96.60	150.00	50.00	53.40					
				CB25P17	105.18	150.00	50.00	44.82					
				CB25P18	105.18	150.00	50.00	44.82					
				CB25P19	130.29	150.00	50.00	19.71					
				CB25P20	114.75	150.00	50.00	35.25					
				CB25P21	121.07	150.00	50.00	28.93					
				CB25P22	124.54	150.00	50.00	25.46					
				CB25P23	119.92	150.00	50.00	30.08					
				CB25P24	189.26	202.26	56.97	13.00					
Total per block					3184.16	3969.47	1261.01	785.31					

CB26	3950.71	323.39	25	CB26P1	192.18	202.26	56.97	10.08	131.69	30.00	131.69	30.00	
				CB26P2	113.30	150.00	50.00	36.70					
				CB26P3	126.67	150.00	50.00	23.33					
				CB26P4	133.76	150.00	50.00	16.24					
				CB26P5	103.53	150.00	50.00	46.47					
				CB26P6	125.27	150.00	50.00	24.73					
				CB26P7	99.15	150.00	50.00	50.85					
				CB26P8	130.75	150.00	50.00	19.25					
				CB26P9	125.15	150.00	50.00	24.85					
				CB26P10	112.00	150.00	50.00	38.00					
				CB26P11	138.88	150.00	50.00	11.12					
				CB26P12	139.88	272.98	66.40	133.09					
				CB26P13	109.08	150.68	52.96	41.60					
				CB26P14	87.77	122.30	49.84	34.53					
				CB26P15	104.54	150.00	50.00	45.46					
				CB26P16	127.63	150.00	50.00	22.37					
				CB26P17	102.97	150.00	50.00	47.03					
				CB26P18	135.60	150.00	50.00	14.40					
				CB26P19	125.14	150.00	50.00	24.86					
				CB26P20	117.67	150.00	50.00	32.33					
				CB26P21	111.39	150.00	50.00	38.61					
				CB26P22	107.91	150.00	50.00	42.09					
				CB26P23	127.35	150.00	50.00	22.65					
				CB26P24	129.17	150.00	50.00	20.83					
				CB26P25	176.06	202.26	56.97	26.20					
Total per block					3102.81	3950.48	1283.14	847.67					

CB27	2631.82	303.16	14	CB27P1	145.74	269.68	66.97	123.95	20.00	131.69	19.78	131.69	
				CB27P2	152.22	200.00	60.00	47.78					
				CB27P3	155.23	200.00	60.00	44.77					
				CB27P4	168.34	200.00	60.00	31.66					
				CB27P5	131.65	200.00	60.00	68.35					
				CB27P6	124.46	200.00	60.00	75.54					
				CB27P7	122.39	200.00	60.00	77.61					
				CB27P8	130.54	200.00	60.00	69.46					
				CB27P9	143.09	200.00	60.00	56.91					
				CB27P10	122.39	200.00	60.00	77.61					
				CB27P11	122.39	200.00	60.00	77.61					
				CB27P12	158.20	158.20	50.33	0.00					
				CB27P13	64.48	104.44	50.17	39.96					
				CB27P14	61.25	99.34	41.22	38.10					
Total per block					1802.36	2631.67	808.70	829.31					

CB28	6026.30	334.13	4	CB28P1	758.25	4055.54	298.29	3297.29	52.56	116.41	53.93	111.23	
				CB28P2	255.26	430.08	83.07	174.83					
				CB28P3	310.65	662.38	110.49	351.73					
				CB28P4	155.31	879.97	136.29	724.66					
Total per block					1479.47	6027.97	628.13	4548.50					

CB29	15500.40	636.11	31	CB29P1	215.40	482.38	87.45	266.98	60.69	236.86	58.89	279.67	
				CB29P2	330.83	600.00	100.00	269.17					
				CB29P3	373.10	600.00	100.00	226.90					
				CB29P4	339.64	600.00	100.00	260.36					
				CB29P5	387.40	600.00	100.00	212.60					
				CB29P6	301.42	600.00	100.00	298.58					
				CB29P7	277.60	600.00	100.00	322.41					
				CB29P8	347.63	600.00	100.00	252.37					
				CB29P9	207.12	600.00	100.00	392.88					
				CB29P10	333.25	600.00	100.00	266.75					
				CB29P11	293.12	600.00	100.00	306.88					
				CB29P12	263.30	779.26	112.09	515.97					
				CB29P13	177.37	327.92	82.12	150.55					
				CB29P14	146.22	243.92	76.35	97.69					
				CB29P15	70.97	208.77	67.84	137.80					
				CB29P16	75.09	140.37	54.15	65.29					
				CB29P17	207.47	732.08	107.34	524.62					
				CB29P18	110.65	263.58	77.82	152.93					
				CB29P19	222.11	498.15	93.24	276.05					
				CB29P20	168.78	171.71	71.28	2.93					
				CB29P21	309.76	600.00	100.00	290.24					
				CB29P22	241.33	600.00	100.00	358.67					
				CB29P23	324.45	600.00	100.00	275.55					
				CB29P24	307.29	600.00	100.00	292.71					
				CB29P25	413.66	600.00	100.00	186.34					
				CB29P26	238.31	600.00	100.00	361.69					
				CB29P27	370.99	600.00	100.00	229.01					
				CB29P28	265.91	600.00	10.00	334.09					
				CB29P29	150.09	226.33	75.07	76.24					
				CB29P30	173.98	381.41	85.40	207.44					
				CB29P31	94.24	129.43	53.41	35.19					
Total per block					7738.48	15385.33	2753.54	7646.85					

CB30	20254.52	784.70	45	CB30P1	193.89	252.94	67.37	59.05	74.48	306.20	55.98	348.04	
				CB30P2	195.96	326.77	74.15	130.80					
				CB30P3	89.49	179.79	73.41	90.30					
				CB30P4	213.66	441.23	91.31	227.57					
				CB30P5	138.50	208.08	60.04	69.58					
				CB30P6	124.93	190.78	59.74	65.85					
				CB30P7	77.25	249.36	66.61	172.11					
				CB30P8	202.61	600.00	100.00	397.40					
				CB30P9	183.62	600.00	100.00	416.38					
				CB30P10	368.81	600.00	100.00	231.19					
				CB30P11	192.72	600.00	100.00	407.28					
				CB30P12	263.11	600.00	100.00	336.89					
				CB30P13	258.81	600.00	100.00	341.19					
				CB30P14	305.53	600.00	100.00	294.47					
				CB30P15	155.14	600.00	100.00	444.86					
				CB30P16	214.77	600.00	100.00	385.23					
				CB30P17	223.93	600.00	100.00	376.07					
				CB30P18	191.65	600.00	100.00	408.35					
				CB30P19	148.38	385.43	86.17	237.04					

				CB30P20	146.89	381.23	85.87	234.35															
				CB30P21	336.10	1393.29	157.56	1057.20															
				CB30P22	101.25	315.28	81.42	214.03															
				CB30P23	294.08	882.90	117.61	588.82															
				CB30P24	147.45	233.02	94.40	85.56															
				CB30P25	160.60	215.94	65.80	55.34															
				CB30P26	126.79	212.07	71.92	85.28															
				CB30P27	103.23	147.15	55.72	43.92															
				CB30P28	65.17	103.16	42.32	37.99															
				CB30P29	161.70	383.08	86.17	221.38															
				CB30P30	185.50	399.00	87.19	213.50															
				CB30P31	222.26	285.14	82.13	62.88															
				CB30P32	156.26	338.80	85.38	182.54															
				CB30P33	413.84	615.03	101.77	201.18															
				CB30P34	157.11	300.00	80.00	142.89															
				CB30P35	162.68	300.00	80.00	137.32															
				CB30P36	232.51	600.00	100.00	367.49															
				CB30P37	256.97	600.00	100.00	343.03															
				CB30P38	107.53	300.00	80.00	192.47															
				CB30P39	176.98	300.00	80.00	123.02															
				CB30P40	250.38	600.00	100.00	349.62															
				CB30P41	175.34	600.00	100.00	424.66															
				CB30P42	111.66	300.00	80.00	188.34															
				CB30P43	112.61	300.00	80.00	187.39															
				CB30P44	287.61	600.00	100.00	312.39															
				CB30P45	261.97	600.00	100.00	338.03															
Total per block					8657.23	20139.48	3974.04	11482.25															

CB31	21349.52	825.67	42	CB31P1	105.05	105.05	49.61	0.00	67.48	341.31	58.32	358.55											
				CB31P2	439.54	655.99	105.30	216.45															
				CB31P3	128.72	322.41	72.10	193.69															
				CB31P4	187.07	313.36	71.19	126.29															
				CB31P5	181.83	300.00	80.00	118.17															
				CB31P6	181.83	300.00	80.00	118.17															
				CB31P7	227.16	300.00	80.00	72.84															
				CB31P8	218.93	300.00	80.00	81.07															
				CB31P9	165.35	600.00	100.00	434.65															
				CB31P10	124.43	180.00	84.00	55.57															
				CB31P11	138.09	407.21	88.28	269.12															
				CB31P12	190.73	322.08	82.78	131.35															
				CB31P13	215.20	304.20	81.61	89.00															
				CB31P14	456.80	636.24	103.03	179.44															
				CB31P15	211.65	626.92	102.42	415.27															
				CB31P16	101.78	154.73	71.89	52.95															
				CB31P17	111.35	237.66	77.25	126.31															
				CB31P18	311.47	818.33	114.78	506.86															
				CB31P19	338.89	600.00	100.00	261.11															
				CB31P20	362.12	474.91	92.54	112.79															
				CB31P21	480.08	763.51	111.72	283.43															
				CB31P22	165.79	223.99	110.07	58.20															
				CB31P23	539.41	1111.90	133.78	572.50															
				CB31P24	390.45	835.29	117.61	444.85															
				CB31P25	260.35	711.01	106.49	450.67															
				CB31P26	225.72	600.00	100.00	374.28															
				CB31P27	487.76	600.00	100.00	112.24															
				CB31P28	224.92	600.00	100.00	375.08															
				CB31P29	249.04	600.00	100.00	350.96															
				CB31P30	287.73	680.26	113.17	392.53															
				CB31P31	492.43	685.41	114.50	192.97															
				CB31P32	480.31	545.98	97.06	65.67															
				CB31P33	402.71	989.22	125.87	586.51															
				CB31P34	387.45	809.75	113.89	422.30															
				CB31P35	146.63	563.23	96.99	416.61															
				CB31P36	299.45	408.44	86.23	108.99															
				CB31P37	81.36	176.73	71.66	95.38															
				CB31P38	280.73	600.00	100.00	319.27															
				CB31P39	217.31	600.00	100.00	382.69															
				CB31P40	243.38	600.00	100.00	356.62															
				CB31P41	122.68	163.51	56.20	40.84															
				CB31P42	253.69	353.02	75.27	99.33															
Total per block					11117.34	21180.35	3947.30	10063.01															

CB32	22368.11	856.18	51	CB32P1	566.07	650.23	104.20	84.17	59.79	361.99	60.50	373.90											
				CB32P2	198.81	650.94	105.02	452.13															
				CB32P3	150.04	209.78	62.47	59.74															
				CB32P4	152.33	228.15	64.18	75.82															
				CB32P5	156.46	195.67	59.80	39.21															
				CB32P6	111.54	348.58	84.57	237.04															
				CB32P7	0.00	247.52	78.06	247.52															
				CB32P8	331.31	600.00	100.00	268.69															
				CB32P9	162.55	482.81	93.21	320.26															
				CB32P10	182.96	444.57	90.75	261.61															
				CB32P11	154.45	319.56	82.70	165.11															
				CB32P12	288.23	600.00	100.00	311.77															
				CB32P13	267.17	600.00	100.00	332.83															
				CB32P14	550.15	1528.75	168.06	978.60															
				CB32P15	472.84	955.71	131.31	482.88															
				CB32P16	221.72	350.45	84.11	128.74															
				CB32P17	180.38	255.56	77.77	75.18															
				CB32P18	147.16	300.00	80.00	152.84															
				CB32P19	134.25	300.00	80.00	165.75															
				CB32P20	174.05	300.00	80.00	125.95															
				CB32P21	165.81	300.00	80.00	134.19															
				CB32P22	137.64	257.16	77.21	119.51															
				CB32P23	120.99	178.94	71.89	57.95															
				CB32P24	135.25	171.25	71.29	36.00															
				CB32P25	220.06	375.28	84.82	155.22															
				CB32P26	161.69	225.57	74.64	63.88															
				CB32P27	331.98	659.40	105.74	327.42															
				CB32P28	154.89	353.61	91.75	198.72															
				CB32P29	165.35	378.86	95.45	213.52															
				CB32P30	248.74	429.64	81.19	180.90															
				CB32P31	286.11	419.66	81.99	133.55															
				CB32P32	533.11	651.84	104.09	118.73															
				CB32P33	116.20	254.94	78.29	138.74															
				CB32P34	152.56	343.92	83.92	191.37															
				CB32P35	351.51	600.00	100.00	248.49															
				CB32P36	278.07	600.00	100.00	321.93															
				CB32P37	411.38	600.00	100.00	188.62															
				CB32P38	296.37	600.00	100.00	303.63															
				CB32P39	384.58	982.33	131.85	597.75															
				CB32P40	271.35	604.06	106.27	332.71															
				CB32P41	260.01	397.85	86.07	137.84															
				CB32P42	259.09	393.52	85.76	134.43															
				CB32P43	185.16	300.00	80.00	114.84															
				CB32P44	199.51	300.00	80.00	100.49															
				CB32P45	247.26	440.26	88.88	193.00															
				CB32P46	86.40	147.58	69.03	61.18															
				CB32P47	189.27	236.07	75.02	46.79															
				CB32P48	171.45	360.97	83.47	189.52															
				CB32P49	208.97	600.00	100.00	391.03															
				CB32P50	120.44	430.76	88.16	310.32															
				CB32P51	104.28	134.52	68.03	30.24															
Total per block					11557.94	22296.31	4550.97	10738.37															

CB33	15844.61	648.97	37	CB33P1	204.05	204.05	60.41	0.00	60.21	264.83	59.64	264.30											
				CB33P2	273.20	319.48	83.90	46.28															
				CB33P3	191.09	319.48	83.90	128.40															
				CB33P4	377.53	679.02	105.20	301.49															
				CB33P5	214.12	300.00	80.00	85.88															
				CB33P6	145.67	300.00	80.00	154.33															
				CB33P7	337.99	600.00	100.00	262.01															
				CB33P8	153.92	300.00	80.00	146.08															
				CB33P9	140.82	300.00	100.00	159.18															
				CB33P10	264.90	600.00	100.00	335.10															
				CB33P11	173.62	429.24	88.62	255.62															
				CB33P12	172.27	405.03	87.01	232.75															
				CB33P13	145.20	395.64	95.83	250.44															
				CB33P14	146.75	331.66	79.44	184.91															

				CB33P15	177.82	538.06	97.15	360.24															
				CB33P16	147.36	318.35	82.71	170.99															
				CB33P17	183.03	314.33	81.29	131.30															
				CB33P18	192.23	613.92	101.26	421.69															
				CB33P19	195.85	345.62	74.61	149.77															
				CB33P20	120.53	285.55	68.28	165.02															
				CB33P21	282.08	640.17	104.13	358.09															
				CB33P22	90.00	121.41	46.38	31.40															
				CB33P23	126.87	194.21	56.02	67.33															
				CB33P24	196.73	335.96	73.92	139.23															
				CB33P25	221.11	613.92	101.26	392.81															
				CB33P26	341.49	688.30	106.22	346.81															
				CB33P27	106.48	375.68	85.21	269.20															
				CB33P28	828.40	1684.01	181.09	855.61															
				CB33P29	249.40	439.05	105.34	189.64															
				CB33P30	292.55	622.48	101.28	329.94															
				CB33P31	277.53	600.00	100.00	322.47															
				CB33P32	173.63	300.00	80.00	126.37															
				CB33P33	121.97	300.00	80.00	178.03															
				CB33P34	107.54	300.00	80.00	192.46															
				CB33P35	122.10	300.00	80.00	177.90															
				CB33P36	119.42	202.17	60.22	82.75															
				CB33P37	173.71	213.67	61.37	39.96															
Total per block					7788.92	15830.44	3232.04	8041.52															

CB34	40370.67	1113.15	32	CB34P1	315.41	782.51	119.45	467.10	59.19	68.09	71.85	63.58	262.02	126.90	45.09	177.56	39.45	37.23	162.20				
				CB34P2	331.19	600.00	100.00	268.81															
				CB34P3	194.82	252.17	64.60	57.35															
				CB34P4	168.72	205.75	61.15	37.03															
				CB34P5	91.16	184.35	59.76	93.19															
				CB34P6	371.15	872.93	131.84	501.77															
				CB34P7	0.00	484.10	86.42	484.10															
				CB34P8	176.68	218.51	62.28	41.83															
				CB34P9	209.12	279.55	78.64	70.43															
				CB34P10	207.10	300.00	80.00	92.90															
				CB34P11	233.67	574.61	102.10	340.94															
				CB34P12	395.47	676.18	108.40	280.71															
				CB34P13	320.73	715.42	113.43	394.68															
				CB34P14	206.02	360.00	84.00	153.98															
				CB34P15	310.22	664.47	104.30	354.25															
				CB34P16	239.56	713.92	116.42	474.35															
				CB34P17	1358.40	5151.49	299.55	3793.09															
				CB34P18	901.66	2603.59	205.28	1701.93															
				CB34P19	1216.79	5984.46	358.87	4767.67															
				CB34P20	246.75	534.35	119.76	287.60															
				CB34P21	734.52	2779.00	223.62	2044.49															
				CB34P22	190.91	1051.43	130.10	860.52															
				CB34P23	232.00	780.00	114.49	548.00															
				CB34P24	318.76	561.15	99.83	242.39															
				CB34P25	883.26	2829.32	213.63	1946.06															
				CB34P26	202.44	241.96	65.29	39.51															
				CB34P27	228.38	438.19	83.75	209.81															
				CB34P28	223.35	681.46	109.24	458.12															
				CB34P29	222.39	772.63	116.78	550.24															
				CB34P30	170.00	807.04	121.26	637.04															
				CB34P31	181.00	804.23	124.12	623.23															
				CB34P32	198.78	831.98	133.31	633.20															
Total per block					11280.43	34736.76	3991.64	23456.34															

CB35	8990.69	427.87	19	CB35P1	246.05	503.65	92.98	257.60	53.75	155.82	60.80	157.50											
				CB35P2	409.32	473.66	89.18	64.34															
				CB35P3	0.00	303.97	78.73	303.97															
				CB35P4	193.10	289.34	78.05	96.24															
				CB35P5	167.00	262.68	76.09	95.68															
				CB35P6	134.05	173.13	69.74	39.08															
				CB35P7	205.13	303.58	78.87	98.45															
				CB35P8	210.61	305.08	79.00	94.47															
				CB35P9	324.43	463.09	89.95	138.66															
				CB35P10	93.54	174.55	70.19	81.01															
				CB35P11	303.61	627.55	101.38	323.93															
				CB35P12	369.28	590.06	99.01	220.79															
				CB35P13	215.56	539.64	93.97	324.08															
				CB35P14	238.97	562.91	95.62	323.95															
				CB35P15	244.08	519.30	92.67	275.21															
				CB35P16	197.93	596.24	98.47	398.31															
				CB35P17	113.79	731.01	108.26	617.22															
				CB35P18	321.59	645.21	102.45																
				CB35P19	238.97	918.40	121.33	679.44															
Total per block					4227.01	8983.06	1715.94	4432.42															

CB36	9332.15	461.24	3	CB36P1	231.07	401.86	82.38	170.79	51.76	176.47	54.40	178.61											
				CB36P2	152.71	200.93	66.31	48.22															
				CB36P3	269.25	401.86	82.38	132.61															
					653.02	1004.65	231.07	351.63															

CB37	6175.96	328.40	15	CB37P1	0.00	280.07	65.52	280.07	83.23	107.76	27.95	109.47											
				CB37P2	176.81	227.17	68.53	50.36															
				CB37P3	0.00	202.25	63.88	202.25															
				CB37P4	147.10	214.36	64.64	67.26															
				CB37P5	243.76	420.90	84.07	177.14															
				CB37P6	155.12	192.90	62.15	37.78															
				CB37P7	239.95	345.36	89.16	105.41															
				CB37P8	163.81	276.00	72.37	112.19															
				CB37P9	259.38	382.08	78.40	122.70															
				CB37P10	228.62	791.50	129.93	562.88															
				CB37P11	0.00	611.77	97.71	611.77															
				CB37P12	231.00	249.50	69.90	18.50															
				CB37P13	0.00	1733.91	177.74	1733.91															
				CB37P14	85.36	113.39	55.36	28.03															
				CB37P15	103.54	134.92	56.98	31.39															
Total per block					2034.44	6176.07	1236.34	4141.63															

CB38	6438.99	335.53	5	CB38P1	191.96	362.29	81.29	170.34	65.32	98.61	66.40	105.19											
				CB38P2	210.39	304.26	81.31	93.88															
				CB38P3	223.00	334.82	87.42	111.82															
				CB38P4	230.50	439.52	89.29	209.02															
				CB38P5	220.20	508.26	98.45	288.06															
Total per block					1076.04	1949.15	437.76	873.11															

CB39	3955.75	270.13	10	CB39P1	169.42	212.07	62.48	42.65	60.38	45.19	20.69	14.74	79.85	49.28									
				CB39P2	130.25	215.76	63.22	85.51															
				CB39P3	60.12	168.01	60.08	107.89															
				CB39P4	262.05	541.17	101.69	279.12															
				CB39P5	162.33	205.26	57.83	42.93															
				CB39P6	104.74	131.22	47.65	26.48															
				CB39P7	95.96	126.84	47.73	30.88															
				CB39P8	107.36	149.05	51.15	41.69															
				CB39P9	278.07	603.57	100.05	325.50															
				CB39P10	295.62	565.28	101.03	269.66															
Total per block					1665.91	2918.22	692.92	1252.31															

CB40	2008.59	227.72	9	CB40P1	138.32	155.98	53.47	17.65	28.06	83.91	21.04	55.12	15.17	24.43									
				CB40P2	168.53	212.43	63.19	43.91															
				CB40P3	107.72	186.99	55.12	79.27															
				CB40P4	95.79	110.00	42.00	14.21															
				CB40P5	79.95	110.00	42.00	30.05															
				CB40P6	98.63	110.00	42.00	11.37															
				CB40P7	40.00	66.45	33.29	26.45															
				CB40P8	117.34	133.55	46.71	16.21															
				CB40P9	43.89	90.33	40.02	46.43															
Total per block					890.17	1175.73	417.80	285.56															

CB41	22590.52	843.55	49	CB41P1	114.12	125.00	45.00	10.88	60.96	217.96	48.42	154.70	54.01	66.48	241.03								
				CB41P2	99.13	125.00	45.00	25.87															
				CB41P3	95.00	125.00	45.00	30.00															
				CB41P4	69.10	69.10	35.98	0.00															
				CB41P5	49.28	49.28	29.59	0.00															
				CB41P6	58.95	73.02	34.90	14.07															
				CB41P7	55.43	55.43	32.20	0.00															

				CB41P8	102.64	118.13	43.39	15.49				
				CB41P9	68.58	84.00	38.00	15.43				
				CB41P10	77.69	96.01	40.00	18.31				
				CB41P11	88.01	120.01	44.00	32.00				
				CB41P12	88.61	120.01	44.00	31.39				
				CB41P13	99.35	146.63	48.56	47.28				
				CB41P14	156.91	194.78	58.70	37.87				
				CB41P15	146.55	146.55	50.32	0.00				
				CB41P16	187.25	217.28	60.21	30.03				
				CB41P17	115.59	120.00	44.00	4.41				
				CB41P18	120.00	120.00	44.00	0.00				
				CB41P19	309.23	309.23	89.81	0.00				
				CB41P20	74.86	74.86	34.64	0.00				
				CB41P21	98.30	98.30	40.29	0.00				
				CB41P22	101.15	101.15	40.98	0.00				
				CB41P23	61.62	61.62	31.45	0.00				
				CB41P24	183.91	183.91	62.65	0.00				
				CB41P25	1148.57	1148.57	178.71	0.00				
				CB41P26	244.95	275.04	82.90	30.08				
				CB41P27	131.20	167.80	67.93	36.60				
				CB41P28	174.15	386.35	83.56	212.20				
				CB41P29	201.72	294.88	69.75	93.16				
				CB41P30	188.87	344.34	74.58	155.46				
				CB41P31	267.74	468.47	92.46	200.73				
				CB41P32	118.40	156.16	72.46	37.76				
				CB41P33	269.07	639.91	103.44	370.84				
				CB41P34	219.00	653.68	105.61	434.68				
				CB41P35	81.58	114.90	43.02	33.32				
				CB41P36	106.63	109.03	42.65	2.41				
				CB41P37	116.21	130.09	46.07	13.88				
				CB41P38	75.00	79.38	35.85	4.38				
				CB41P39	77.78	77.78	35.52	0.00				
				CB41P40	88.91	195.00	56.00	106.10				
				CB41P41	88.08	104.00	42.00	15.92				
				CB41P42	88.00	104.00	42.00	16.00				
				CB41P43	79.04	104.00	42.00	24.96				
				CB41P44	88.00	104.00	42.00	16.00				
				CB41P45	82.52	104.00	42.00	21.48				
				CB41P46	78.33	104.00	42.00	25.67				
				CB41P47	62.36	78.00	38.00	15.64				
				CB41P48	90.53	114.63	43.81	24.10				
				CB41P49	0.00	12981.73	729.54	12981.73				
Total per block					6787.92	21974.03	3336.52	15186.11				
CB42	3424.96	255.28	1	CB42P1	0.00	3424.96	255.28	3424.96	84.33	29.63	92.89	48.42
Total per block					0.00	3424.96	255.28	3424.96				
CB43	11347.42	429.36	21	CB43P1	93.71	99.80	39.94	6.09	75.37	108.28	137.40	108.32
				CB43P2	90.53	96.71	40.17	6.18				
				CB43P3	137.24	147.92	50.92	10.68				
				CB43P4	97.29	101.11	40.62	3.81				
				CB43P5	79.15	93.97	40.88	14.82				
				CB43P6	90.12	95.91	41.45	5.79				
				CB43P7	104.95	104.95	44.08	0.00				
				CB43P8	184.23	268.73	65.77	84.51				
				CB43P9	211.67	260.34	65.61	48.67				
				CB43P10	65.02	93.81	40.81	28.79				
				CB43P11	90.98	94.98	40.65	4.00				
				CB43P12	119.66	119.66	49.89	0.00				
				CB43P13	97.11	97.11	39.63	0.00				
				CB43P14	139.90	151.53	50.88	11.64				
				CB43P15	142.12	187.86	60.45	45.74				
				CB43P16	94.70	94.70	41.40	0.00				
				CB43P17	91.29	94.68	41.02	3.39				
				CB43P18	87.96	94.82	40.50	6.87				
				CB43P19	109.27	109.27	44.34	0.00				
				CB43P20	102.73	102.73	42.62	0.00				
				CB43P21	87.29	94.08	40.61	6.78				
Total per block					2316.93	2604.69	962.24	287.77				
CB44	9477.13	389.23	5	CB44P1	411.90	431.33	101.82	19.44	89.86	114.19	88.16	97.03
				CB44P2	30.00	30.00	22.00	0.00				
				CB44P3	189.01	189.01	61.38	0.00				
				CB44P4	32.87	32.87	23.04	0.00				
				CB44P5	184.30	184.30	60.21	0.00				
Total per block					848.08	867.52	268.46	19.44				
CB45	15327.62	530.78	27	CB45P1	633.41	633.41	174.35	0.00	206.77	218.99	105.03	
				CB45P2	398.24	398.24	157.74	0.00				
				CB45P3	145.20	216.93	69.14	71.73				
				CB45P4	123.53	162.60	56.56	39.07				
				CB45P5	103.42	164.79	57.18	61.36				
				CB45P6	103.30	164.80	55.92	61.50				
				CB45P7	106.76	137.27	50.59	30.52				
				CB45P8	153.51	198.91	56.95	45.40				
				CB45P9	79.79	135.02	46.86	55.23				
				CB45P10	64.95	97.44	40.87	32.49				
				CB45P11	76.77	114.57	44.28	37.79				
				CB45P12	91.01	139.40	47.90	48.39				
				CB45P13	85.28	112.39	43.75	27.12				
				CB45P14	52.65	69.36	36.87	16.71				
				CB45P15	84.13	119.52	44.82	35.39				
				CB45P16	163.81	163.81	54.42	0.00				
				CB45P17	149.24	149.24	51.59	0.00				
				CB45P18	169.85	169.85	55.54	0.00				
				CB45P19	191.95	191.95	61.73	0.00				
				CB45P20	216.42	216.42	57.54	0.00				
				CB45P21	111.28	111.28	44.16	0.00				
				CB45P22	138.11	138.11	50.53	0.00				
				CB45P23	191.19	191.19	64.49	0.00				
				CB45P24	166.10	166.10	58.44	0.00				
				CB45P25	166.90	197.38	64.75	30.48				
				CB45P26	3367.98	3367.98	282.18	0.00				
				CB45P27	1583.51	1583.51	234.64	0.00				
Total per block					8918.29	9511.47	2063.79	593.18				
CB46	2989.59	334.45	1	CB46P1	0.00	2989.59	334.45	2989.59	170.55	163.90		
Total per block					0.00	2989.59	334.45	2989.59				
CB47	17863.62	679.00	2	CB47P1	0.00	16836.75	694.73	16836.75	317.29	309.39	52.32	
				CB47P2	0.00	379.00	98.75	379.00				
Total per block					0.00	17215.75	793.48	17215.75				
CB48	5528.32	676.22	1	CB48P1	0.00	5528.32	676.22	5528.32	293.25	25.45	312.30	45.22
Total per block					0.00	5528.32	676.22	5528.32				
CB49	5700.86	361.85	4	CB49P1	539.02	547.24	141.61	8.21	143.66	37.53	141.76	38.90
				CB49P2	190.68	292.20	70.73	101.53				
				CB49P3	210.90	370.17	78.78	159.27				
				CB49P4	204.73	427.91	86.23	223.19				
Total per block					1145.32	1637.52	377.36	492.20				

Number of Blocks	Total Area of Blocks	Total Blocks Perimeter	Total Number of Plots		Total Built-up Area	Total Plots Area	Total Plots Perimeter	The difference between the area of the plot and the built-up area		Area of Case Study
49	444017.18	21202.27	849		167130.73	383441.59	68502.02	215596.56		502654.8246

Case Study D - The statistic of blocks and plots in a selected area - Circle (radius 400 m with area 502654.8246 m^2)

DBID	Block Area	Block Perimeter	Number of Plots per Block	Plot ID	Built up Area	Plot Area	Plot Perimeter	The difference between the area of the plot and the built-up area	Block Dimensions														
DB1	10500.00	520.00	22	DB1P1	76.00	375.00	80.00	299.00	210.00	50.00	210.00	50.00											
				DB1P2	286.46	375.00	80.00	88.54															
				DB1P3	213.88	375.00	80.00	161.13															
				DB1P4	185.59	375.00	80.00	189.41															
				DB1P5	220.40	375.00	80.00	154.60															
				DB1P6	196.13	319.00	80.00	122.88															
				DB1P7	31.50	56.00	36.00	24.50															
				DB1P8	189.65	375.00	80.00	185.35															
				DB1P9	167.10	375.00	80.00	207.90															
				DB1P10	183.00	375.00	80.00	192.00															
				DB1P11	182.00	375.00	80.00	193.00															
				DB1P12	207.40	375.00	80.00	167.60															
				DB1P13	210.88	375.00	80.00	164.13															
				DB1P14	212.00	375.00	80.00	163.00															
				DB1P15	165.00	375.00	80.00	210.00															
				DB1P16	220.00	375.00	80.00	155.00															
				DB1P17	210.50	375.00	80.00	164.50															
				DB1P18	209.50	375.00	80.00	165.50															
				DB1P19	76.63	175.00	64.00	98.38															
				DB1P20	110.06	200.00	66.00	89.94															
				DB1P21	206.88	375.00	80.00	168.13															
				DB1P22	185.93	375.00	80.00	189.08															
Total per block					3946.46	7500.00	1686.00	3553.54															
DB2	7200.00	388.00	19	DB2P1	217.00	400.00	82.00	183.00	50.00	144.00	50.00	144.00											
				DB2P2	77.25	400.00	82.00	322.75															
				DB2P3	237.88	400.00	82.00	162.13															
				DB2P4	304.03	400.00	82.00	95.97															
				DB2P5	361.25	400.00	82.00	38.75															
				DB2P6	209.75	400.00	82.00	190.25															
				DB2P7	199.63	400.00	82.00	200.38															
				DB2P8	216.50	400.00	82.00	183.50															
				DB2P9	186.88	400.00	82.00	213.12															
				DB2P10	175.50	400.00	82.00	224.50															
				DB2P11	186.50	400.00	82.00	213.50															
				DB2P12	234.97	400.00	82.00	165.03															
				DB2P13	159.46	200.00	66.00	40.54															
				DB2P14	166.98	200.00	66.00	33.02															
				DB2P15	278.50	400.00	82.00	121.50															
				DB2P16	174.00	400.00	82.00	226.00															
				DB2P17	230.65	400.00	82.00	169.35															
				DB2P18	178.75	400.00	82.00	221.25															
				DB2P19	190.00	400.00	82.00	210.00															
Total per block					3985.47	7200.00	1526.00	3214.53															
DB3	3200.00	228.00	8	DB3P1	221.50	400.00	82.00	178.50	50.00	64.00	50.00	64.00											
				DB3P2	223.88	400.00	82.00	176.13															
				DB3P3	187.75	400.00	82.00	212.25															
				DB3P4	251.25	400.00	82.00	148.75															
				DB3P5	0.00	400.00	82.00	400.00															
				DB3P6	213.69	400.00	82.00	186.31															
				DB3P7	187.25	400.00	82.00	212.75															
				DB3P8	357.50	400.00	82.00	42.50															
Total per block					1642.81	3200.00	656.00	1557.19															
DB4	7255.97	394.41	20	DB4P1	261.19	400.00	82.00	138.81	5.75	2.00	137.00	50.00	144.00	55.66									
				DB4P2	224.30	400.00	82.00	175.70															
				DB4P3	202.25	400.00	82.00	197.75															
				DB4P4	218.24	400.00	82.00	181.76															
				DB4P5	267.56	400.00	82.00	132.44															
				DB4P6	289.38	400.00	82.00	110.63															
				DB4P7	271.65	400.00	82.00	128.35															
				DB4P8	240.25	400.00	82.00	159.75															
				DB4P9	238.09	400.00	82.00	161.91															
				DB4P10	320.63	400.00	82.00	79.38															
				DB4P11	201.30	230.97	70.41	29.67															
				DB4P12	180.48	225.00	68.00	44.52															
				DB4P13	239.00	400.00	82.00	161.00															
				DB4P14	203.00	400.00	82.00	197.00															
				DB4P15	146.50	400.00	82.00	253.50															
				DB4P16	92.63	200.00	66.00	107.38															
				DB4P17	86.00	200.00	66.00	114.00															
				DB4P18	207.59	400.00	82.00	192.41															
				DB4P19	221.54	400.00	82.00	178.46															
				DB4P20	381.63	400.00	82.00	18.38															
Total per block					4493.20	7255.97	1582.41	2762.77															
DB5	11613.40	564.26	27	DB5P1	448.75	487.50	87.83	38.75	51.00	202.83	54.95	12.98	242.50										
				DB5P2	387.04	392.29	96.98	5.25															
				DB5P3	152.77	195.00	67.00	42.23															
				DB5P4	138.25	325.00	77.00	186.75															
				DB5P5	468.13	520.00	92.00	51.88															
				DB5P6	253.00	520.00	92.00	267.00															
				DB5P7	410.85	520.00	92.00	109.15															
				DB5P8	199.40	260.00	72.00	60.60															
				DB5P9	120.90	260.00	72.00	139.09															
				DB5P10	299.59	520.00	92.00	220.41															
				DB5P11	287.85	494.00	90.00	206.15															
				DB5P12	200.88	546.00	94.00	345.13															
				DB5P13	0.00	520.00	92.00	520.00															
				DB5P14	270.38	515.06	90.16	244.69															
				DB5P15	292.25	500.00	90.00	207.75															
				DB5P16	153.13	312.50	75.00	159.38															
				DB5P17	105.00	187.50	65.00	82.50															
				DB5P18	227.24	312.50	75.00	85.26															
				DB5P19	146.98	212.50	67.00	65.52															
				DB5P20	254.59	475.00	88.00	220.41															
				DB5P21	200.18	500.00	90.00	299.83															
				DB5P22	223.11	500.00	90.00	276.89															
				DB5P23	222.50	500.00	90.00	277.50															
				DB5P24	243.00	500.00	90.00	257.00															
				DB5P25	215.75	500.00	90.00	284.25															
				DB5P26	221.00	500.00	90.00	279.00															
				DB5P27	240.63	500.00	90.00	259.38															
Total per block					6383.12	11574.85	2296.97	5191.72															
DB6	5600.00	324.00	17	DB6P1	144.98	208.00	58.00	63.03	50.00	112.00	50.00	112.00											
				DB6P2	195.13	400.00	82.00	204.88															
				DB6P3	273.80	400.00	82.00	126.20															
				DB6P4	245.64	400.00	82.00	154.36															
				DB6P5	230.06	400.00	82.00	169.94															
				DB6P6	236.75	400.00	82.00	163.25															
				DB6P7	372.05	398.05	80.71	26.00															
				DB6P8	356.25	400.00	82.00	43.75															
				DB6P9	441.50	481.25	88.50	39.75															
				DB6P10	234.11	318.75	75.50	84.64															
				DB6P11	284.96	400.00	82.00	115.04															
				DB6P12	259.66	400.00	82.00	140.34															
				DB6P13	229.00	400.00	82.00	171.00															
				DB6P14	74.50	152.00	51.00	77.50															
				DB6P15	138.75	152.00	51.00	13.25															
				DB6P16	80.40	96.00	44.00	15.60															
				DB6P17	173.50	192.00	56.00	18.50															
Total per block					3971.03	5598.05	1242.71	1627.02															
DB7	13750.00	650.00	8	DB7P1	114.27	116.27	43.30	2.00	50.00	275.00	50.00	275.00											
				DB7P2	148.17	210.00	59.00	61.84															
				DB7P3	253.25	441.25	86.50	188.00															
				DB7P4	397.00	437.50	85.00	40.50															
				DB7P5	409.15	500.40	90.03	91.25															
				DB7P6	233.98	500.00	90.00	266.03															
				DB7P7	248.50	437.50	85.00	189.00															
				DB7P8	101.38	110.50	43.00	9.13															
Total per block					1905.68	2753.41	581.83	847.74															

DB8	8800.00	452.00	12	DB8P1	218.00	400.00	82.00	182.00	50.00	176.00	50.00	176.00											
				DB8P2	199.38	400.00	82.00	200.63															
				DB8P3	202.63	400.00	82.00	197.38															
				DB8P4	152.72	400.00	82.00	247.28															
				DB8P5	152.00	200.00	66.00	48.00															
				DB8P6	168.00	200.00	66.00	32.00															
				DB8P7	159.25	400.00	82.00	240.75															
				DB8P8	276.00	400.00	82.00	124.00															
				DB8P9	227.26	400.00	82.00	172.74															
				DB8P10	204.63	400.00	82.00	195.37															
				DB8P11	208.69	400.00	82.00	191.31															
				DB8P12	255.50	400.00	82.00	144.50															
Total per block					2424.04	4400.00	952.00	1975.96															

DB9	5600.00	324.00	13	DB9P1	190.50	400.00	82.00	209.50	50.00	112.00	50.00	112.00											
				DB9P2	201.93	400.00	82.00	198.08															
				DB9P3	192.75	400.00	82.00	207.25															
				DB9P4	158.06	400.00	82.00	241.94															
				DB9P5	198.50	400.00	82.00	201.50															
				DB9P6	187.21	400.00	82.00	212.79															
				DB9P7	212.65	400.00	82.00	187.35															
				DB9P8	199.90	400.00	82.00	200.10															
				DB9P9	177.44	400.00	82.00	222.56															
				DB9P10	195.38	400.00	82.00	204.63															
				DB9P11	144.50	400.00	82.00	255.50															
				DB9P12	252.10	400.00	82.00	147.90															
				DB9P13	184.86	400.00	82.00	215.14															
Total per block					2495.77	5200.00	1066.00	2704.23															

DB10	8774.30	453.02	27	DB10P1	106.80	128.00	48.00	21.20	50.00	175.00	51.00	16.00	1.50	159.00									
				DB10P2	335.97	400.00	82.00	64.03															
				DB10P3	197.21	400.00	82.00	202.79															
				DB10P4	171.76	400.00	82.00	228.24															
				DB10P5	255.61	400.00	82.00	144.39															
				DB10P6	198.62	400.00	82.00	201.38															
				DB10P7	181.01	400.00	82.00	218.99															
				DB10P8	224.53	375.00	80.00	150.47															
				DB10P9	221.71	400.00	82.00	178.29															
				DB10P10	119.88	200.00	66.00	80.12															
				DB10P11	154.74	200.00	66.00	45.26															
				DB10P12	258.51	400.00	82.00	141.49															
				DB10P13	88.75	120.00	47.00	31.25															
				DB10P14	117.40	136.00	49.00	18.60															
				DB10P15	125.89	168.00	53.00	42.11															
				DB10P16	291.51	400.00	82.00	108.49															
				DB10P17	179.58	400.00	82.00	220.42															
				DB10P18	224.20	375.00	80.00	150.80															
				DB10P19	151.51	400.00	82.00	248.49															
				DB10P20	150.32	400.00	82.00	249.68															
				DB10P21	227.66	400.00	82.00	172.34															
				DB10P22	277.68	400.00	82.00	122.32															
				DB10P23	221.76	400.00	82.00	178.24															
				DB10P24	200.35	400.00	82.00	199.65															
				DB10P25	170.76	214.09	57.87	43.34															
				DB10P26	165.33	184.01	55.00	18.68															
				DB10P27	191.71	272.01	66.00	80.30															
Total per block					5210.73	8772.12	1979.91	3561.39															

DB11	8439.51	466.05	18	DB11P1	746.75	776.55	118.15	29.80	48.16	87.54	121.99	20.00	49.20	104.17	35.00								
				DB11P2	415.50	450.00	90.00	34.50															
				DB11P3	325.07	450.00	90.00	124.94															
				DB11P4	427.50	450.00	90.00	22.50															
				DB11P5	391.90	450.00	90.00	58.10															
				DB11P6	487.29	527.29	99.32	40.00															
				DB11P7	90.00	159.00	55.90	69.00															
				DB11P8	267.00	600.00	100.00	333.00															
				DB11P9	156.00	260.00	66.00	104.00															
				DB11P10	213.99	580.00	98.00	366.01															
				DB11P11	334.02	532.50	101.00	198.48															
				DB11P12	248.82	525.00	100.00	276.19															
				DB11P13	247.90	525.00	100.00	277.10															
				DB11P14	223.45	525.00	100.00	301.55															
				DB11P15	202.00	490.00	98.00	288.00															
				DB11P16	474.66	525.00	100.00	50.34															
				DB11P17	241.00	292.77	68.94	51.77															
				DB11P18	194.10	238.16	61.74	44.05															
Total per block					5686.93	8356.26	1627.05	2669.33															

DB12	8825.87	476.29	25	DB12P1	160.24	168.00	52.40	7.76	130.00	65.00	105.00	43.50	15.05	12.45	4.50	100.79							
				DB12P2	374.06	502.50	97.00	128.44															
				DB12P3	450.20	450.00	90.00	-0.20															
				DB12P4	439.00	450.00	90.00	11.00															
				DB12P5	436.99	450.00	90.00	13.01															
				DB12P6	451.00	450.00	90.00	-1.00															
				DB12P7	351.80	450.00	90.00	98.20															
				DB12P8	440.75	450.00	90.00	9.25															
				DB12P9	230.75	300.00	70.00	69.25															
				DB12P10	177.78	195.00	56.00	17.22															
				DB12P11	168.60	495.00	96.00	326.40															
				DB12P12	143.83	247.50	81.00	103.67															
				DB12P13	191.00	247.50	81.00	56.50															
				DB12P14	271.10	411.78	96.00	140.68															
				DB12P15	77.25	83.22	39.74	5.97															
				DB12P16	256.81	495.00	96.00	238.19															
				DB12P17	343.77	518.10	97.40	174.33															
				DB12P18	157.41	264.00	82.00	106.59															
				DB12P19	131.63	207.90	78.60	76.28															
				DB12P20	155.28	203.34	56.29	48.05															
				DB12P21	185.30	385.54	78.58	200.24															
				DB12P22	151.40	365.25	76.58	213.85															
				DB12P23	192.20	294.23	69.58	102.03															
				DB12P24	100.25	243.50	64.58	143.25															
				DB12P25	207.42	312.00	71.60	104.58															
Total per block					6245.82	8639.37	1980.37	2393.55															

DB13	8481.25	465.51	15	DB13P1	146.48	146.48	48.54	0.00	122.01	110.50	15.00	45.00	105.00	68.00									
				DB13P2	411.68	450.00	90.00	38.32															
				DB13P3	324.94	450.00	90.00	125.06															
				DB13P4	356.29	450.00	90.00	93.71															
				DB13P5	428.81	450.00	90.00	21.19															
				DB13P6	430.81	450.00	90.00	19.19															
				DB13P7	187.50	510.00	98.00	322.50															
				DB13P8	346.80	510.00	98.00	163.20															
				DB13P9	276.76	510.00	98.00	233.24															
				DB13P10	118.71	238.00	82.00	119.29															
				DB13P11	116.60	272.00	84.00	155.40															
				DB13P12	258.80	510.00	98.00	251.20															
				DB13P13	358.50	510.00	98.00	151.50															
				DB13P14	76.80	117.60	47.60	40.80															
				DB13P15	162.25	165.92	53.46	3.66															
Total per block					4001.74	5740.00	1255.60	1738.26															

DB14	5940.00	312.00	14	DB14P1	77.39	98.32	40.58	20.93	66.00	90.00	66.00	90.00											
				DB14P2	96.55	98.15	40.54	1.60															
				DB14P3	207.38	495.00	96.00	287.62															
				DB14P4	328.59	495.00	96.00	166.41															
				DB14P5	377.21	495.00	96.00	117.79															
				DB14P6	222.50	495.00	96.00	272.50															
				DB14P7	343.00	495.00	96.00	152.00															
				DB14P8	319.70	495.00	96.00	175.30															
				DB14P9	183.68	280.50	83.00	96.82															
				DB14P10	156.90	214.50	79.00	57.60															
				DB14P11	211.35	495.00	96.00	283.65															
				DB14P12	150.75	197.13	56.64	46.38															
				DB14P13	282.63	330.87	73.36	48.24															
				DB14P14	250.89	331.54	73.44	80.65															
Total per block					3208.51	5016.00	1118.56	1807.49															

DB15	8576.55	458.29	6	DB15P1	148.50	506.55	96.29	358.05	107.29	44.00	15.00	110.00	120.00	62.00									
				DB15P2	276.50	510.00	98.00	233.50															
				DB15P3	354.43	510.00	98.00	155.58															
				DB15P4	347.50	480.00	94.00	132.50															
				DB15P5	155.50	248.00	63.00	92.50															

				DB15P6	172.32	248.00	63.00	75.68															
Total per block					1454.75	2502.55	512.29	1047.80															

DB16	3829.66	317.06	18	DB16P1	93.50	195.00	56.00	101.50	109.53	32.50	128.28	17.50	15.00	14.25									
				DB16P2	174.45	284.00	68.40	109.55															
				DB16P3	80.00	85.00	44.00	5.00															
				DB16P4	108.40	119.00	48.00	10.60															
				DB16P5	40.85	64.60	41.60	23.75															
				DB16P6	213.00	255.00	64.00	42.00															
				DB16P7	236.25	255.00	64.00	18.75															
				DB16P8	123.50	450.24	92.71	326.73															
				DB16P9	257.99	372.14	77.35	114.14															
				DB16P10	139.32	186.07	59.35	46.75															
				DB16P11	181.50	232.50	61.00	51.00															
				DB16P12	210.50	232.50	61.00	22.00															
				DB16P13	120.10	136.40	48.60	16.30															
				DB16P14	93.00	108.50	45.00	15.50															
				DB16P15	135.04	177.50	53.40	42.46															
				DB16P16	128.90	195.00	59.00	66.10															
				DB16P17	98.75	105.00	52.00	6.25															
				DB16P18	235.46	261.61	64.13	26.15															
Total per block					2670.52	3715.06	1059.54	1044.54															

DB17	2693.15	205.79	1	DB17P1	1147.89	2693.15	205.79	1545.26	40.84	61.61	42.15	61.19											
Total per block					1147.89	2693.15	205.79	1545.26															

DB18	8556.63	457.16	19	DB18P1	415.24	495.00	96.00	79.76	66.00	105.00	42.76	14.95	108.91	119.53									
				DB18P2	277.64	495.00	96.00	217.37															
				DB18P3	259.50	495.00	96.00	235.50															
				DB18P4	269.55	495.00	96.00	225.45															
				DB18P5	227.31	495.00	96.00	267.69															
				DB18P6	167.40	264.00	82.00	96.60															
				DB18P7	150.40	231.00	80.00	80.60															
				DB18P8	280.80	495.00	96.00	214.20															
				DB18P9	284.83	401.73	83.67	116.90															
				DB18P10	106.66	150.67	50.13	44.00															
				DB18P11	346.91	350.91	75.90	4.00															
				DB18P12	184.82	224.26	59.90	39.44															
				DB18P13	185.50	495.00	96.00	309.50															
				DB18P14	192.00	495.00	963.00	303.00															
				DB18P15	226.50	495.00	96.00	268.50															
				DB18P16	221.64	495.00	96.00	273.36															
				DB18P17	258.03	495.00	96.00	236.98															
				DB18P18	290.35	495.00	96.00	204.65															
				DB18P19	470.28	495.00	96.00	24.72															
Total per block					4815.36	8057.57	2546.61	3242.21															

DB19	5850.00	310.00	13	DB19P1	448.05	480.00	94.00	31.95	65.00	90.00	65.00	90.00											
				DB19P2	332.28	480.00	94.00	147.72															
				DB19P3	312.02	480.00	94.00	167.98															
				DB19P4	347.12	480.00	94.00	132.88															
				DB19P5	257.28	480.00	94.00	222.72															
				DB19P6	274.78	480.00	94.00	205.22															
				DB19P7	173.47	495.00	96.00	321.53															
				DB19P8	347.31	495.00	96.00	147.70															
				DB19P9	0.00	247.53	81.01	247.53															
				DB19P10	174.40	247.53	81.01	73.13															
				DB19P11	359.68	495.00	96.00	135.32															
				DB19P12	234.60	495.00	96.00	260.40															
				DB19P13	434.66	495.00	96.00	60.34															
Total per block					3695.66	5850.06	1206.02	2154.40															

DB20	10003.12	569.01	25	DB20P1	415.30	495.00	96.00	79.70	105.00	40.76	20.00	154.51	19.00	48.75	115.00	66.00							
				DB20P2	303.15	495.00	96.00	191.85															
				DB20P3	342.94	495.00	96.00	152.06															
				DB20P4	272.41	495.00	96.00	222.59															
				DB20P5	192.85	495.00	96.00	302.15															
				DB20P6	251.25	495.00	96.00	243.75															
				DB20P7	172.78	495.00	96.00	322.23															
				DB20P8	428.82	712.03	112.34	283.21															
				DB20P9	121.60	152.01	54.00	30.40															
				DB20P10	123.26	400.00	80.00	276.75															
				DB20P11	129.57	200.00	60.00	70.43															
				DB20P12	249.09	410.00	81.00	160.91															
				DB20P13	148.76	170.01	57.00	21.25															
				DB20P14	120.00	160.00	56.00	40.00															
				DB20P15	83.50	140.00	54.00	56.50															
				DB20P16	73.90	120.00	52.00	46.10															
				DB20P17	78.38	141.00	54.10	62.62															
				DB20P18	186.02	439.00	83.90	252.98															
				DB20P19	133.50	495.00	96.00	361.50															
				DB20P20	436.27	523.50	106.00	87.23															
				DB20P21	334.66	495.00	96.00	160.34															
				DB20P22	174.60	495.00	96.00	320.40															
				DB20P23	233.68	495.00	96.00	261.32															
				DB20P24	287.08	462.00	94.00	174.93															
				DB20P25	441.00	528.00	98.00	87.00															
Total per block					5734.35	10002.55	2098.37	4268.19															

DB21	5940.00	312.00	13	DB21P1	413.08	528.00	98.00	114.93	66.00	90.00	66.00	90.00											
				DB21P2	235.00	462.00	94.00	227.00															
				DB21P3	135.00	495.00	96.00	360.00															
				DB21P4	217.55	495.00	96.00	277.45															
				DB21P5	185.86	495.00	96.00	309.14															
				DB21P6	295.00	495.00	96.00	200.00															
				DB21P7	223.50	493.72	95.07	270.22															
				DB21P8	365.00	495.00	96.00	130.00															
				DB21P9	192.63	495.00	96.00	302.38															
				DB21P10	0.00	495.00	96.00	495.00															
				DB21P11	270.83	495.00	96.00	224.17															
				DB21P12	179.25	217.50	59.00	38.25															
				DB21P13	140.50	277.50	67.00	137.00															
Total per block					2853.20	5938.72	1181.07	3085.53															

DB22	6237.00	321.00	14	DB22P1	317.18	495.00	96.00	177.82	66.00	94.50	66.00	94.50											
				DB22P2	201.30	495.00	96.00	293.70															
				DB22P3	296.18	495.00	96.00	198.82															
				DB22P4	370.41	495.00	96.00	124.59															
				DB22P5	287.90	495.00	96.00	207.10															
				DB22P6	181.00	360.75	76.00	179.75															
				DB22P7	181.10	282.75	68.00	101.65															
				DB22P8	110.39	263.25	66.00	152.86															
				DB22P9	307.95	380.25	78.00	72.30															
				DB22P10	193.54	495.00	96.00	301.46															
				DB22P11	314.42	495.00	96.00	180.58															
				DB22P12	366.61	495.00	96.00	128.39															
				DB22P13	195.74	495.00	96.00	299.26															
				DB22P14	363.57	495.00	96.00	131.43															
Total per block					3687.29	6237.00	1248.00	2549.71															

DB23	8912.11	473.49	28	DB23P1	155.90	280.75	67.43	124.85	109.53	66.00	124.53	112.24	15.00	46.20									
				DB23P2	88.56	120.00	46.00	31.44															
				DB23P3	108.12	120.00	46.00	11.88															
				DB23P4	236.80	277.50	67.00	40.70															
				DB23P5	165.20	277.50	67.00	112.30															
				DB23P6	231.50	378.75	80.50	147.25															
				DB23P7	104.86	228.75	60.50	123.89															
				DB23P8	230.50	532.50	101.00	302.00															
				DB23P9	312.73	600.00	110.00	287.28															
				DB23P10	208.30	495.00	96.00	286.70															
				DB23P11	209.59	495.00	96.00	285.41															
				DB23P12	219.70	495.00	96.00	275.30															
				DB23P13	292.20	495.00	96.00	202.80															
				DB23P14	140.21	195.28	59.06	55.07															
				DB23P15	146.05	195.28	59.06	49.23															
				DB23P16	116.05	253.86	65.06	137.81															
				DB23P17	115.83	175.93	57.07	60.11															
				DB23P18	170.00	302.68	70.06	132.68															
				DB23P19	106.25	165.99	56.06	59.74															
				DB23P20	178.00	264.00	82.00	86.00															
				DB23P21	126.50	231.00	80.00	104.50															
				DB23P22	159.53	495.00	96.00	335.47															
				DB23P23	276.30	495.00	96.00	218.70															
				DB23P24	107.20	132.00	74.00	24.80															

				DB23P25	120.00	132.00	74.00	12.00															
				DB23P26	179.00	231.00	80.00	52.00															
				DB23P27	284.00	390.00	82.00	106.00															
				DB23P28	314.90	457.50	91.00	142.60															
Total per block					5103.79	8912.29	2150.79	3808.50															
DB24	9046.86	412.57	19	DB24P1	415.75	510.00	98.00	94.25	34.00	150.00	64.00	120.00	44.57										
				DB24P2	0.00	510.00	98.00	510.00															
				DB24P3	325.50	510.00	98.00	184.50															
				DB24P4	156.15	510.00	98.00	353.85															
				DB24P5	338.14	510.00	98.00	171.86															
				DB24P6	218.20	510.00	98.00	291.80															
				DB24P7	317.00	510.00	98.00	193.00															
				DB24P8	216.38	510.00	98.00	293.63															
				DB24P9	240.19	510.00	98.00	269.81															
				DB24P10	209.75	510.00	98.00	300.25															
				DB24P11	444.00	450.00	90.00	6.00															
				DB24P12	311.13	450.00	90.00	138.88															
				DB24P13	351.00	450.00	90.00	99.00															
				DB24P14	322.79	450.00	90.00	127.21															
				DB24P15	436.60	450.00	90.00	13.40															
				DB24P16	278.00	450.00	90.00	172.00															
				DB24P17	442.00	450.00	90.00	8.00															
				DB24P18	426.60	450.00	90.00	23.40															
				DB24P19	0.00	346.86	89.93	346.86															
Total per block					5449.16	9046.86	1789.93	3597.70															
DB25	5138.58	415.79	11	DB25P1	450.00	450.00	90.00	0.00	30.00	149.00	10.00	15.00	40.00	171.79									
				DB25P2	441.74	450.00	90.00	8.26															
				DB25P3	450.00	450.00	90.00	0.00															
				DB25P4	346.70	450.00	90.00	103.30															
				DB25P5	398.00	450.00	90.00	52.00															
				DB25P6	281.00	450.00	90.00	169.00															
				DB25P7	429.75	450.00	90.00	20.25															
				DB25P8	408.00	450.00	90.00	42.00															
				DB25P9	274.83	450.00	90.00	175.17															
				DB25P10	325.54	450.00	90.00	124.46															
				DB25P11	502.70	600.00	110.00	97.30															
Total per block					4308.26	5100.00	1010.00	791.74															
DB26	2992.50	303.00	14	DB26P1	164.40	250.00	70.00	85.60	130.50	25.00	126.50	6.00	15.00										
				DB26P2	110.90	200.00	66.00	89.10															
				DB26P3	103.60	175.00	64.00	71.40															
				DB26P4	72.80	125.00	60.00	52.20															
				DB26P5	110.40	200.00	66.00	89.60															
				DB26P6	79.87	125.00	60.00	45.13															
				DB26P7	105.88	175.00	64.00	69.12															
				DB26P8	132.00	200.00	66.00	68.00															
				DB26P9	0.00	150.00	62.00	150.00															
				DB26P10	128.50	175.00	64.00	46.50															
				DB26P11	114.85	175.00	64.00	60.15															
				DB26P12	100.50	150.00	62.00	49.50															
				DB26P13	300.39	735.00	112.00	434.61															
				DB26P14	143.50	157.50	57.00	14.00															
Total per block					1667.59	2992.50	937.00	1324.91															
DB27	9852.75	432.50	3	DB27P1	1291.10	2600.00	210.00	1308.90	65.00	151.00	65.00	151.00											
				DB27P2	643.50	720.50	153.00	77.00															
				DB27P3	2408.70	6550.00	331.00	4141.30															
Total per block					4343.30	9870.50	694.00	5527.20															
DB28	9450.00	490.00	9	DB28P1	395.25	495.00	96.00	99.75	65.00	120.00	45.00	15.00	110.00	135.00									
				DB28P2	157.00	495.00	96.00	338.00															
				DB28P3	181.25	495.00	96.00	313.75															
				DB28P4	271.35	480.00	94.00	208.65															
				DB28P5	188.00	480.00	94.00	292.00															
				DB28P6	285.62	480.00	94.00	194.38															
				DB28P7	190.47	480.00	94.00	289.53															
				DB28P8	173.25	480.00	94.00	306.75															
				DB28P9	304.15	480.00	94.00	175.85															
Total per block					2146.34	4365.00	852.00	2218.66															
DB29	7800.00	370.00	17	DB29P1	409.55	495.00	96.00	85.45	65.00	120.00	65.00	120.00											
				DB29P2	213.93	495.00	96.00	281.07															
				DB29P3	313.17	495.00	96.00	181.83															
				DB29P4	295.75	495.00	96.00	199.25															
				DB29P5	196.00	495.00	96.00	299.00															
				DB29P6	198.00	495.00	96.00	297.00															
				DB29P7	207.54	495.00	96.00	287.46															
				DB29P8	343.40	495.00	96.00	151.60															
				DB29P9	306.69	480.00	94.00	173.31															
				DB29P10	186.00	480.00	94.00	294.00															
				DB29P11	206.30	480.00	94.00	273.70															
				DB29P12	189.08	256.00	80.00	66.92															
				DB29P13	166.95	224.00	78.00	57.05															
				DB29P14	323.00	480.00	94.00	157.00															
				DB29P15	286.95	480.00	94.00	193.05															
				DB29P16	208.98	480.00	94.00	271.02															
				DB29P17	432.25	480.00	94.00	47.75															
Total per block					4483.53	7800.00	1584.00	3316.47															
DB30	9750.00	430.00	22	DB30P1	389.96	495.00	96.00	105.04	65.00	150.00	65.00	150.00											
				DB30P2	171.00	495.00	96.00	324.00															
				DB30P3	193.91	495.00	96.00	301.09															
				DB30P4	274.09	495.00	96.00	220.91															
				DB30P5	280.69	495.00	96.00	214.31															
				DB30P6	183.44	495.00	96.00	311.57															
				DB30P7	233.26	495.00	96.00	261.74															
				DB30P8	267.41	495.00	96.00	227.59															
				DB30P9	176.25	495.00	96.00	318.75															
				DB30P10	225.53	495.00	96.00	269.48															
				DB30P11	85.50	112.50	45.00	27.00															
				DB30P12	336.05	367.50	79.00	31.45															
				DB30P13	244.95	480.00	94.00	235.05															
				DB30P14	217.25	480.00	94.00	262.75															
				DB30P15	131.25	240.00	79.00	108.75															
				DB30P16	167.00	240.00	79.00	73.00															
				DB30P17	207.58	480.00	94.00	272.43															
				DB30P18	331.35	480.00	94.00	148.65															
				DB30P19	189.85	480.00	94.00	290.15															
				DB30P20	283.54	480.00	94.00	196.46															
				DB30P21	384.60	480.00	94.00	95.40															
				DB30P22	432.00	480.00	94.00	48.00															
Total per block					5406.44	9750.00	1994.00	4343.56															
DB31	9750.00	430.00	24	DB31P1	449.25	495.00	96.00	45.75	65.00	150.00	65.00	150.00											
				DB31P2	326.75	495.00	96.00	168.25															
				DB31P3	318.25	495.00	96.00	176.75															
				DB31P4	245.13	495.00	96.00	249.87															
				DB31P5	205.63	495.00	96.00	289.38															
				DB31P6	341.24	495.00	96.00	153.76															
				DB31P7	265.50	495.00	96.00	229.50															
				DB31P8	308.75	495.00	96.00	186.25															
				DB31P9	166.80	495.00	96.00	328.20															
				DB31P10	188.56	495.00	96.00	306.44															
				DB31P11	274.75	480.00	94.00	205.25															
				DB31P12	226.40	480.00	94.00	253.60															
				DB31P13	218.85	480.00	94.00	261.15															
				DB31P14	203.43	480.00	94.00	276.58															
				DB31P15	122.83	224.00	78.00	101.17															
				DB31P16	207.46	256.00	80.00	48.54															
				DB31P17	255.00	480.00	94.00	225.00															
				DB31P18	147.50	480.00	94.00	332.50															
				DB31P19	126.27	160.00	74.00	33.73															
				DB31P20	146.24	158.20	74.00	11.96															
				DB31P21	148.75	161.80	75.60	13.05															
				DB31P22	359.42	480.00	94.00	120.58															
				DB31P23	213.00	225.00	60.00	12.00															
				DB31P24	160.00	255.00	64.00	95.00															
Total per block					5625.75	9750.00	2123.60	4124.25															
DB32	8976.76	405.76	21	DB32P1	168.06	479.38	94.50	311.31	65.50	139.66	65.36	135.24											
				DB32P2	271.75	487.50	95.00	215.75															
				DB32P3	139.71	487.50	95.00	347.79															

				DB32P4	179.75	487.50	95.00	307.75															
				DB32P5	274.49	487.50	95.00	213.01															
				DB32P6	163.50	487.50	95.00	324.00															
				DB32P7	200.90	487.50	95.00	286.60															
				DB32P8	186.06	487.50	95.00	301.44															
				DB32P9	189.81	354.25	73.91	164.44															
				DB32P10	136.62	142.50	53.00	5.88															
				DB32P11	80.91	114.00	50.00	33.09															
				DB32P12	75.40	133.00	52.00	57.60															
				DB32P13	175.20	389.39	81.35	214.19															
				DB32P14	216.88	495.00	96.00	278.13															
				DB32P15	360.78	495.00	96.00	134.23															
				DB32P16	172.83	495.00	96.00	322.18															
				DB32P17	176.97	495.00	96.00	318.03															
				DB32P18	164.44	495.00	96.00	330.56															
				DB32P19	175.38	495.00	96.00	319.62															
				DB32P20	188.70	495.00	96.00	306.30															
				DB32P21	233.45	486.75	95.50	253.30															
Total per block					3931.59	8976.76	1837.26	5045.18															

DB33	4491.91	336.58	13	DB33P1	304.31	495.00	96.00	190.69	33.00	136.55	32.27	134.75											
				DB33P2	210.15	495.00	96.00	284.85															
				DB33P3	163.82	495.00	96.00	331.18															
				DB33P4	164.00	495.00	96.00	331.00															
				DB33P5	366.90	495.00	96.00	128.10															
				DB33P6	198.72	495.00	96.00	296.28															
				DB33P7	266.90	495.00	96.00	228.10															
				DB33P8	99.34	159.75	56.73	60.41															
				DB33P9	131.76	157.12	57.84	25.36															
				DB33P10	159.78	175.50	53.40	15.72															
				DB33P11	180.76	319.50	72.60	138.74															
				DB33P12	71.26	88.81	39.00	17.55															
				DB33P13	94.94	102.69	42.00	7.75															
Total per block					2412.62	4468.37	993.57	2055.75															

DB34	15705.30	655.97	28	DB34P1	252.50	600.00	100.00	347.50	240.00	5.25	20.54	53.99	28.18	8.01	240.00	60.00							
				DB34P2	270.76	600.00	100.00	329.24															
				DB34P3	242.50	345.00	83.00	102.50															
				DB34P4	185.32	255.00	77.00	69.69															
				DB34P5	132.51	172.50	71.50	40.00															
				DB34P6	159.91	427.50	88.50	267.59															
				DB34P7	236.25	600.00	100.00	363.75															
				DB34P8	285.19	600.00	100.00	314.81															
				DB34P9	274.49	600.00	100.00	325.51															
				DB34P10	151.25	600.00	100.00	448.75															
				DB34P11	259.63	600.00	100.00	340.37															
				DB34P12	209.00	600.00	100.00	391.00															
				DB34P13	161.40	600.00	100.00	438.60															
				DB34P14	314.44	600.00	100.00	285.56															
				DB34P15	0.00	1305.21	175.96	1305.21															
				DB34P16	0.00	600.00	100.00	600.00															
				DB34P17	521.77	600.00	100.00	78.23															
				DB34P18	149.18	240.00	76.00	90.83															
				DB34P19	206.38	360.00	84.00	153.62															
				DB34P20	288.39	600.00	100.00	311.61															
				DB34P21	0.00	600.00	100.00	600.00															
				DB34P22	0.00	600.00	100.00	600.00															
				DB34P23	150.00	600.00	100.00	450.00															
				DB34P24	193.88	600.00	100.00	406.12															
				DB34P25	300.75	600.00	100.00	299.25															
				DB34P26	330.20	600.00	100.00	269.80															
				DB34P27	336.75	600.00	100.00	263.25															
				DB34P28	287.15	600.00	100.00	312.85															
Total per block					5899.59	15705.22	2755.97	9805.63															

DB35	13200.00	560.00	28	DB35P1	246.25	600.00	100.00	353.75	60.00	220.00	60.00	220.00											
				DB35P2	341.75	600.00	100.00	258.25															
				DB35P3	231.00	420.00	88.00	189.00															
				DB35P4	121.50	180.00	72.00	58.50															
				DB35P5	182.50	300.00	80.00	117.50															
				DB35P6	170.00	300.00	80.00	130.00															
				DB35P7	334.50	600.00	100.00	265.50															
				DB35P8	248.25	600.00	100.00	351.75															
				DB35P9	202.00	600.00	100.00	398.00															
				DB35P10	153.14	204.00	76.00	50.86															
				DB35P11	164.05	396.00	88.00	231.95															
				DB35P12	137.53	300.00	80.00	162.48															
				DB35P13	137.53	300.00	80.00	162.48															
				DB35P14	209.73	600.00	100.00	390.28															
				DB35P15	163.25	600.00	100.00	436.75															
				DB35P16	207.40	600.00	100.00	392.60															
				DB35P17	133.00	300.00	80.00	167.00															
				DB35P18	133.00	300.00	80.00	167.00															
				DB35P19	156.93	180.00	72.00	23.07															
				DB35P20	277.99	420.00	88.00	142.01															
				DB35P21	288.35	600.00	100.00	311.65															
				DB35P22	163.75	600.00	100.00	436.25															
				DB35P23	349.15	600.00	100.00	250.85															
				DB35P24	424.72	600.00	100.00	175.28															
				DB35P25	303.33	600.00	100.00	296.67															
				DB35P26	228.05	600.00	100.00	371.95															
				DB35P27	332.40	600.00	100.00	267.60															
				DB35P28	266.00	600.00	100.00	334.00															
Total per block					6307.04	13200.00	2564.00	6892.96															

DB36	17466.05	791.49	39	DB36P1	170.60	260.00	66.00	89.40	260.00	135.68	25.00	74.99	235.82	60.00									
				DB36P2	162.22	300.00	80.00	137.78															
				DB36P3	194.50	300.00	80.00	105.50															
				DB36P4	247.50	600.00	100.00	352.50															
				DB36P5	156.00	396.00	90.00	240.00															
				DB36P6	168.93	204.00	76.00	35.07															
				DB36P7	158.75	390.00	86.00	231.25															
				DB36P8	106.87	210.00	74.00	103.13															
				DB36P9	293.60	600.00	100.00	306.40															
				DB36P10	232.63	600.00	100.00	367.38															
				DB36P11	319.00	600.00	100.00	281.00															
				DB36P12	152.75	600.00	100.00	447.25															
				DB36P13	285.25	600.00	100.00	314.75															
				DB36P14	221.25	450.00	90.00	228.75															
				DB36P15	102.50	150.00	70.00	47.50															
				DB36P16	350.10	600.00	100.00	249.90															
				DB36P17	44.10	600.00	100.00	555.90															
				DB36P18	102.00	600.00	100.00	498.00															
				DB36P19	84.00	875.00	120.00	791.00															
				DB36P20	316.13	762.50	111.00	446.37															
				DB36P21	262.85	600.00	100.00	337.15															
				DB36P22	221.37	300.00	80.00	78.63															
				DB36P23	0.00	150.00	70.00	150.00															
				DB36P24	96.70	150.00	70.00	53.30															
				DB36P25	193.00	600.00	100.00	407.00															
				DB36P26	308.35	600.00	100.00	291.65															
				DB36P27	170.50	600.00	100.00	429.50															
				DB36P28	266.44	600.00	100.00	333.56															
				DB36P29	401.92	600.00	100.00	198.08															
				DB36P30	125.88	138.20	72.90	12.33															
				DB36P31	229.30	313.70	84.80	84.40															
				DB36P32	70.65	150.00	70.00	79.35															
				DB36P33	377.00	600.00	100.00	223.00															
				DB36P34	169.88	213.00	78.00	43.12															
				DB36P35	153.75	387.00	88.00	233.25															
				DB36P36	330.55	600.00	100.00	269.45															
				DB36P37	268.63	600.00	100.00	331.38															
				DB36P38	94.00	180.00	58.00	86.00															
				DB36P39	116.00	160.00	56.00	44.00															
Total per block					7725.44	17239.40	3470.70	9513.96															

DB37	6060.00	322.00	13	DB37P1	300.00	630.00	102.00	330.00	60.00	101.00	60.00	101.00											
				DB37P2	315.17	580.30	98.69	265.13															
				DB37P3	474.00	600.00	100.00	126.00															
				DB37P4	0.00	600.00	100.00	600.00															
				DB37P5	218.63	268.54	67.31	49.91															
				DB37P6	118.07	206.57	61.31	88.50															
				DB37P7	102.60	144.60	55.31	42.00															
				DB37P8	496.45	629.70	103.31	133.25															

				DB37P9	158.25	600.00	100.00	441.75															
				DB37P10	279.50	600.00	100.00	320.50															
				DB37P11	120.50	315.00	81.00	194.50															
				DB37P12	159.06	265.30	77.69	106.24															
				DB37P13	184.75	630.00	102.00	445.25															
					2926.98	6070.00	1148.63	3143.02															
DB38	9787.92	419.66	12	DB38P1	230.00	600.00	100.00	370.00	70.00	139.98	70.00	139.68											
				DB38P2	317.75	600.00	100.00	282.25															
				DB38P3	378.30	600.00	100.00	221.70															
				DB38P4	77.81	150.00	70.00	72.19															
				DB38P5	108.75	180.00	72.00	71.25															
				DB38P6	148.63	270.00	78.00	121.38															
				DB38P7	312.38	600.00	100.00	287.63															
				DB38P8	452.99	600.00	100.00	147.01															
				DB38P9	0.00	1587.92	189.66	1587.92															
				DB38P10	363.00	600.00	110.00	237.00															
				DB38P11	154.00	480.00	104.00	326.00															
				DB38P12	312.00	320.00	96.00	8.00															
Total per block					2855.61	6587.92	1219.66	3732.32															
DB39	6960.00	386.00	12	DB39P1	192.00	420.00	86.00	228.00	48.00	145.00	48.00	145.00											
				DB39P2	168.50	420.00	86.00	251.50															
				DB39P3	158.50	420.00	86.00	261.50															
				DB39P4	100.00	196.00	70.00	96.00															
				DB39P5	178.41	224.00	72.00	45.59															
				DB39P6	85.95	150.00	50.00	64.05															
				DB39P7	175.70	270.00	66.00	94.30															
				DB39P8	231.50	300.00	70.00	68.50															
				DB39P9	131.75	220.00	62.00	88.25															
				DB39P10	73.20	80.00	48.00	6.80															
				DB39P11	183.15	300.00	70.00	116.85															
				DB39P12	154.75	300.00	70.00	145.25															
Total per block					1833.42	3300.00	836.00	1466.58															
DB40	5800.00	370.00	3	DB40P1	221.35	300.00	70.00	78.65	40.00	145.00	40.00	145.00											
				DB40P2	181.60	300.00	70.00	118.40															
				DB40P3	189.76	300.00	70.00	110.24															
Total per block					592.71	900.00	210.00	307.29															
DB41	14400.00	600.00	5	DB41P1	40.00	144.20	55.00	104.20	60.00	240.00	60.00	240.00											
				DB41P2	186.32	200.00	60.00	13.68															
				DB41P3	207.75	300.00	70.00	92.25															
				DB41P4	168.00	300.00	70.00	132.00															
				DB41P5	284.00	600.00	100.00	316.00															
Total per block					886.07	1544.20	355.00	658.13															
DB42	13200.00	560.00	8	DB42P1	160.48	600.00	100.00	439.52	60.00	220.00	60.00	220.00											
				DB42P2	322.00	600.00	100.00	278.00															
				DB42P3	226.50	360.00	76.00	133.50															
				DB42P4	153.00	240.00	64.00	87.00															
				DB42P5	197.50	600.00	100.00	402.50															
				DB42P6	197.25	600.00	100.00	402.75															
				DB42P7	225.67	600.00	100.00	374.33															
				DB42P8	240.00	600.00	100.00	360.00															
Total per block					1722.40	4200.00	740.00	2477.60															
DB43	13800.00	600.00	13	DB43P1	425.36	600.00	100.00	174.64	240.00	60.00	220.00	30.00	20.00	30.00									
				DB43P2	311.65	600.00	100.00	288.35															
				DB43P3	166.00	600.00	100.00	434.00															
				DB43P4	580.61	600.00	100.00	19.39															
				DB43P5	175.01	384.00	78.40	208.99															
				DB43P6	150.32	200.00	60.00	49.68															
				DB43P7	0.00	150.00	70.00	150.00															
				DB43P8	120.00	150.00	70.00	30.00															
				DB43P9	224.14	300.00	80.00	75.86															
				DB43P10	148.50	300.00	80.00	151.50															
				DB43P11	141.00	300.00	80.00	159.00															
				DB43P12	246.50	600.00	100.00	353.50															
				DB43P13	263.97	300.00	80.00	36.03															
Total per block					2953.07	5084.00	1098.40	2130.93															
DB44	10352.00	525.00	7	DB44P1	405.00	480.00	94.00	75.00	135.50	64.00	150.50	112.00	15.00	48.00									
				DB44P2	104.00	120.00	46.00	16.00															
				DB44P3	105.00	105.00	44.00	0.00															
				DB44P4	170.25	255.00	64.00	84.75															
				DB44P5	108.75	150.00	50.00	41.25															
				DB44P6	67.50	75.00	40.00	7.50															
				DB44P7	63.00	90.00	42.00	27.00															
Total per block					1023.50	1275.00	380.00	251.50															
DB45	7920.00	372.00	6	DB45P1	247.38	495.00	96.00	247.62	66.00	120.00	66.00	120.00											
				DB45P2	274.00	495.00	96.00	221.00															
				DB45P3	265.50	495.00	96.00	229.50															
				DB45P4	239.00	495.00	96.00	256.00															
				DB45P5	298.50	495.00	96.00	196.50															
				DB45P6	291.50	495.00	96.00	203.50															
Total per block					1615.88	2970.00	576.00	1354.12															
DB46	688.47	124.23	1	DB46P1	0.00	688.47	124.23	688.47	52.15	33.64	38.44												
Total per block					0.00	688.47	124.23	688.47															
DB47	7550.45	520.75	1	DB47P1	0.00	7550.45	520.75	7550.45	33.61	227.12	32.92	227.10											
Total per block					0.00	7550.45	520.75	7550.45															
DB48	2584.97	213.31	1	DB48P1	0.00	2584.97	213.31	2584.97	37.14	70.57	37.02	68.58											
Total per block					0.00	2584.97	213.31	2584.97															
DB49	5697.59	415.11	1	DB49P1	0.00	5697.59	415.11	5697.59	36.19	175.03	28.95	174.94											
Total per block					0.00	5697.59	415.11	5697.59															
DB50	4580.19	277.71	1	DB50P1	0.00	4580.19	277.71	4580.19	53.94	85.14	53.94	84.70											
Total per block					0.00	4580.19	277.71	4580.19															
DB51	1612.44	215.18	1	DB51P1	0.00	1612.44	215.18	1612.44	16.53	88.87	19.50	90.29											
Total per block					0.00	1612.44	215.18	1612.44															
DB52	6100.97	620.28	1	DB52P1	0.00	6100.97	620.28	6100.97	242.97	50.33	102.03	204.82	20.13										
Total per block					0.00	6100.97	620.28	6100.97															
DB53	1785.24	191.01	1	DB53P1	0.00	1785.24	191.01	1785.24	70.00	25.35	70.00	25.65											
Total per block					0.00	1785.24	191.01	1785.24															
DB54	4534.48	360.46	2	DB54P1	0.00	1662.64	170.46	1662.64	30.23	150.00	30.23	150.00											
				DB54P2	0.00	2871.84	250.46	2871.84															
Total per block					0.00	4534.48	420.92	4534.48															
DB55	2436.89	253.63	1	DB55P1	0.00	2436.89	253.63	2436.89	25.00	85.36	34.36	108.91											
Total per block					0.00	2436.89	253.63	2436.89															

Number of Blocks	Total Area of Blocks	Total Blocks Perimeter	Total Number of Plots		Total Built-up Area	Total Plots Area	Total Plots Perimeter	The difference between the area of the plot and the built-up area		Area of Case Study
55	424050.86	22821.32	720		162880.44	332882.43	64181.74	170001.99		502654.8246