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**GATED COMMUNITIES IN THE UAE: FROM A SOCIAL
SUSTAINABILITY BARRIER TO A CATALYST**

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SUSTAINABILITY BARRIER TO A CATALYST

Marwa Salem Al Jaber

This thesis is submitted in partial fulfilment of the requirements for the degree of
Master of Science in Architectural Engineering

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Declaration of Original Work

I, Marwa Salem Al Jaberi, the undersigned, a graduate student at the United Arab Emirates University (UAEU), and the author of this thesis entitled “*Gated Communities in the UAE: From a Social Sustainability Barrier to a Catalyst*”, hereby, solemnly declare that this thesis is my own original research work that has been done and prepared by me under the supervision of Dr. Khaled Galal Ahmed, in the College of Engineering at UAEU. This work has not previously formed the basis for the award of any academic degree, diploma or a similar title at this or any other university. Any materials borrowed from other sources (whether published or unpublished) and relied upon or included in my thesis have been properly cited and acknowledged in accordance with appropriate academic conventions. I further declare that there is no potential conflict of interest with respect to the research, data collection, authorship, presentation and/or publication of this thesis.

Student's signature:

A handwritten signature in black ink, appearing to be 'Ms Al Jaber', with the name 'Marwa Salem' written vertically in small text below the signature.

Date: 22. November. 2021

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Abstract

Gated communities are commonly defined as residential areas with restricted access, where commonly public spaces are privatized. The main characteristic of gated communities, based on the physical aspect of the development, involves gates, walls, guards, and closed-circuit surveillance. Scholarly studies have focused on the phenomenon of gated communities through covering its implications on the society and the city, where the benefits of this type of development have been frequently questioned. Gated communities have been linked with their negative impacts on the communities as socially segregated areas from the surrounding urban context. Nonetheless, several other studies advocated paradoxical theories related to social bonding, sense of safety, and sense of community that gated communities might provide for its residences. The question that poses itself is: what is the balance point, if any, for gated communities to satisfy the social sustainability for both the communities within the gate and the community outside it? This study seeks to explore the potential for such a balance point through investigating the different aspects and attributes of the case in the context of the UAE with the aim to understand the impact of gated communities on social sustainability within and outside the ‘gates’ of these communities. The Case Study method was used to examine the data closely within the defined urban context through mixed methodological quantitative and qualitative tools. The utilized qualitative research tools included field surveys, interviews, and spatial analysis for relevant maps. Meanwhile, the quantitative research tools included questionnaires and the Space Syntax DepthmapX software for spatial analysis. The research has revealed that it is difficult to reach a ‘perfect’ balance point in-between to satisfy the social sustainability for both communities within the ‘gate’ and the community outside it because ‘safety’ has proven to be more preferable to the interviewed residents of gated communities than ‘connectivity’ with the surrounding urban context. However, some sort of a ‘balance’ could be achieved if local services of the gated communities could be utilized and exploited as the social integration link between the local communities within and outside of the gates. This would convert these services into social nodes for both communities in a way that maintains ‘safety’ while encouraging social ‘connectivity’.

Keywords: Gated community, social sustainability, social isolation, catalyst, UAE.

Title and Abstract (in Arabic)

المجتمعات السكنية المغلقة في الإمارات من حاجز للاستدامة الاجتماعية إلى محفز

الملخص

يتم تعريف المجتمعات المغلقة عادة على أنها مناطق سكنية ذات وصول مقيد، حيث يتم خصخصة الأماكن العامة. السمة الرئيسية للمجتمعات المغلقة بناء على المظهر هو أنها تشتمل على البوابات والجدران والحراس وكاميرات المراقبة. ركزت الدراسات العلمية على ظاهرة المجتمعات المغلقة من خلال تغطية آثارها على المجتمع والمدينة، حيث تم التشكيك في فوائد هذا النوع من التنمية بشكل متكرر. تم ربط المجتمعات المغلقة بآثارها السلبية على المجتمعات حيث تشكل هذه المجتمعات مناطق معزولة اجتماعياً عن السياق الحضري المحيط. ومع ذلك، دعت العديد من الدراسات الأخرى إلى نظريات متناقضة تتعلق بالترابط الاجتماعي، والشعور بالأمان، والشعور بالمجتمع الذي قد توفره المجتمعات المغلقة لسكانها. السؤال الذي يطرح نفسه هو: ما هي نقطة التوازن، إن وجدت، للمجتمعات المغلقة لتلبية الاستدامة الاجتماعية لكل من المجتمعات داخل البوابة والمجتمع خارجها؟ تسعى هذه الدراسة إلى استكشاف إمكانيات نقطة التوازن هذه من خلال التحقيق في الجوانب والسمات المختلفة للقضية في سياق دولة الإمارات العربية المتحدة بهدف فهم تأثير المجتمعات المغلقة على الاستدامة الاجتماعية داخل وخارج "بوابات" هذه المجتمعات. تم استخدام طريقة دراسة الحالة لفحص البيانات عن كثر ضمن السياق الحضري المحدد من خلال أدوات منهجية كمية ونوعية مختلطة. تضمنت أدوات البحث النوعي المستخدمة المسوحات الميدانية والمقابلات والتحليل المكاني للخرائط ذات الصلة. وفي الوقت نفسه، تضمنت أدوات البحث الكمي الاستبيانات وبرنامج (Space Syntax DepthmapX) للتحليل المكاني. أظهرت نتائج البحث أنه من الصعب الوصول إلى نقطة توازن "مثالية" بينهما لإرضاء الاستدامة الاجتماعية لكلا المجتمعين داخل "البوابة" والمجتمع خارجها، لأن "السلامة" أثبتت أنها أكثر تفضيلاً لمن تمت مقابلتهم من سكان المجتمعات المسورة بدلاً من "الاتصال" بالسياق الحضري المحيط. ومع ذلك، يمكن تحقيق نوع من "التوازن" إذا أمكن استخدام الخدمات المحلية للمجتمعات المسورة واستغلالها كحلقة تكامل اجتماعي بين المجتمعات المحلية داخل وخارج البوابات. سيؤدي هذا إلى تحويل هذه الخدمات إلى عقد اجتماعية لكلا المجتمعين بطريقة تحافظ على "الأمان" مع تشجيع "الاتصال" الاجتماعي.

مفاهيم البحث الرئيسية: المجتمعات المغلقة، الاستدامة الاجتماعية، العزل الاجتماعي، محفز، الإمارات العربية المتحدة.

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Dedication

*To my beloved parents, family and husband
Thank you for the support and love*

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List of Abbreviations

DPM	Department of Urban Planning and Municipalities
IPAQ	International Physical Activity Questionnaire
OECD	Organization for Economic Cooperation and Development
PCR	Polymerase Chain Reaction
PSPL	Public Spaces Public Life
UAE	United Arab Emirates
WCED	World Commission on Environment and Development

Chapter 1: Introduction

1.1 Overview

Through time, gated communities became an object of study, especially in the 1990s as social scientists observed their growth in several cities. The expansion of gated communities has led to active research, examining different aspects of this type of residential development and providing evidence from case studies worldwide that discuss its impact in a different perspective (Landman, 2004). Gated communities represent smaller communities on its own with a small residential street and provide a number of shared amenities to the members of the community. In this modern area, gated communities can be defined as the walled community that is the part of the housing estate or the residential community containing strict control entrances for the automobiles, pedestrians, and bicycles (Ilesanmi, 2012). The social benefits of these types of development have been usually questioned and linked to their negative impact on the community as socially-segregated communities (Manzi & Smith-Bowers, 2005; Webster, 2001)

1.2 Statement of the Problem

Although gated communities are socially isolated from their urban surroundings, they are still being developed (Csefalvay, 2011). There is no research investigates the social sustainability of gated communities with their surrounding contexts and how to reconcile between; research versus practice, as the research highlights mostly issues of isolation, it creates in the urban fabric, against its continuous growth and demand in the housing market, especially in the UAE.

1.3 Research Question

How can social sustainability and social capital benefits of gated communities, particularly safety and security, be preserved while achieving connectivity with the surrounding urban contexts to be more socially sustainable communities?

1.4 Research Objectives

- a) To assess main urban aspects related to social sustainability and social capital in gated communities.
- b) To discover what could create a link between inside and outside social life in gated communities.

Chapter 2: Relevant Literature

This chapter discusses related theories studied in the field of this research. Collecting relevant resources aid in seeing what research has already been done to avoid duplication. Moreover, it helps the researcher determine the important questions that need to be addressed. This chapter covers theories related to sustainability, social sustainability, socially-sustainable communities, social capital, social capital in social science, social capital in the urban design community, gated community, traditional gated communities' intimacy, and enclosure in the Arab world, as well as types of gated communities on an international basis: debates of sociability of gated communities and corresponding contexts.

2.1 Sustainability

Sustainability, first defined over 30 years ago, is widely accepted as an important conceptual framework within which urban policy and development are positioned (Dempsey, Bramley, Power, & Brown, 2011). Furthermore, "sustainability" has been known as a buzzword in urban development in the past decade. The concept of sustainable development was defined by World Commission on Environment and Development (WCED) as "a development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED, 1987). However, it is generally agreed that the economy, environment, and social equity are three foremost components of the concept of sustainability. The underlying tension between associated aspects of sustainability, namely the environmental, social, and economic aspects, as well as the

wide interpretation of the concept have led to a variety of urban forms being described as ‘sustainable’ (Dempsey et al., 2011).

2.2 Social Sustainability

There is general agreement that the different dimensions of sustainable development have not been equally prioritized by policy makers within the sustainability discourse. Sustainable development was born out of the synergy between the emerging environmental movement of the 1960s and the ‘basic need’ advocates of the 1970s, but also because assessing the intangible nature of social aspects of development presents measurement quandaries. As a result, there exists limited literature that focuses on social sustainability to the extent that a comprehensive study of this concept is still missing (Vallance, Perkins, & Dixon, 2011). One recent study (OECD, 2001) indicates that social sustainability is currently dealt with in connection with the social implications of environmental politics rather than as an equally constitutive component of sustainable development.

Social sustainability has been defined in different viewpoints and aspects by many researchers (Chan & Lee, 2008; Chiu, 2003; Chiu, 2002; Godschalk, 2004; Sachs, 1999). On the other hand, (Stren & Polèse, 2017) defined it as “development that is compatible with the harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population”. However, the definition of (Yiftachel & Hedgcock, 1993) is “the continuing ability of a city to function as a long-term viable setting for human interaction, communication and cultural development”.

Additionally, in a discussion regarding ‘social sustainability and whole development’, Sachs (1999) identified a number of constituent elements including social homogeneity, equitable incomes and access to goods, services, and employment. However, Godschalk (2004) took quite a different approach and sought to expose ways in which various elements of social sustainability might align or, more importantly, have conflicts through adding a livability component of social sustainability. This perspective highlighted ways in which the concerns of urban planning (economic growth, ecology, and equity) can misalign and even clash with residents’ search for livable cities. Godschalk’s focus on conflict is crucial because it runs contrary to much of the sustainability discourse which simply assumes the concept will generate desirable outcomes for all, all of the time. This work also serves as a useful point of departure for wider discussions around social sustainability that might take place outside the urban planning field. Another perspective was given by Chiu (2002), who evaluated social sustainability in the context of housing in Hong Kong, identifying three types of social sustainability based on conceptualizations of social limits, ecological limits, and equality. In addition, according to Chiu (2003), social sustainability refers to maintenance and improvement of the well-being of current and future generations. Also, Enyedi (2002), as cited by Chan and Lee (2008), stated that a project is socially sustainable when it creates a harmonious living environment, reduces social inequality and cleavages, and improves the quality of life in general.

2.3 Socially Sustainable Community

Cities are spaces where most people live, thus, the tangible and measurable spatial characteristics of cities contribute to defining the connotation of social

sustainability as it is clear that sustainability of a community relates to the collective aspects of social life. In order to explore such social life at the neighborhood level, a number of specific inter-related measurable aspects of community sustainability need to be identified (Dempsey et al., 2011). The European policy interpretation of ‘sustainable communities’ includes social aspects of sustainability and describes them as active, inclusive, and safe (ODPM, 2006).

According to Chan and Lee (2008), there are 6 main dimensions associated with social sustainability, including provision of social infrastructure, availability of job opportunities, accessibility, preservation of local characteristics, and the ability to fulfill psychological needs. However, as stated by Ahmed (2017), more dimensions need to be included, namely density, choice, mobility, mixed use, social mix or social capital, adaptability or resilience, local autonomy, environmental quality, community safety and security, privacy, and imageability or sense of place or identity. Other features of sustainable communities are claimed to include a sense of community in a healthy and safe environment (Burton & Mitchell, 2006). Dimensions developed by (Dempsey et al., 2011) mainly focus on the contained community social state, social interaction or social networks in the community, participation in collective groups and networks in the community, community stability, pride or sense of place, and safety and security. These dimensions relate to collective aspects of everyday life and are appropriate and meaningful concepts at the neighborhood scale.

Different sets of dimensions were identified for the sake of measuring and evaluating social sustainability in neighborhoods. Researchers consider various criteria for social sustainability. The major aspects include social capital and welfare, safety, social interaction, access to facilities and adaptability, unemployment, health, equality, democracy, and participation (Davoodi, Fallah, & Aliabadi, 2014)

Social sustainability is a manner in which a society is formed based on peoples' wants and needs (Woodcraft, Hackett, & Caistor-Arendar, 2011).

Furthermore, positive interpersonal interactions, such as social interactions, have been argued to be the foundation of most social processes Laumann (1973), as cited in Raman (2010). The more social interactions people have with each other, the more satisfaction they would have from living in their housing estates. Without social interaction, people living in a given area can only be described as a group of individuals living separate lives, with little sense of community or sense of pride or attachment to a place (Bramley, Dempsey, Power, & Brown, 2006).

2.4 Social Capital

Social capital is coming to be seen as a vital ingredient in economic development around the world (Putnam, 1993). The concept of social capital originated in the fields of sociology and political science to explain how citizens within certain communities cooperate with each other to overcome the dilemmas of collective action (Lochner, Kawachi, & Kennedy, 1999) and is defined as "features of social life networks, norms and trust that enable participants to act together more effectively to pursue shared objectives". Putnam also argued that social capital is connected to economic development. Moreover, one of the oldest and fundamental definitions of social capital is the definition by (Hanifan, 1916) who identified social capital as good will, fellowship, mutual sympathy, and social intercourse among a group of individuals and families who make up a social unit.

According to Aldrich and Meyer (2015), several scholars now separate social capital into three main types: bonding, bridging, and linking. Each type identifies

variation in strength of relationships and composition of networks and, thus, different outcomes for individuals and communities.

The study of Onyx & Bullen (2000) showed the contributing factors of the social capital that emphasize a newer related factor that defines social capital as labelled participation in the local community, social agency or proactivity in a social context, feelings of trust and safety, neighborhood connections, connections with family and friends, tolerance of diversity, and value of life. In many popular discussions, the concept of social capital takes on a fuzzy quality and seems applicable to almost any social condition. Yet, most social scientists use an extremely focused and measurable definition of social capital in their research. Social capital is typically gauged by looking at rates of civic participation, such as how many people vote or join groups, or even how committed they are to these groups. Places high in social capital have active volunteer and civic networks. These networks play a critical role in organizing the community's response to devolution and welfare reform. The concern among many social scientists and policy makers is that many communities lack such networks (Lang & Hornburg, 1998).

Aside from that, social capital is a collective dimension of the society external to the individual. Moreover, social capital is a feature of the social structure, not of the individual actors within the social structure; it is an ecologic characteristic. In this way, social capital can be distinguished from the concepts of social networks and support, which are attributes of individuals (Lochner et al., 1999). As such, it is important to recognize that social capital is not a single entity, but rather multi-dimensional in nature, given that it is frequently defined in terms of groups, networks, norms, and trust that people have available to them for productive purposes.

Measuring social capital in the study of Grootaert et al. (2004), is based on a six-dimensional framework consisting of several aspects. Firstly, groups and networks are a category most commonly associated with social capital. The second aspect consists of trust and solidarity trust towards neighbors, key service providers, and strangers, as well as how these perceptions have changed over time. The third is collective action and cooperation that explore whether and how household members have worked with others in their community on joint projects and/or in response to a crisis. This aspect also considers the consequences of violating community expectations regarding participation.

The fourth aspect is information and communication which explores the ways and means by which poor households receive information regarding market conditions and public services, and the extent of their access to communications infrastructure. The fifth is social cohesion and inclusion that identify the nature and extent of these differences, mechanisms by which they are managed, and groups that are excluded from key public services. Questions pertaining to everyday forms of social interaction are also considered. The sixth aspect is empowerment and political action that explore household members' sense of happiness, personal efficacy, and capacity to influence both local events and broader political outcomes.

For social capital being combined with neighborhood variables such as crime rate, mortgage credit availability, and housing conditions, Temkin and Rohe (1998) found that it is a key determinant in predicting neighborhood stability. According to their study, homes in neighborhoods that scored high in social capital held their value better than homes in neighborhoods with low measures of social capital. In fact, their study shows that social capital is more important to strong neighborhoods than

conventional measures of community health, namely residential stability, vacancy rates, and the age of housing stock (Lang & Hornburg, 1998).

2.4.1 Social Capital in Social Science

Social capital was defined independently by Pierre Bourdieu and James Coleman, as being “the social ties or membership of particular communities that made resources, advantages and opportunities available to individuals”. Bourdieu’s analysis was initially published in French in 1980 and focused on the benefits accruing to individuals by virtue of participation in groups, and on the deliberate construction of sociability for the purpose of creating this resource. He defined the concept as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition”.

Moreover, his definition makes it clear that social capital can be broken into two elements: first, the social relationship itself that allows individuals to claim access to resources possessed by their associates, and second, the amount and quality of those resources. Also, Putnam acknowledges that social capital is a multifaceted concept and assesses that we are not anywhere near a kind of canonical account of the dimensions of social capital. Yet, this hardly brings more analytical clarity, since in his conception of social capital, trust, norms, and networks are all different facets of the same functional notion. In support of a basically unitary concept, he argues that individuals congregate in voluntary organizations of different types where they learn to trust each other through repeated interactions. This, in turn, underlies the creation of social norms and trust, the idea being that social norms of honesty and cooperation are disseminated through overlapping networks, and that when an individual learns to trust others (who

used to be strangers) through repeated interactions, the individual will also learn to trust other people who remain strangers (Bjørnskov, 2006).

Coleman (1988) defined social capital by its function as “a variety of entities with two elements in common: they all consist of some aspect of social structures, and they facilitate certain action of actors – whether persons or corporate actors – within the structure”.

According to Tzanakis (2013), the fundamental difference between the definitions of Bourdieu and Coleman lies in how and why social processes develop. For Bourdieu, social processes are constrained by underlying economic organization while for Coleman, they are created by the free will of individuals. Bourdieu argues that it is the presence of profit that is the very reason for the solidarity that makes group existence possible in the first place and in this sense, he argues that it is structural economic organization that underlies the creation of social capital. For Coleman, social capital is created by rational, purposeful individuals who build social capital to maximize their individual opportunities. He, therefore, sees social capital as a form of contract made between individuals unconstrained by underlying economic factors. Social capital here has an ‘economic rationalist’ flavor where individuals freely choose to build networks to further their self-interest. While continuing to use a singular comprehensive index of social capital constructed of elements of associational activity, social trust, and engagement in public affairs on which he bases most analyses and conclusions in his widely-cited book on social capital, much empirical evidence serves hypothetical links between trust, norms, and associations (Siisiainen, 2003).

Furthermore, in the study of Onyx and Bullen (2000), several contributing elements were analyzed to result with eight factors contributing to social capital, including community, social agency, trust and safety, neighborhood connections,

family and friends, tolerance of diversity, value of life, and work. These eight primary factors were first identified with a principal component analysis. The meaning of each factor can be inferred from the item content. These elements were introduced in different aspects in many studies (Callois & Aubert, 2007; Chiu, 2003; Kikuchi & Coleman, 2012; Lochner et al., 1999; Onyx & Bullen, 2000; Perkins & Long, 2002; Stone, 2001; Van Deth, 2003). Measuring of social capital is mainly associated with the concept of the various definitions of social capital, which result in different measures of social capital (Pope, 2003).

2.4.2 Social Capital in Urban Design

Social capital of a community is a valuable asset in regeneration projects. Human capital refers to attributes of individuals defined by their skills, qualifications, and knowledge, whereas social capital refers to an asset generated by being part of a 'community'. The World Bank defines social capital as "the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions". Moreover, social capital is not only a summation of institutions underpinning a society – it is the glue that holds them together. Therefore, social capital is an intangible asset that develops over time with the goodwill, bonds or trust that result from shared values, outlook on life, and attitudes or behaviors that can become a resource to serve common goals (Paranagamage, Price, Khandokar, & Austin, 2014).

The physical design of neighborhoods can impact the social capital of communities. Contribution of the environment appears as a variable in research on social capital and public health (Kawachi, Subramanian, & Kim, 2008; Lomas, 1998; Lynch, Due, Muntaner, & Smith, 2000; Muntaner, Lynch, & Smith, 2000) and also in social capital and crime (Akçomak & Ter Weel, 2012; Buonanno, Montolio, & Vanin,

2009; Lederman, Loayza, & Menendez, 2002). The manifested nature of social capital in a neighborhood is context-specific and determined by history and culture, social structures, economic inequalities, and individual consumption patterns (Kliksberg, 1999). Being a theoretical construct reliant on context specific factors may have resulted in the lack of operational knowledge, including any in-depth discussion of the role of physical design in relation to social capital.

However, with renewed interest to improve the quality of the environment to promote healthy and active lifestyles and social equality in recent regeneration initiatives in the UK, it is timely that this operational knowledge gap between social capital and urban design is addressed to provide an impetus for sustainable regeneration (Paranagamage et al., 2014). Within the urban context, the physical and social environment are inseparable. As a setting material through which people live, the physical environment is both a condition and a result of social relationships. Despite this symbiotic relation, research on the contribution of physical space for the development of social capital is recent, and even more, corresponds to its assessment in requalification of spontaneous settlement programs (Vilar & Cartes, 2016).

Furthermore, urban designers influence, inhibit, facilitate, and modify, but do not determine patterns of human activity and social life (Johnson & Munshi-South, 2017). On the other hand, the physical framework might have an influence on the quality, content, and intensity of social contacts. The environment can affect possibilities for meeting, seeing, and hearing people acting as a background and starting point for many forms of contact to develop (Dempsey, 2008; Leyden, 2003).

Several key principles through which urban design can facilitate and allow for social capital to evolve are designing to retain people in the area for longer terms and providing for means of repetitive interaction. Also, four principle and twelve sub

principles were identified in several studies (Paranagamage et al., 2014; Vilar & Cartes, 2016). These are:

- a) Connectivity: movement structure, mixed use, local facilities.
- b) Safety: ownership, natural surveillance, access and footpaths.
- c) Character: context, public space, personalization.
- d) Diversity: life cycle needs, mixed tenure, and life style differences.

These principles have been recently also a focus in Putnam's research, which aroused interest in how urban space can be organized to facilitate diversity and minimize isolation or segregation. Results indicate that pedestrian-oriented neighborhoods and mixed-use allow residents to interact along the way and, thus, increase the contact frequency. People who live in quieter neighborhoods are more likely to have a higher level of interaction and tend to live longer and healthier lives than those living in car-dependent neighborhoods. Therefore, (Nguyen, 2010) confirms that sprawl is an important factor in the decline of social capital. This is because the center of social capital is the relationship between individuals and groups based on trust, which is only enhanced if there is a time factor that favors the interactions (Siisiainen, 2003).

Since the late 1980s, social capital has begun to have great prominence among researchers, occupying an important place in the social sciences. Moreover, it refers to a set of features inherent in social relationships based on trust and cooperation. The breadth of this definition allows us to use the term as a new replacement for "civic virtue, social cohesion, social solidarity, collective action capacity or any other attribute for an ethically valuable community" (de Souza Briggs, 1998) as cited in (Vilar & Cartes, 2016).

Urban design principles related to social capital evolving are described and studied in different research works as follows:

A- Safety

Perceived safety may reflect the physical, social, and resource characteristics of neighborhoods. The perception of safety from criminal threats has become a critical aspect on the quality of human life. In countering the issue of crime in neighborhoods, safety is considered as a fundamental need by residents, where one will not attain life satisfaction if the absence of threats to safety is not guaranteed. The need to feel safe is also an indicator to measure fear of crime, specifically on residents' emotions (Kanan & Pruitt, 2002). The human-built topography of dwellings and neighborhoods is an important contributor to individuals' social and psychological well-being. Also, the constructed landscape of places could add to, or subtract from, individuals' sense of security and safety (Nasar & Jones, 1997).

a) Ownership

Housing ownership status is one factor that influences the need to feel safe. This is based on lifestyle differences between housing owners and housing tenants. According to Hipp (2010), suggests that housing owners spend more time outdoors compared to housing tenants. This enables housing owners to readily inculcate relationships with neighbors than are housing tenants. Clampet–Lundquist (2010) suggests that lifestyle induces the perception of safety among residents.

DiPasquale and Glaeser (1999), as cited by Kleinhans (2009), suggest that homeownership positively influences the formation of social capital and, as such,

creates additional barriers to mobility. This finding is particularly relevant for urban restructuring, which usually results in higher levels of homeownership.

b) Natural Surveillance

Natural surveillance (fronts and backs) provides increased security for pedestrians due to the feeling of ‘eyes on the streets’ (Jacobs, 2007). In addition, front and back mapping identifies areas of streets that have active building frontage, which helps promote a better natural street surveillance. With respect to this indicator, streets that are poorly designed contain blank walls, high fences, parking lots or the backs of commercial buildings (Porta & Renne, 2005).

c) Access and Footpaths

Footpaths provide an integral component of urban environments and have the potential to act as safe places for people and focus for community life (Stevens & Salmon, 2014).

According to the Auckland design manual, at some point in life everyone is limited to moving only as a pedestrian: through age, wealth, medical impairment or choice. Therefore, subdivisions and all roads within them must be designed to prioritize walking. Subdivisions should be extremely walkable, with generous footpaths and landscaped berms. Also, pedestrian routes need to be designed as well overlooked by vehicle lanes and property frontages to provide passive surveillance. Road placement and orientation should be based on providing route choices that are direct and allow pedestrians to intuitively understand where they are going. Pedestrians should be able to primarily travel in a straight direction and should never have to walk in the opposite direction to where they are headed. A well-designed footpath is

acknowledged as being significant to the entire roadway's ability to effectively function as a safe 'public place' (Stevens & Salmon, 2014).

Aside from that, safe footpaths are physically protected and well-engineered, yet they also require people and activity if they are emerging as social places. They must be continuous, highly visible, context sensitive, and convenient to use at all times (Stevens & Salmon, 2014). Subdivision design should maximize the area and mix of activities that can be accessed from each lot within a ten-minute walk as able-bodied adults can walk at an average speed of 1.5 meters per second, or up to 800 meters in 10 minutes, accounting for occasional delays. One must consider a slower speed of around one meter per second if the target market for the subdivision includes the elderly or families with young children. Also, subdivision design and layout should consider how easy it is for pedestrians to access public transport routes (existing and future) and local reserves (Frank et al., 2006).

B- Connectivity

According to Tischendorf and Fahrig (2000), advocates of new urbanist and neo-traditional planning concepts include street connectivity as a key component for good neighborhood design. Street networks that are more grid-like are preferred over networks that include many cul-de-sacs and long blocks, thus increasing distances between destinations. The increased distances are thought to discourage walking and bicycling and, thus, physical activity. While intuitively attractive, there is limited empirical research at this time making this connection. There is also debate over how to measure connectivity and what levels of connectivity are appropriate. The current debate is particularly unclear because street connectivity is proposed to meet multiple,

sometime conflicting objectives. In addition, most efforts to date have focused on the street network, which may differ from the pedestrian and bicycle network.

The New Oxford American Dictionary defines “connect” as "bring together or into contact so that a real or notional link is established". Connectivity is the primary purpose of any transportation network; it links locations people want to travel between. Travel is generally considered as a "derived demand" we travel mainly because we want access to other locations, not simply because we enjoy movement. Travel demand modeling generally assigns a cost to travel that includes the "cost" of time. All else being equal, shorter travel times are preferred. This is particularly true for bicycling and walking, which are usually slower than motorized travel. There are practical limits to how far a person will walk or bike. Increased network connectivity can reduce travel distances for all modes, including walking and bicycling. An additional benefit of increased connectivity for these modes is having a wider range of routes from which one can choose. A cyclist, for example, might choose a slightly longer route if he or she can use a bicycle lane, a street with less traffic or a less steep hill (Dill, 2004).

The related sub principles to connectivity as described earlier are structure movement, land use diversity and local facilities.

a) Structure Movement

Urban spatial structure is defined as the spatial distribution pattern of urban economic activities and residences along with the existing transport network, which influences urban spatial distribution (Sohn, 2005). Face-to-face human interactions on the stage of public life are extremely relevant for supporting livability, safety and

control, economic development, participation, and identity (Duncan & Fiske, 2015; Zhao, Stehlé, Bianconi, & Barrat, 2011).

As stated by Porta and Renne (2005), layout describes the spatial arrangement and configuration of elements of streets, blocks, and buildings, often referred to at the street scale, such as grid or tree-like (cul-de-sac) street patterns. Layout has an important influence on pedestrian movement and the way in which different places and spaces are connected to each other (Foltête & Piombini, 2007). Whether or not 'permeable' and easy to find the way, layout controls access and movement for pedestrians, and could influence other aspects of urban form such as land use or density (Hillier, 2004). The layouts of today's cities are largely artifacts of their historical development and planning and building regulations. Moreover, configuration of the street network, in terms of its urban block sizes, their overall location within the city, pedestrian and vehicular connectivity, can affect the functioning of a city by, for example, influencing the location intensity of activities (Dempsey et al., 2010).

The connectedness and permeability of urban layouts are claimed to determine the nature and extent of routes between and through spaces which, in turn, has an influence on how lively and well-used a space is (Cozens, 2011). Streets that are well-connected to services and facilitate the means for pedestrians to reach them are argued to be more frequently used than deserted or quiet options (Hemani, Das, & Rudlin, 2012). Permeability (street connectivity) or the type and number of intersections in an area impacts the movement of users in that given space and user legibility of the street network. Also, four-way intersections offer both physical and visual directness of movement to a destination. However, T-junctions give a reduced choice in movement and force a change in direction. Cul-de-sacs are highly undesirable because they disrupt the flow of movement. Hence, to achieve a high level of permeability, a street

network should contain a high proportion of four-way intersections, few cul-de-sacs, and small street block sizes (Dempsey et al., 2010). The UN-habitat recommends an intersection density of 100/km² and according to the Auckland design manual, a connected network is based on convenient and logical connections between destinations, based on the most direct route possible. Furthermore, subdivision design should allow movement that maximizes opportunities for social and economic exchange while minimizing the costs and general need for travel to make such exchanges. The 'right' amount of connectivity should be delivered, instead of any particular fixed standard that may be either too little or too much for a particular site. However, most subdivisions usually require 15 to 35 per cent of the gross developable area to be allocated as movement network space, depending on the density and degree of connectivity being proposed, where subdivisions should also integrate successfully into their wider neighborhoods through road connections and urban structure, design cues, such as block sizes and sizes and shapes of sections, that refer to historical or adjacent developments and provide new amenities that complement adjacent ones, rather than duplicating them.

According to the Abu Dhabi Urban Street Design Manual regarding the conventional approach in automobile-oriented cities, street typologies are typically defined by traffic prioritizing the degree to which streets are emphasized through movement for vehicles. This is known as “functional classification.” In this conventional approach, streets with the purpose of accommodating a high level of movement are “arterials,” whereas streets that primarily provide access are “locals,” and those in between are “collectors”. However, this categorization is no longer used in Abu Dhabi. As described in Table 1, street categories in Abu Dhabi have a two-name convention. The first name is the “context name” and is based on urban land use

such as “residential” or “commercial”. The second name, or the “street family name”, refers to the transport capacity of the street and is divided into the following:

- Boulevard: a high vehicle priority 3+3 street (three lanes in each direction).
- Avenue: a medium vehicle priority 2+2 street (two lanes in each direction).
- Street: a low vehicle priority 1+1 street (one lane in each direction).
- Access lane: a very low vehicle priority 1+1 street (one lane in each direction). This could also be a one-lane shared street.
- Sikka: pedestrian passageway between properties common throughout the Emirate in historic and new neighborhoods. No motor vehicles are accommodated in a Sikka; however, bicyclists may share this space. They can be a useful tool for increasing the walkability of a neighborhood. The narrow width of the Sikka (typically 2.5 - 5.0 meters) increases the amount of shading for pedestrians.

Table 1: Street Typologies (Abu Dhabi Urban Street Design Manual, 2014)

Street Family	Transport Capacity		Land Use Context					
	Vehicle Priority	Travel Lanes	City (7 stories +)	Town (3-6 stories)	Commercial (1-3 stories)	Residential (1-3 stories)	Industrial	No Active Frontage
Boulevard	High	3+3	City Boulevard	Town Boulevard	Commercial Boulevard	Residential Boulevard	Industrial Boulevard	General Boulevard
Avenue	Medium	2+2	City Avenue	Town Avenue	Commercial Avenue	Residential Avenue	Industrial Avenue	General Avenue
Street	Low	1+1	City Street	Town Street	Commercial Street	Residential Street	Industrial Street	General Street
Access Lane	Very Low	1+1 1 shared	City Access	Town Access	Commercial Access	Residential Access	Industrial Access	General Access

b) Land Use Diversity

This indicator measures the variety of land uses within the walkable catchment area. A high value of diversity may increase consumer choice a greater degree for maintaining an urban lifestyle without increasing the need for motorized movements. Traditional developments should have a higher level of land use diversity than conventional developments. Fremantle performs remarkably higher than Joondalup, especially for retail and the fine-grained diffusion of diverse land uses (Porta & Renne, 2005).

Moreover, land use distribution is a vital factor in designs for new communities or urban regeneration plans in the development of traditional city centers. Land use affects inhabitants' patterns of movement, types of transportation needed, social interaction, livability, health issues, safety, economic values, and other factors, all of which influence the sustainable development of a city. Through history, various theories have been presented as an attempt to formulate a logical distribution for locating socio-economic activities within existing city boundaries or newly-established settlements. These theories are applicable to different development cycles and methods in both Arabic and Western cities (Mohareb, 2010).

c) Local Facilities

Good access to amenities like parks or local shops increases the likelihood that amenities and the routes to them will be used more, and users will feel safer (Giles-Corti et al., 2005). This maximizes the social and economic return on the community's investment in those amenities through: higher property values, a stronger sense of local identity, and more public use of expensive infrastructure such as parks and playground

equipment (Mccrea & Walters, 2012). Moreover, one must mention locating amenities and exemplar development on prominent sites. For example, at intersections or on sites that are highly visible, one needs to integrate amenities and routes to them into the subdivision by maximizing their road frontage and planning for future land uses to overlook the amenities (Areas, 2009; Campoli, 2012).

C- Character or Identity

This refers to strong attachment to place and intertwining of personal and place identity. It is important not to see the neighborhood as only a territorially-bounded entity, but as a series of overlapping social networks. Furthermore, one should not underestimate the importance of physical change, physical boundaries, and local landmarks in creating a sense of belonging and identity (Forrest & Kearns, 2001).

Also, the neighborhood in which we live can play an important part in socialization, not only through its internal composition and dynamics, but also according to how it is seen by residents in other neighborhoods and by institutions and agencies that play a key role in opportunity structures. Thus, the identity and contextual roles of a neighborhood are closely linked to one another. Residential identities are embedded in a strongly comparative psychological landscape in which each neighborhood is known primarily as a counterpart to some of the others, and relative differences are probably more important than any single and widely shared social characteristic (Forrest & Kearns, 2001).

D- Diversity

One of the main explanations for the negative correlation between diversity and social capital is that people are more inclined to trust and interact with those who

are similar in terms of income, race, religion, and ethnicity (McPherson et al., 2001). The effect of ethnic diversity on social capital, networks, and cohesion is context-bound. In some cases, diversity will have a more negative effect on interpersonal contacts than in others (Vermeulen, Tillie, & van de Walle, 2012).

2.5 Community

Community can be envisaged as the experience of social inter-connectivity. Moreover, it represents collective consciousness emerging as a result of the myriad of personal and local interactions occurring in the course of our everyday lives (Gilchrist, 2013). A sense of community affects our behavior, feelings, judgements, and expectations (McMillan & Chavis, 1986). Whether we like it or not, we are influenced by the decisions and actions of those around us, especially those for whom we have emotional attachment to some extent. This is particularly true if we focus on those aspects of our lives that we consider to be about free will, personal choice, and voluntary association. These influences are by no means always positive (Gilchrist, 2013).

2.6 Gated Community

In the modern era, a gated community can be defined as the walled community that is the part of the housing estate or the residential community containing strict control entrances for automobiles, pedestrians, and bicycles. Such communities are often defined by the closed perimeters of fences and walls. Furthermore, gated communities are part of small residential streets and provide a number of shared amenities to the members of the community (Cséfalvay & Webster, 2012). These amenities usually include shared religious areas and shared parks. Larger gated

communities might provide a number of other facilities to its residents. The concept of gated communities is growing with the increasing demand of residential schemes. This makes it significant for the discipline of arts and architecture to have the basic knowledge of gated housing communities.

The known definition of a gated community is a housing development on private roads closed to general traffic by a gate across the primary access. The developments may be surrounded by fences, walls or other natural barriers that further limit public access. As such, our definition includes projects with gates across roadways, but excludes "barricade perches" (Blakely & Snyder, 1997a). Moreover, what is most commonly called a "gated community" is considered to be a residential area enclosed by walls, fences or landscaping that provides a physical barrier to entry. Access to GCs is restricted, not only to personal residences, but also to the area's streets, sidewalks, and neighborhood amenities (Low, 2004).

In addition, gated enclaves are spatially-defined residential communities with shared amenities (and, thus, the potential for developing social networks). Although walls and gates may look similar across cultures, they have a range of functions, including physical, economic, social, and symbolic functions. Gates may keep residents inside or nonresidents out. Also, through the course of time, the functions of enclosure may change (Blakely & Snyder, 1997b).

The past two decades have witnessed a remarkable growth of gated communities appearing in many countries, including China, US, Istanbul, Spain, and the UK (Blakely & Snyder, 1997a; Blandy & Lister, 2005; Callois & Aubert, 2007; Chiu, 2003; Geniş, 2007; Glasze & Alkhayyal, 2002; Kikuchi & Coleman, 2012; Le Goix & Webster, 2008). The growth of gated communities which has largely been attributed to a growing search for security associated with increasing fear of urban

crime and violence in different context, however, suggests that gated enclaves serve different purposes in communities and localities with different social, cultural, and economic characteristics (Geniş, 2007; Webster, Glasze, & Frantz, 2002). According to Blakely and Snyder (1997a), the need for gates and walls is also created and encouraged by changes in the social and physical structure of the suburbs.

2.6.1 Traditional Gated Communities' Intimacy and Enclosure in the Arab World

In the cities of the Arab world, the spatial seclusion of social groups is not a new phenomenon. Urban research on premodern towns depicted the socio-spatial and material fragmentation of urban patterns in small and distinct quarters as one of the most typical characteristics of Arab cities (Glasze & Alkhayyal, 2002) (Bagaeen, 2010). Another unique feature of the city structure contributed by Islam is the creation of 'male' and 'female' territories (Abu-Lughod, 1993). It was this separation that necessitated the protection of visual privacy, prevented physical contact, and regulated the placement of windows, heights of adjacent buildings, and mutual responsibilities of neighbors towards one another so as to guard visual privacy (Bagaeen, 2010). So strong was this neighborhood 'social' cohesion based on kinship, tribal affiliation or ethnicity that it was able, according to (Kostof, 1991). Therefore, what we appear to have is an urban form that accentuates processes of social cohesion, social capital formation, and social exclusion at the same time (Bagaeen, 2010).

Furthermore, in the old city of Damascus, the only development factor at these periods brought to the city was triggered by the high level of insecurity: inhabitants had to look after themselves, gathering and organizing in groups. This transformed the city into a group of autonomous areas, where each area had its own mosque and lived according to its own sort of lifestyle. Differences extended to ways in which water

systems, public baths, and markets were organized according to religions, tribes, and social groups. As such, it was not long before each area had its own door, locked every evening, with smaller-to-smaller streets, leading to private houses. However, there was a common denominator that brought these areas together into forming the larger city beyond its walls: the big mosque and main market areas (Khoury, 1984).

Observing Riyadh (capital city of Saudi Arabia), Glasze and Alkhayyal (2002), provide a clear indication that the urban form surveyed continues to behave here in the same way that it has always done, at least in terms of emphasis on aspects of social networks, social control, and social order. Furthermore, they argued that the extended family compounds could be seen as a sign of revival of the traditional living environment which offers mutual social and economic benefits. In the modern gated developments, traditional shared space, traditionally used for social activities, is reconfigured as the common space within the walls of extended family compounds. In social terms, extended family compounds offer a solution for the fostering of extended family ties while maintaining the independence of the nuclear family. In addition, they add that these compounds not only offer a safe common space for children's play, but, in economic terms, reduce their costs.

Examples of such developments can include extended family compounds that consist of a group of villas surrounded by a common fence or wall. Since the 1980s, these have been designed and built to accommodate extended families. Moreover, the physical layout of these complexes is composed of two or more architecturally identical houses built on the same block. Usually, these complexes contain one larger unit which accommodates the head of the extended family. This would have the grandest entrance off the street with the remaining units benefiting from their own entrance in most cases.

In addition, Danby (1986) demonstrated the importance of law and, in some instances, what he calls the ‘spirit of Islam’ through building guidelines as a prime factor shaping the traditional Middle Eastern city. He argues that this physical organizational pattern, based on Islamic law and models of governance, necessitated the level of interdependence between neighbors referred to above with regard to site management, including the use of party walls, maintenance of cul-de-sacs and problems related to rain and wastewater, and had the primary impact. Furthermore, it is Hakim’s view that Islamic law responded well in fulfilling the demand for building and urban design guidelines in the traditional city, where it acted as a framework for adjudicating related conflicts.

Also, Bianca and Landesplanung (2000) discovered that the morphology of traditional Islamic cities, from an urban design perspective, can be attributed to the strong social order of Islam practiced in conjunction with strong customary laws, the conspicuous absence of formal civic institutions, and the empowerment of self-regulating private communities and social groups.

2.6.2 Types of Gated Communities Internationally

According to a survey by Blakely and Snyder (1997), as cited by Geniş (2007), there are three major types of gated communities in the United States. The first two types, ‘prestige’ and ‘lifestyle’ communities are built as master-planned developments and governed by either developers or homeowners’ associations. Prestige communities cater exclusively to upper-income groups and convey status along with exclusivity. Moreover, they serve as symbols of wealth and status for image-conscious residents. The lifestyle communities focus on leisure activities with recreational facilities, common amenities, and shared services at their core. The third type is ‘security zone’

communities occupied by low-income groups wherein the previously public spaces are retrofitted with gates by the residents themselves for reasons of safety and protection from crime and violence.

Blandy and Parsons (2003) observed that since the early 90s, the global community has undergone a number of major changes that have changed the dynamics of architectural design and social construction. One such concept is gated communities or living under a confined private space. This concept was initially recognized in the 1990s, and despite having achieved its peak in the UK, USA, Middle East, and Latin America, different names have been given to it, the most common one being security-oriented privatized urbanism. According to Winter and De Munck (2013), it is a form of residential community where the entrance to the building or premises is restricted for outsiders of any form and there are security personnel at the gate of the building or compartments in order to control the external movement in the society.

Furthermore, Addington and Rennison (2015) determined that these spaces are usually designed in the form of small residential societies with streets. However, there is criticism over this concept. For example, people believe that this concept has increased the sense of false security among people and divides the society into different classes. Moreover, he quoted the example of crime rate in the USA in suburban areas (gated communities) and normal areas to determine that it does not matter. According to Roitman (2010), the concept of gated community is not new but with a long routed history in the Roman Empire, where soldiers were given these lands as a return over their services at their country's side of the land, with the purpose of providing security to countryside people and protecting the occupants from external invaders.

In addition, Bagaeen and Uduku (2015) conferred that there are different types of gated communities recognized all over the world; these include lifestyle communities, prestige communities, and security zone communities. Despite that, in different parts of the world, there are more classifications of gated communities. For example, in Argentina, there are six different types of gated communities such as clubs' de campo, closed neighborhood, garden towers, farm clubs, nautical clubs, megaprojects, condominiums, etc. Hence, different regions have a different focus. Therefore, in order to develop a focus, it is essential to focus on a particular pathway. In this study, the focus is underpinned to the concept of gated communities in the UAE. As defined above, there are three primary types of gated communities recognized; it can be said, based on the research of Smigiel (2013), lifestyle communities focus on the lifestyle preference of people living under a single roof.

For instance, there are different retirement communities in the USA, where retired people live together; moreover, they design their premises with different leisure activities. However, they are keen to share individual goals rather than going with collective ones. Considering the nature of prestige communities, rich and famous people, as well as upper middle class resides here, they are commonly known as suburban areas and are formed entirely over the economic and social status of people. Their key goal is to protect their place under the standards of social status. Also, Breitung (2012) conferred that in security zone communities, there are barriers for security reasons, usually including government officials' residences. The important point in this genre is that residents are supposed to feel confident and secure at their workplaces so that they are living as per as their required location.

Moreover, Blakely and Snyder (1997b) identified four features in their model, including functions of enclosure, security features and barriers, amenities and facilities included, and type of residents.

2.6.3 Debates of Sociability of Gated Communities

2.6.3.1 Gated Communities are Needed in All Scales

Several attractive factors of gated communities are that they affect residents' opinion into security and safety factors, social control and grouping a certain social group of people together, privacy, prestige and exclusiveness, services and facilities, sense of community, quality of life, and protecting property values. Each one of these factors is achieved in gated communities by applying certain features that can include gates, design of walls (where some wish to be seen through walls and some need walls as a means of security), guards and security, activities and facilities, urban design and landscape, housing types and its patterns, economic states of residents who could afford the house, scale, location and traffic, and finally its value and resale value (Salah & Ayad, 2018). Also, Landman (2004) carried out a study on gated communities in South Africa's post-apartheid regime, where a number of residents indicated that the establishment of an enclosed neighborhood contributes to a stronger spirit of community in the area.

2.6.3.2 Gated Communities are Triggering Social Isolation

The creation of private roads and motor-ways accessible only to privileged residents, of towns on a scale of medium-sized European cities out of bounds for the public, creates large self-sufficient ghettos that are taken out of the public space and the state as an institution. Patterns of segregation in small and large scale in Latin

American cities have been observed, since they began to grow rapidly during the last decades, marked by lack of effective urban planning (Borsdorf & Hidalgo, 2008). Also, “growing worries have been expressed on the negative consequences of the walls and gates in term of the loss of sense of community, traffic pressure and new patterns of crime and fear, most of which are considered to be part of social segregation” (Roitman, 2013). Moreover, one study (Moobela, 2003; Sakip, Johari, & Salleh, 2012) found that residents of non-gated residential areas demonstrated higher sense of community.

The findings of Zhang and Zheng (2019) support that residents in non-gated residential areas have a higher sense of community as compared to those in gated communities. Furthermore, Talen (1999) argued that this may be caused by environmental factors and the physical layout of residential areas that influence the community ties. As such, social interaction among residents will be enhancing in an environmental design and building physical designs that motivate them to go out for recreation (Talen, 1999). Community relations are formed when the relationship among children in the community as childhood friends leads to the formation of ties among parents (Sakip et al., 2012).

Another crucial issue arising from the debate about gated communities is that of urban fragmentation and separation. Gated communities tend to physically isolate a specific area from the surroundings and create zones of restricted access within the urban existence. This leaves motorists and pedestrians with little room for getting around, thereby resorting to alternative routes which may take longer. Gated communities, therefore, do not only impact negatively the daily life patterns of people, but also distort the urban form and functioning (Moobela, 2003). Whether the purpose of “shutting the gates” is to facilitate a specific lifestyle within the gated communities

or to pursue security concerns, gated communities are an emblem of an urban setting that is physically, socially, and economically isolated from the surrounding urban environment.

This view is strongly supported by Blakely & Snyder (1997a) who argue, with reference to the US experience, that while neighborhoods have always been able to exclude certain classes of residents through discrimination and cost of housing, with gates and walls, they can now exclude not only undesirable new residents, but even new passers-by and people from surrounding areas. This has the potential of triggering a harmful effect on urban sustainability (Moobela, 2003).

A closely related issue to urban fragmentation is that of planning and urban management. As gated communities are built on privately-held land, they can formulate rules and regulations regarding the expected conduct of the members of a particular community (Wainwright & Calnan, 2002). Furthermore, Moobela (2003) stated that the division between the rich and the poor has always existed but introducing physical barriers like gates and walls can only serve to widen the gap. Social connectivity naturally evolves among members of a diverse community, rich and poor, whose relationships and first-time meetings start from streets, pubs, parks, club houses, and many other informal space requirements.

This was confirmed in the case study of Hulme where some respondents to the questionnaire alluded to the fact that their community groupings started as purely informal arrangements out of casual meetings among strangers of the same area – Hulme. Within this context, gated communities should be regarded as a potential threat to the natural creation and subsequent evolution of such organic networks which play a vital role, not only in urban regeneration, but the wider social and economic landscape of the areas harboring the networks. It is no secret that gated communities

are (and have the potential of) splitting cities into private, guarded fortresses and a neglected majority of the population.

2.7 Gaps in the Literature

The discussed literature regarding gated communities mainly focuses on the need of a gated community, as it provide several benefits of security and social bonding (Landman, 2004; Salah & Ayad, 2018) for its residents. However, other studies highlighted the urban isolation it creates to the urban fabric (Blakely & Snyder, 1997a; Moobela, 2003; Talen, 1999; Wainwright & Calnan, 2002).

Moreover, no research showed any solution for the isolation issue or investigated the potential of having a balance point to satisfy residents in gated communities and those living outside them.

This study aims to discover and analyze social capital principles on gated communities by focusing on two urban design principles related to social capital. There are several urban design elements that influence social capital, as discussed in this chapter. Two principles were covered in depth through the analysis of the main case study: ‘connectivity’ as the missing factor between the inside and outside of the community, and ‘safety’ which represents a vital reason for the existence of gated communities and one of the major characteristics.

2.8 Context: UAE Gated Communities

For the United Arab Emirates (UAE), urban development is a major concern of policymakers, planners, public officials, and environmental advocates. In this regard, the UAE has been progressing steadily on the path of growth and development over the last three decades (Al-Zubaidi, 2007).

Furthermore, the UAE has emerged as a hub of commerce, stability, security, and peace. Because of its economic growth and relatively open immigration policies, the UAE has attracted large numbers of people from all over the world. This country has also urbanized rapidly over a comparatively brief time frame (Salama & Hana, 2010).

Several reasons for the UAE's large-scale growth in construction have been the massive expansion of urban areas, facilities, and infrastructure. Thus, growing cities such as Dubai and Abu Dhabi need to plan along sustainable lines to reduce their negative impact. Hence, cities can strive to be magnets for long-term sustainability by promoting sustainable lifestyles, cleaner production, renewable energy, water resource management, reduction of solid waste and sewage treatment, reuse and recycling of materials, ecological urban design and construction, public health, cultural expression, and social responsibility of residents (Issa & Al Abbar, 2015). Thus, sustainability has ranked among the major concerns of UAE policy in city planning and development. In this regard, most of their focus in sustainability has been toward the environment, giving less emphasis of social sustainability in research and practice.

Gated communities are one of the recognizable forms of housing developments in the Gulf region (Mahgoub & Khalfani, 2012). Thus, the proliferation of gated communities serves as a social need in many UAE cities. This analysis focuses on studying urban design principles' effect on social capital in gated communities and their relation to the surroundings. The selected case represents a unique form of gated communities in the surrounding as it is a quasi-gated community, by removing the fences and allowing people to walk through the community to use the services while preventing the access of cars by bollards and security guard stations.

Moreover, there no such a term as gated communities in the DPM Legislative Encyclopedia. The concept itself is named as investment housing and it differs from one region to another. For Al Ain the construction legislation of the investment housing has the following rules regarding the fences:

1. Construction of a fence within the boundaries of the voucher according to the dimensions shown in the site map, including all the structural elements or the necessary projections for the construction of the fence and proper construction methods. Also, the owner is responsible for its maintenance.

2. It is permissible to use a common fence or to cancel the fences on the voucher boundary between two vouchers for the same owner or if the parties agree and without the implementation of installations in the rebound zone of the boundary between the vouchers.

3. The height of the fences should not be less than ninety centimeters (0.90 meters) and not more than two meters (2.00 meters) from the zero level.

4. Fences overlooking the streets consist of aesthetic architectural elements such as hollow block panels (slabs made of reinforced concrete, brick, metal or glass hollow) and have interlocking decorations.

Chapter 3: Methods

This chapter discusses the methodology used to study social capital principles on gated communities by analyzing two urban design principles related to social capital ('safety' and 'connectivity'). Furthermore, this chapter includes the research design, case study method, and data collection. It contains the mixed methodology of quantitative and qualitative approaches. As such, qualitative research tools consisting of field surveys, questionnaires, interviews, and spatial analysis using maps are utilized. Also, quantitative research tools are represented using the DepthmapX software for spatial analysis to analyze data and questionnaires. Moreover, the use of mixed methodology helps in the validation and triangulation of collected data.

3.1 Research Design

Socially-sustainable communities include different measurable aspects based on multiple studies (Ahmed, 2017; Chan & Lee, 2008; Forrest & Kearns, 2001). This research covers urban design elements related to social sustainability in gated communities by analyzing safety and connectivity, as these elements are vital in the formation and evolving of gated communities in social life.

In addition, social capital is an effective feature on sustainable communities. It is impacted by boosting urban design principles interrelated with social capital factors. Covered principles in this study are analyzed through a set of indicators, as summarized in Table 2.

Table 2: List of Measuring Principles and Indicators

Principle	Sub principles	Indicators	Tools	References
Safety	Movement structure	<ul style="list-style-type: none"> Permeability of a street network should contain a high proportion of four-way intersections, few cul-de-sacs, small street block sizes or “street intersection density” 	Spatial analysis: mapping Spatial analysis: DepthmapX software	(Porta & Renne, 2005)
		<ul style="list-style-type: none"> Provision of connected streets for the pedestrian to reach services, facilities, etc. 	Spatial analysis: DepthmapX software Questionnaire	(Hemani et al., 2012)
		<ul style="list-style-type: none"> Connected network is based on convenient and logical connections between destinations, based on the most direct route possible. 	Spatial analysis: DepthmapX software	(Dill, 2004)
	Mixed use	<ul style="list-style-type: none"> Variety of land uses within the walkable catchment area. 	Spatial analysis: DepthmapX software Field survey: observation Questionnaire	(Porta & Renne, 2005; Sohn, Moudon, & Lee, 2012)
	Local facilities	<ul style="list-style-type: none"> Connections between important amenities and features should be highlighted through street layout, street trees, and other prompts. 	Spatial analysis: mapping Spatial analysis: DepthmapX software	(Witten, Exeter, & Field, 2003)
<ul style="list-style-type: none"> Locate public open spaces for recreation on flat, usable land in accessible and obvious locations. 		Spatial analysis: mapping Field survey: observation	(Giles-Corti et al., 2005)	
Connectivity	Ownership	<ul style="list-style-type: none"> Visibility of ownership 	Interview Questionnaire	(Hipp, 2010; Kleinhans, 2009)

Table 2: List of Measuring Principles and Indicators (continued)

Principle	Sub principles	• Indicators	Tools	References
Connectivity	Natural surveillance	<ul style="list-style-type: none"> Provision of natural surveillance (front and back) mapping identifies areas of streets that have active building frontage 	Spatial analysis: mapping Field survey: observation	(Jacobs, 2007)
		<ul style="list-style-type: none"> Pedestrian routes should be designed to be well overlooked by vehicle lanes and property frontages to provide passive surveillance. 	Field survey: observation Questionnaire Spatial analysis: DepthmapX software	(Jacobs, 2007; Porta & Renne, 2005)
	Access and footpaths	<ul style="list-style-type: none"> Streets should accommodate a mixture of transport types 	Interview Field survey: observation Questionnaire	(Rode et al., 2017; Southworth, 2005)
		<ul style="list-style-type: none"> Safety of all road users, especially vulnerable pedestrians 	Field survey: observation Questionnaire	(Stevens & Salmon, 2014)
		<ul style="list-style-type: none"> Traffic-calming tools 	Field survey: observation Spatial analysis: mapping Interview	(Distefano & Leonardi, 2019; Litman, 1999)

This research analysis is conducted using a mixed methodology of quantitative and qualitative approaches. The qualitative research tools of field surveys, questionnaire, interview, and spatial analysis using maps are utilized, and the quantitative research tools are represented using the DepthmapX software for spatial analysis to analyze data and questionnaires. Moreover, a case study is examined using both methods to explore and answer the research questions and to reach the set of objectives in this research.

As such, a pilot study was conducted to assess the viability of the used tools, data, and questionnaire as well as the required time and equipment for the field study.

The actual field work was focused mainly on the selected case, as it represented a unique type of quasi-closed gated community that was transformed to be totally closed. The work involved the surrounding areas as it linked with the connectivity of the case and had an influence on the transformation.

3.2 Case Study Method: MREIFA Compound, Bida Bin Ammar

The selected case of MREIFA Villa compound is located in Bida Bin Ammar, as the opening of this compound was in 2015. The Bida Bin Ammar block is a mixed-use area in Asharej, in the northwest direction of the Emirate of Al Ain. It includes restaurants, shops, supermarkets, medical facilities, and service facilities such as schools and nurseries, in addition to gated housing complexes that include apartments and villas for rent as shown in Figure 1.



Figure 1: Bida Bin Ammar Urban Context

The boundaries around the MREIFA compound were mainly blocked with security station and bollards to restrict the access of unauthorized cars, allowing walking people, however, to enter and reach the services inside as shown in Figure 2 and Figure 3.



Figure 2: MREIFA Compound,
Pedestrian Entrance



Figure 3: MREIFA Compound, Car
Entrance

Furthermore, the selected case of MREIFA compound provides a different experience to evaluate and analyze the change in social sustainability between both cases an open access community and a totally close one. The compound was first of a kind to be ungated or semi-gated before the current change in 2021, as they added walls to close all pedestrian access and limit the entry in the compound as shown in Figure 4 and Figure 5.



Figure 4: Pedestrian Access Before Closing

Figure 5: Pedestrian Access After Closing

The site is categorized with the code R12, according to the Department of Urban Planning and Municipalities (DPM), which means that the land is for residential areas with medium densities. Moreover, it is designated as an investment land, allowing the development of connected units (townhouses), multiple units (apartments) or separate units (villas). The definition of the fences, according DPM, that a fence is a barrier consisting of any material or group of approved materials to represent the limits of the voucher or to obscure it from view or divide it into parts or for any other authorized reason.

Case study analysis has been performed for the sake of providing an in-depth analysis of this study. Case study method, as defined by Yin (1981) is an empirical inquiry that investigates a contemporary phenomenon within its real-life context. In this method, data was closely examined within a specific context. Case studies, in their true essence, explore and investigate contemporary real-life phenomena through detailed contextual analysis of a limited number of events or conditions and their relationships (Zainal, 2007). Also, case study research is neither new nor essentially qualitative. Case study is not a methodological choice, but a choice of what is to be studied. If case study research is more humane or in some ways transcendent, it is

because the researchers are so, not because of the methods. In this research, a mixed methodology approach was used through the qualitative and quantitative approach. Moreover, the used methodology allows reliability of results generated by the different approaches of data collection.

3.3 Data Collection

The data collection process contains a qualitative approach using field surveys, questionnaire, interviews, and mapping, as well as the quantitative approach using the DepthmapX software. All these tools were applied to collect relevant data.

3.3.1 Sample Selection

Selection of the sample group was carried out through convenience sampling which involves obtaining responses from people who are available and willing to take part in the survey. In contrast, snowball sampling involves asking people who have participated in a survey to nominate other people they believe would be willing to take part (Etikan & Bala, 2017). In this research, non-probabilistic convenience sampling and snowball sampling were used to select participants and reach a representative sample. In this regard, the samples came from different ages, nationalities, genders, and households. Also, the most common variable among these sample was the location of the study: MREIFA compound and block Bida Bin Ammar. Moreover, the participants were residents in the community, visitors, friends, and people living in the surrounding area outside the community.

3.3.2 Qualitative Approach

The qualitative approach provides details gathered from field surveys and observation of the selected study area and related aspects. As such, the questionnaire targeted people living in the community and in the surrounding area (the block), and interviews were held with officials at Abu Dhabi municipality and the community management facility. Furthermore, the mapping included street network analysis, street hierarchy map, and land use map.

3.3.2.1 Field Surveys and Observation

Observation is one of the most important research methods in social sciences and, at the same time, one of the most diverse, most common, and simplest method of data collection (Ciesielska, Boström, & Öhlander, 2018). Observation can take place while letting the observed person know that they are being observed or without letting them know. Also, observations can be made in natural settings as well as in artificially-created environments (Kabir, 2016). Structured observation works according to a plan and involves specific information of the units that are to be observed and also about the information that is to be recorded.

3.3.2.2 Questionnaire

Questionnaire is the most commonly used method in surveys and consists of a list of questions, either open-ended or close-ended, to which the respondents give answers (Stone, 1993). Questionnaires can be conducted via telephone, mail, live in a public area, or in an institute, through electronic mail, fax or other methods. Moreover, a closed-ended question has the respondent pick an answer from a given number of options which limits the respondent to a set of alternatives. Open-ended questions are

usually preferable for measuring quantities as open questions and can add richness to survey results (Krosnick, 2018). Response options for a close-ended question should be exhaustive and mutually exclusive.

In this research, close-ended question has been used, questions were mainly related to the measuring indicators of safety and connectivity principles based on different survey tools related to measurements of social sustainability thus, International Physical Activity Questionnaire (IPAQ) developed by International Consensus Group and Public Spaces Public Life (PSPL) developed by Jan Ghel. The uses of survey tools were used as a guidance and provided a background on linking questions to measuring indicators. The questionnaire was an online questionnaire considering the current situation (pandemic caused by COVID-19) to collect the data safely and to save time. However, to assure the participant agreement to be part of the study and to explain the confidentiality of their information a consent form explained it all at the beginning of the questionnaire. The used Questionnaire is in Appendix 1.

3.3.2.3 Interview

Interviews provide the researcher with rich and detailed qualitative data for understanding participants' experiences, how they describe those experiences, and the meaning they make of those experiences (Knox & Burkard, 2009). As such, various sources are employed to understand and cover the details regarding interviews, focusing on the conditions fostering quality interviews, such as gaining access to and selecting participants (DiCicco-Bloom & Crabtree, 2006), building trust, location, duration, order, quality, and clarity of questions in interviews (Knox & Burkard, 2009). The interview was conducted with management officer at MREIFA compound Mr. Kamal.

3.3.3 Quantitative Approach

In this study, quantitative content analysis was conducted through the Space Syntax DepthmapX software in order to assess and evaluate the related social capital measures of the study area.

3.3.3.1 Space Syntax: Depthmapx

Space syntax is a set of methodologies describing the effect of space geometry. Indeed, space syntax scientifically explains why the continuously-connected city is a good thing and exposes the risks that come from sprawl and disconnection. The definition of Space Syntax in the context of urban scale begins with understanding the urban space as a collection of buildings united by the space network flowing between blocks. This network connects one network of road spaces. Furthermore, it is a tool that helps architects simulate the likely social effects of their architectural and urban designs. The general idea is that spaces can be broken down into components, analyzed as networks of choices, then represented as maps and graphs that describe the relative connectivity and integration of those spaces.

In this research, DepthmapX, an open-source multi-platform spatial network analysis software developed by Tasos Varoudis of UCL, is used in the segment angular analysis to conduct two main types of segment analysis as follows:

- a) Integration, which is thought to be related to “to movement”, measuring how close each segment is to all others within the radius and using the least angle measure of distance. Hence, it is a measure of how accessible each segment is from all the others, therefore how much potential it has as a destination for movement. As a result, integration measures the destination

potential for a segment at a specific catchment radius (Jiang, Claramunt, & Klarqvist, 2000).

b) Choice, which is thought to be related to “through movement” to measure the degree to which each segment lies on least angle routes between all other pairs of segments within the radius. Hence, it measures the through-movement potential of each segment within that radius in contrast to the to-movement potential measured by integration.

Before beginning an analysis, a set of fundamental research was defined, including what radius measure would best correlate with block size parameters, segment length, land values, pollution rates or observed patterns of pedestrian and vehicular movement within a certain urban area. Local movement is normally best represented by a local radius measure – 800 meters which is equivalent to a 10-minute walk. Market areas with finer scale grid pattern are better represented at a lower radius such as 400 meters. Higher radius measures are then needed to represent vehicular movement flows. These potentials are reflected in maps.

Also, integration and choice measures are combined by multiplying one by the other. With the combined measure, which can be done at any radius, the combined potential of a segment as both a destination and a route is revealed.

The argument raised by space syntax is that the pattern of movement in a city is likely to be shaped to a large extent by the topology of its route network alone, irrespective of all other factors therefore, the network itself, and the analysis of its shape. Space syntax provides an alternative method of measuring street connectivity. Originated in the field of architecture and urban design, space syntax is generally used for characterizing and quantifying the spatial layout of buildings within urban spaces

or enclosed spaces within streets based on topological methods. space syntax focuses on the topological distance within the network.

3.3.4 Pilot Study

The objective of the pilot study was to examine the research questions and ensure its application and suitability on the case and to test the selected methodology by testing the data collection tools, field conditions, and the expected time needed.

The pilot study was conducted in the summer of 2019, from the 14th to 29th of June, during working days and weekends and through morning and evening periods in the MREIFA Compound.

As such, the pilot study examined data collection tools such as site observation, interviews, and questionnaires. As such, for the observation, it was performed using a check list to ensure covering all required information regarding urban design elements of the place and people's behavior within the area. Observing the neighborhood provided an in-depth and rich understanding of both the selected site and people. Also, the interview was examined through communication with municipality employees and security guards working in the site. Lastly, the questionnaire was tested through selecting random people available in that place to test their initiative to do the questionnaires and to take their feedback.

After conducting the pilot study, multiple findings were highlighted, as follows:

The timing of the study showed that most people in vacation leave their houses, hence the actual study was done after the summer vacation ended. As this took place during the COVID-19 pandemic, accessing the questionnaires online was safe during the pandemic.

The low response rate during the pilot study led to using personal connections to explain the importance of their contribution and to reach more people.

Due to the comments received from the sample group, the questions needed to be formatted in an easy and simple language for the subjects. Also, the researcher needed to translate the questions, thus create an Arabic version of the questionnaire.

Chapter 4: Data Analysis

This chapter analyzes the data collected linked to the principles of safety and connectivity through a set of sub-principles and indicators using a mixed methodology of quantitative and qualitative approaches. Hence, tools such as observation, questionnaires, interviews, mapping, and the DepthmapX software are applied. Additionally, data analysis was done for the special case of MREIFA Compound in Al Ain and the surrounding area in the block.

4.1 Safety

The safety measurement is applied in the community level only as it matters most to people inside the community. As such, three sub-principles are used, each with a set of indicators and tools to measure and assess the principle of safety.

4.1.1 Ownership

a) Visibility of Ownership

Interview

Based on data gathered from an interview with the management officer Mr. Kamal, he indicated that all apartments and villas in the compound is for renting only. Also, there are several options of housing for people as the Compound offers one-bedroom apartments up to three-bedroom apartments or villas.

Questionnaire

Based on the conducted questionnaire, as shown in Chart 1, the majority of the people in this Compound were already living there for three to five years, representing 54%. After that comes residents living there for one to two years, representing 33.2%.

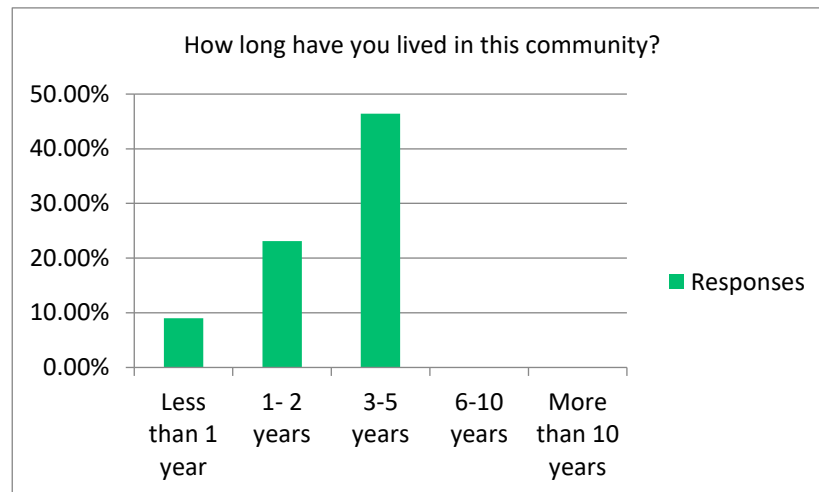


Chart 1: Living Period in the Community

4.1.2 Natural Surveillance

- a) Provision of natural surveillance (front and back) mapping identifies areas of streets that have active building frontage.

Spatial analysis: mapping

The outer roads are surrounded with other buildings that overlook the street from two sides; one side is facing a main road and the other side is facing a solid wall which is the back of another compound, as shown in Figure 6.

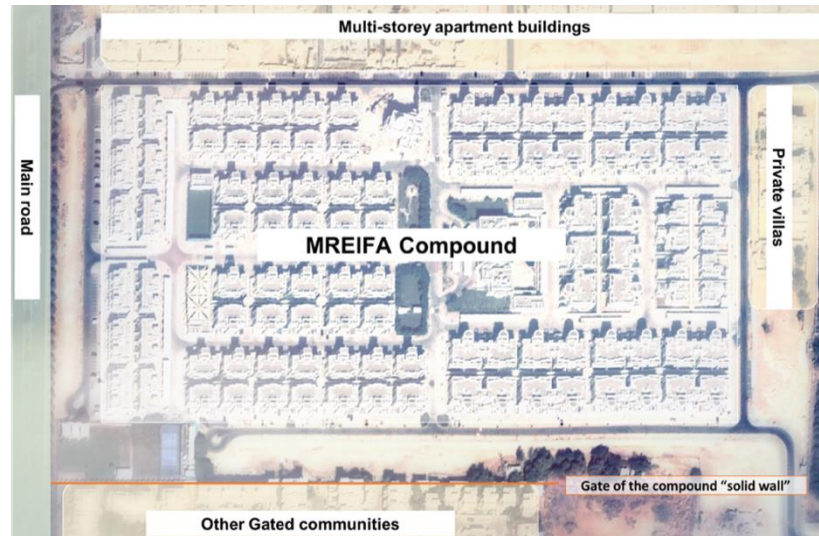


Figure 6: MREIFA Compound Surroundings (Google Earth, 2019)

Moreover, Figure 7 demonstrates the inner roads and routes as shown in the following map, categorized as zone B. This zone is divided into three categories based on the type of surveillance it receives. Also, B1 and B2 represent streets for cars and pedestrians. However, B3 is a pedestrians-only path in-between villas and connecting streets through these passages. In addition, these zones were studied through observing the Compound in the field analysis section.

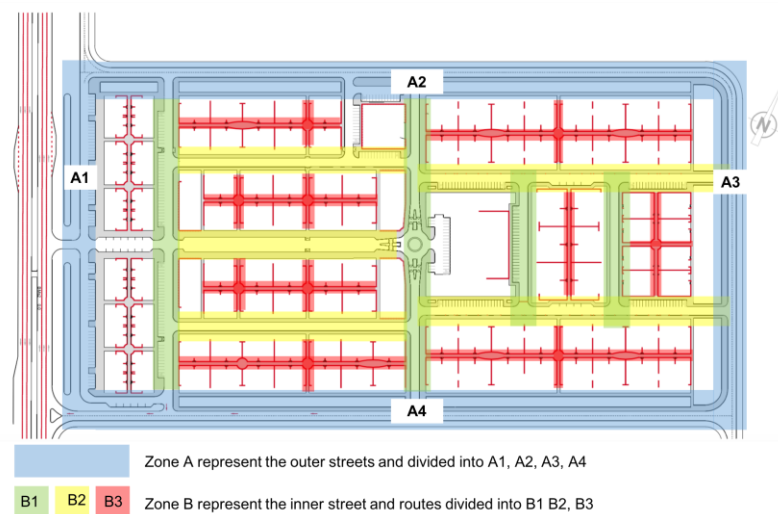
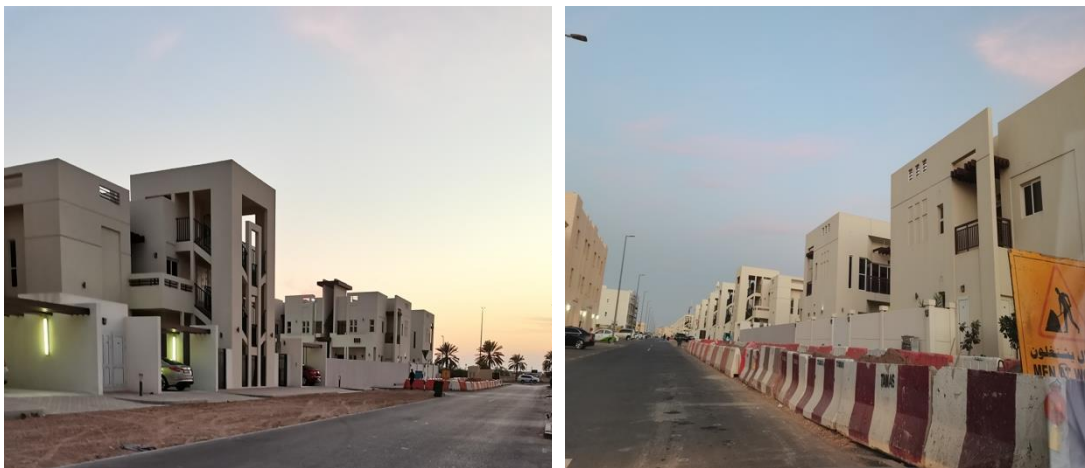


Figure 7: Categorization of Inner Community Streets

Field analysis: observation

A1, shown in Figure 8 (a) and (b), is overlooked from both sides. One side is the community villas' windows (a) and the other side is mixed commercial-residential buildings (b).



(a)

(b)

Figure 8: Street A1 MREIFA Compound, Bida Bin Ammar

A2, shown in Figure 9 (a) and (b), is overlooked from both sides. One side is overlooked by mixed commercial-residential buildings (a) and the other side is the community villas' entrance side as well as the main entrance to the community (b).



(a)

(b)

Figure 9: Street A3 MREIFA Compound, Bida Bin Ammar

A3, as shown in Figure 10 (a) and (b), this side is overlooked by the villas from one side (a), it is a residential area containing private villas and several villa entrances from the side and from the other side is the community side exit gate (b)



(a)

(b)

Figure 10: Street A2 MREIFA Compound, Bida Bin Ammar

A4, as shown in Figure 11, is overlooked only from one side by the community villas, as the other side of the street is empty land, as well as from the back of another community's gate.



Figure 11: Street A4 MREIFA Compound, Bida Bin Ammar

B1, as shown in Figure 12 (a) and (b), is overlooked by villa entrances and apartment windows from the side (b). Also, it is a main passage for cars (a).



(a)

(b)

Figure 12: Street B1 MREIFA Compound, Bida Bin Ammar

B2, as shown in Figure 13, mostly contains entrances of apartments and villas, and is usually blocked by cars.



Figure 13: Street B2 MREIFA Compound, Bida Bin Ammar

B3, as shown in Figure 14 (a) and (b), represents pedestrian routes. Only at night it is too dark to walk (a), but at daytime even kids use them to see their friends and play (b).



(a)

(b)

Figure 14: Pedestrian Routes in MREIFA Compound, Bida Bin Ammar

- b) Pedestrian routes should be designed to be well overlooked by vehicle lanes and property frontages so as to provide passive surveillance.

Field analysis: observation

The various alleys and pedestrians' routes are in most cases overlooked by windows, balconies or vehicle lanes, as shown in Figure 15. However, alleys between the villas have poor lighting at night, which might make it not very well observed or clear to see into.



Figure 15: Pedestrian Routes in MREIFA Compound, Bida Bin Ammar

Questionnaire

Residents' evaluation of the natural surveillance in Chart 2 indicates that the street is well overlooked by cars and houses, as 85% answered that pedestrian routes are seen. Also, 48% expressed that they could use streets at all times of the day. Also, in Chart 3 48% stated that they can use the streets in all times day and night.

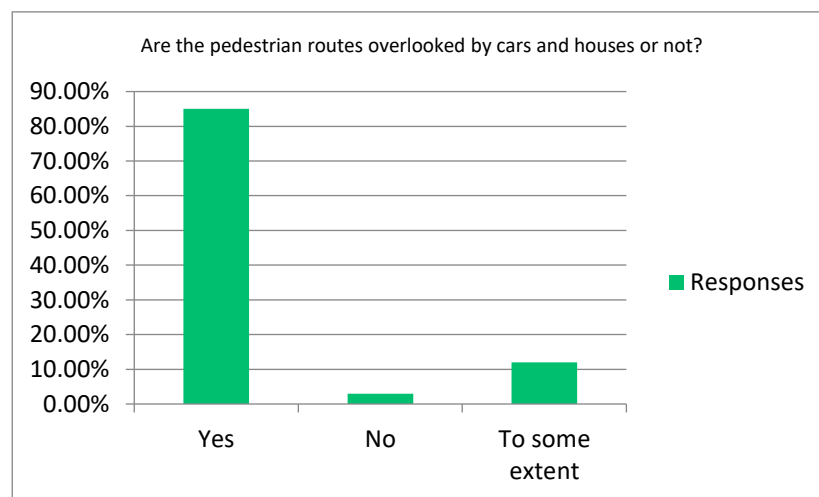


Chart 2: Surveillance of Pedestrian Routes



Chart 3: Street Usage Time

Spatial analysis: DepthmapX software

As shown in the choice map in Figure 16, for the Compound most of the routes have a low choice value.

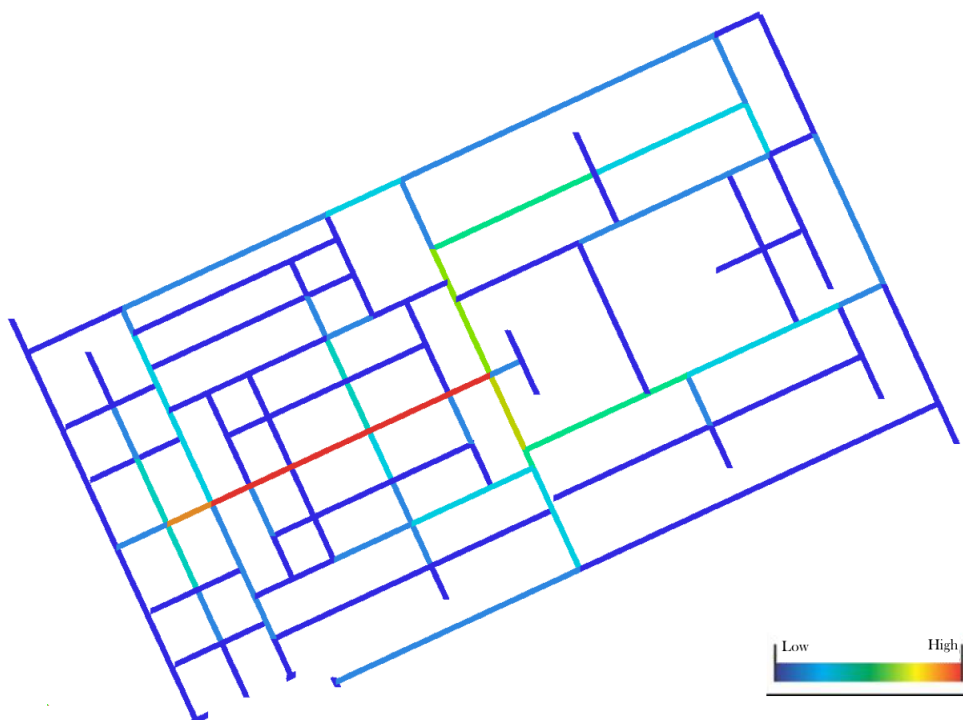


Figure 16: Choice Map in MREIFA Compound

4.1.3 Access and Footpaths

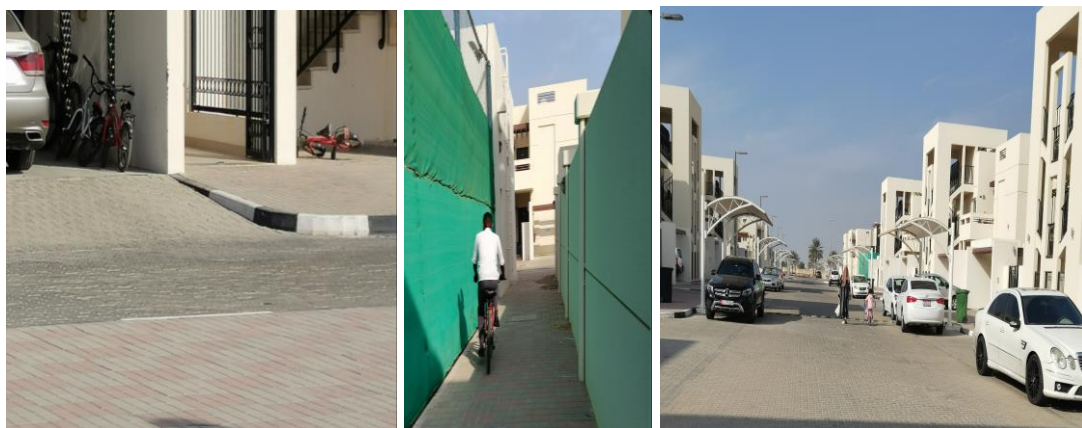
- a) Streets should accommodate a mixture of transport types.

Interview

As discussed with the community management officer, he indicated that the community has no specific lanes for walking or cycling only, although both adults and kids use their bikes all around the community. Also, security guards take their rounds in the community using bicycles, as shown in Figure 17.

Field analysis: observation

Streets in the community are prepared to serve mainly pedestrians and cars. Moreover, the provision of high street pumps helps cyclists move around easily, since they are not crowded at all, as shown in Figure 17. Furthermore, kids in the community like to use bikes to play within the community (a) and even the security guards use bicycles to move around (b). However, in some areas, they need to use the car routes because the sidewalks end without a slope and also the cars parked in the villas' parking entries create obstacles for street users (c).



(a)

(b)

(c)

Figure 17: Pedestrian Routes and Sidewalks in MREIFA Compound, Bida Bin Ammar

Questionnaire

Based on a majority of resident evaluations, it was confirmed that streets are not designed to accommodate different transport types, as 61.8% answered with ‘no’, only 24.1% answered with ‘yes’, and around 14% answered with ‘to some extent’, as shown in Chart 4.

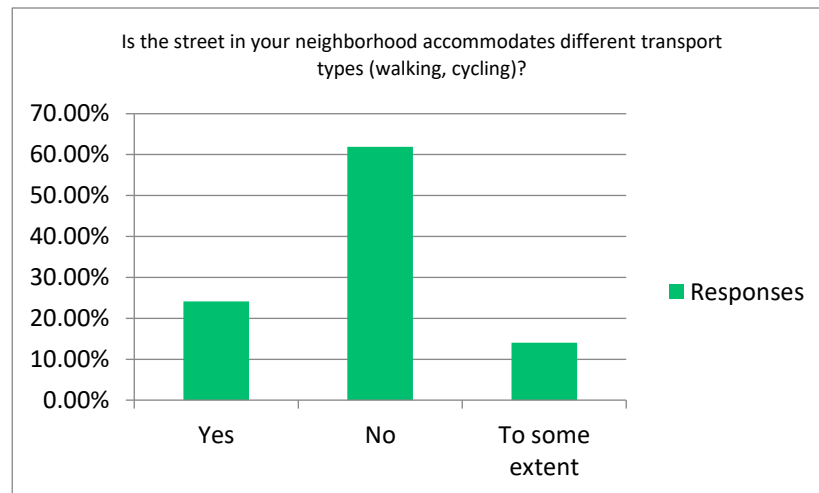


Chart 4: Streets Accommodation: Different Transport Types

b) Safety of all road users, especially vulnerable pedestrians.

Field analysis: observation

Most of the sidewalks had a certain slope, as shown in Figure 18. This slope increases as it goes closer to the street and could be an obstacle for road users.



Figure 18: Slope in the Sidewalk at the Entrance of Every Villa

Questionnaire

The residence's opinion regarding this indicator is as follows: 46.29% answered with 'yes', 41.71% answered with 'no', and 12% answered with 'to some extent', according to Chart 5.

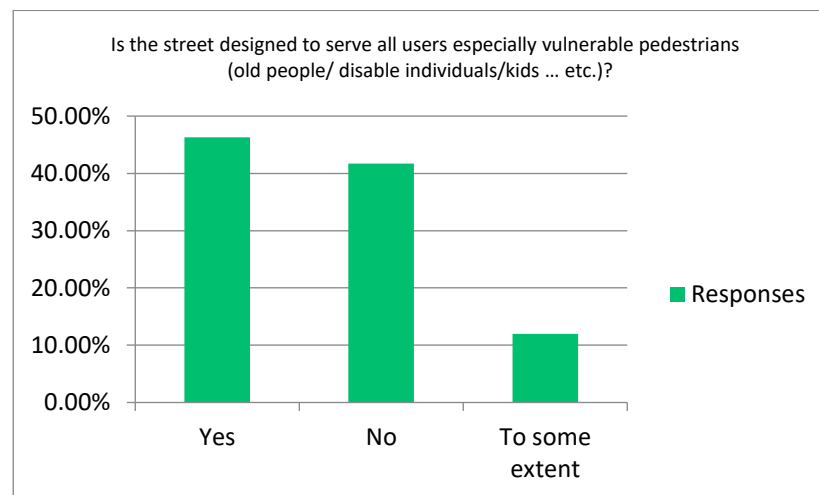


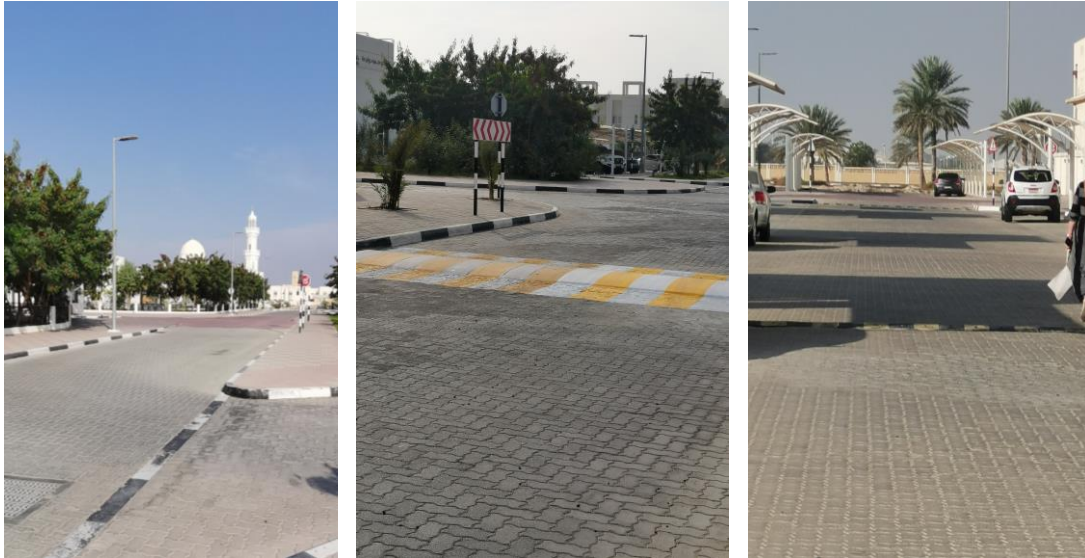
Chart 5: Street Design for All Road Users

c) Traffic-calming tools include the following:

Field analysis: observation

The provided calming method in the community includes street humps, speed tables, and speed bumps distinguished in different colors and textures. Moreover, different materials, textures, and colors were used to make vehicular carriageways, pedestrian sidewalks, parking bays, and maneuvering areas clearly legible, as illustrated in Figure 19 (a, b, c). Furthermore, incorporating islands or raised berms were established to help pedestrians cross and slow vehicles down, as shown in Figure 19. Also, long stretches of straight local residential roads were avoided by using the road reservation width to allow for regular bends or 'shifts' in the carriageway. No landscaping was incorporated into parking bays or over long sidewalks, except for a few spots around the green areas in the community.

Traffic-calming tools were made more prominent through raising intersections and using different materials while aiding in slowing vehicles down in the center of the community and in front of the community services.



(a) (b) (c)
Figure 19: Traffic-Calming Tools in the Community

Spatial analysis: mapping

The map below marks out traffic-calming elements such as street tables, street humps, and speed bumps used in the community and their location based on the site inventory. Also, the elements are concentrated in the middle area of the community and in the two main streets, as shown in Figure 20.

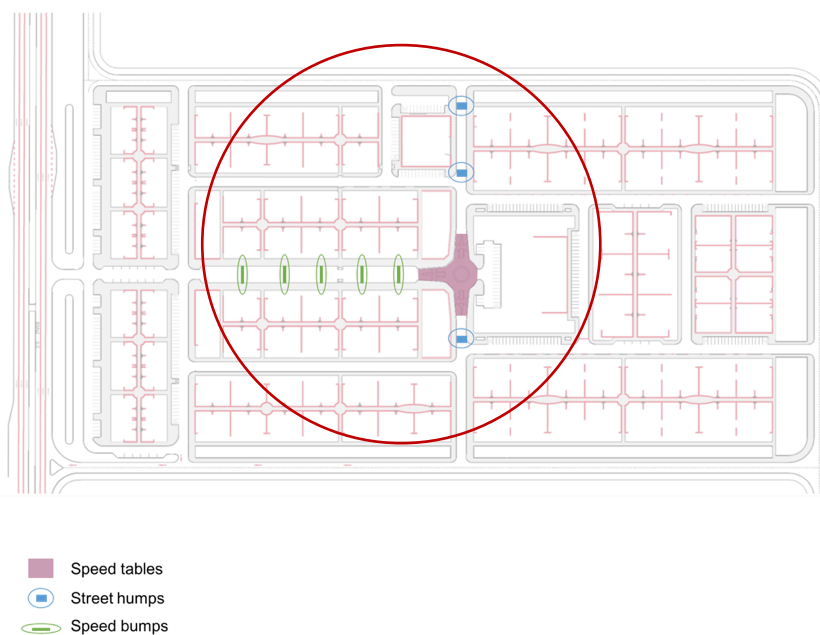


Figure 20: Traffic-Calming Tools Indicated in Maps

Questionnaire

Responses regarding the streets bumps and humps in the Compound were as follows: 46% with 'yes', 22.71% with 'no', and 31.29% with 'to some extent', as shown in Chart 6.



Chart 6: Traffic-Calming Tools

4.2 Connectivity

Connectivity is measured using two scales: the community level and the block level. In this study, the community level was measured in MREIFA Compound and the block level in Bida Bin Ammar block area.

4.2.1 Movement Structure

- a) Permeability of a street network should contain a high proportion of four-way intersections, few cul-de-sacs, small street block sizes or “street intersection density”.

On the community level:

Spatial analysis: mapping

There are 10 cul-de-sacs and 21 four-way intersections for the community, as shown in Figure 21. Most of the intersections are three-way and the area is approximately 0.13 square kilometers. Moreover, intersection density is calculated through dividing the number of intersections in the selected plot by the area in square kilometers. The compound itself has an intersection density of $21/0.13=161.53$.

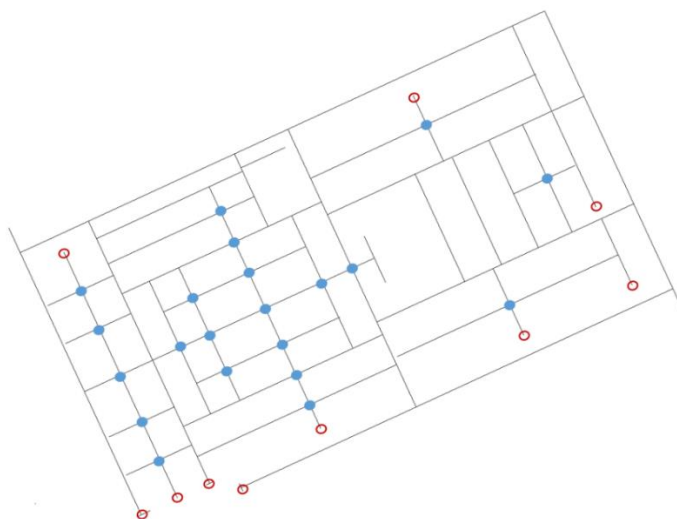


Figure 21: Intersections and Cul-de-sacs on the Community

As shown earlier in Figure 7, there are Sikkas in the community between every few villas, which increases the pedestrians' ability to move around the community and increase the connectivity from within. Some Sikkas have a dead end (cul-de-sac).

Spatial analysis: DepthmapX software

Connectivity is performed to find the degree of interaction among spaces located nearby. High connectivity represents many people using the street. Moreover, network connectivity measures direct routes to destinations, as shown in Figure 22. Furthermore, connectivity in the community has high values in general as most of the streets are red and green and all the facilities and services are located in this area.

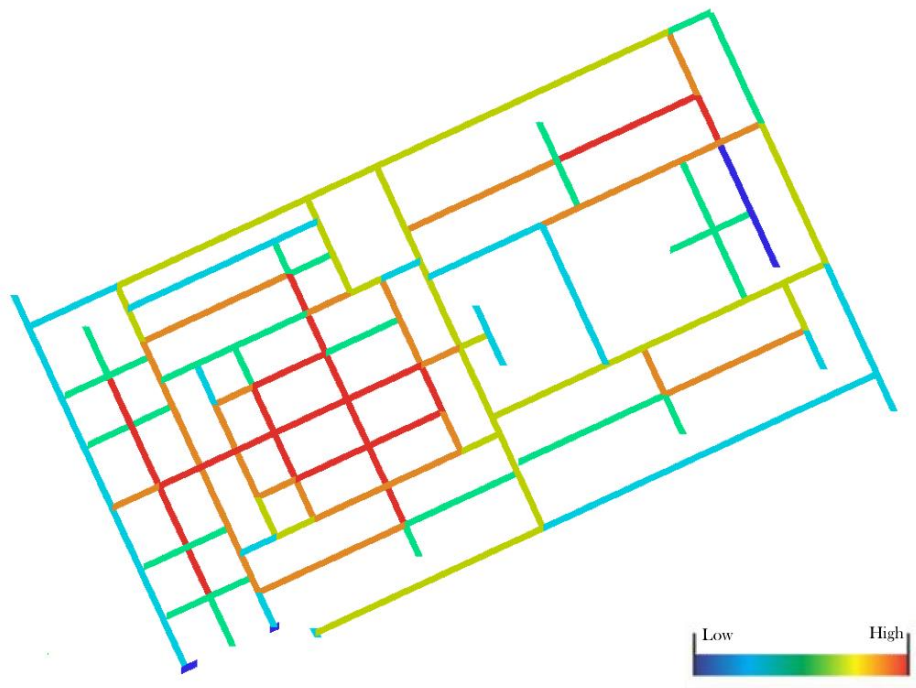


Figure 22: Connectivity Map Rn in MREIFA Compound

On the block level:

Spatial analysis: mapping

Based on the street mapping, the blue points represent the location of the four-way intersection, and the red circles indicate the cul-de-sac locations. Also, the amount of cul-de-sac streets in the block is more than double the intersections, as shown in Figure 23. Moreover, there are 11 four-way intersections in the area and 29 cul-de-sacs, and as described earlier, the cul-de-sacs are commonly referred to as dead-end streets.

In addition, the area of the block is around 1.95 square kilometers, as illustrated in Figure 23. There are 11 four-way-intersections, therefore the intersection density in the block is $11/1.95=5.64$.



Figure 23: Intersections and Cul-de-sacs on the Block

Spatial analysis: DepthmapX

Connectivity is measured the by calculating the quantity of spaces directly interconnected in a layout space. According to Figure 24, the connectivity map analysis indicates a weak overall connectivity in the block, as the red lines show the streets with highest connectivity values while the blue-lined street represent less connected ones.

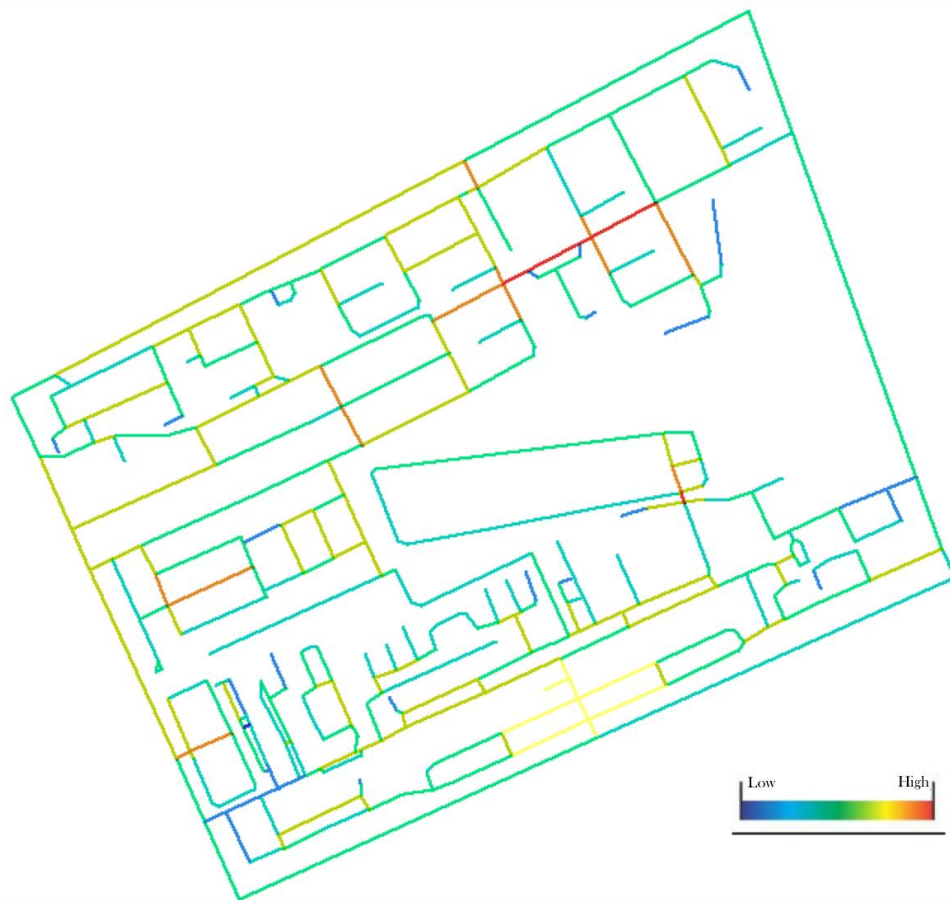


Figure 24: Connectivity Map Rn in the Block

- b) Provision of connected streets for the pedestrians to reach services, facilities, etc.

On the community level:

Spatial analysis: mapping

Community services are distributed mainly in the center and toward the left side of the Compound. However, all services fall within a 200-meter radius, reflecting a two-to-four-minute walking distance, as shown in Figure 25.

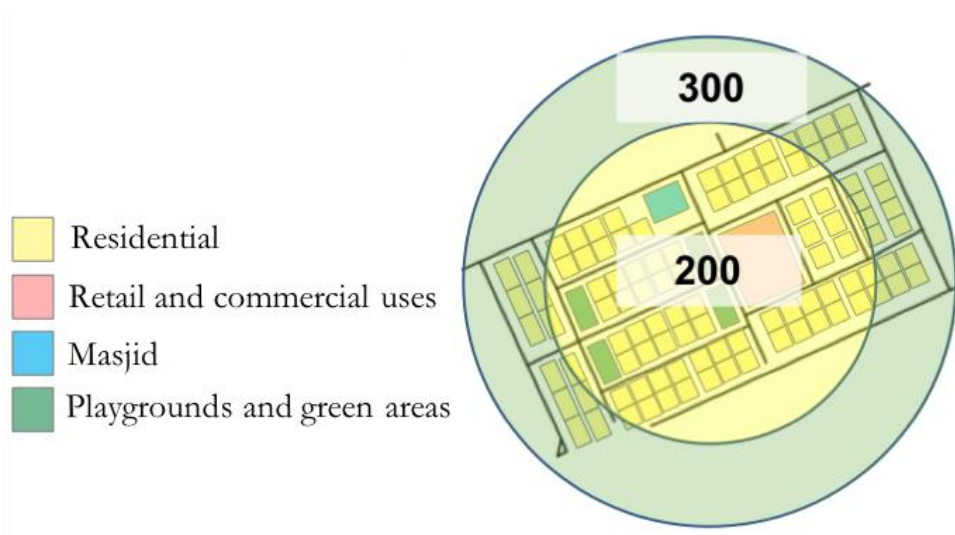


Figure 25: Services Within the Community with the Catchment Distances

Spatial analysis: DepthmapX software

As demonstrated in Figure 26, the location of the Masjid is near the edge of the community. However, it can easily serve the inside of the community with a walking distance ranging between 100 and 400 steps while the retails inside the community, as depicted in Figure 27, are in the center since they serve the whole community.

The playground and sport field are located in the left side of the community, as shown in Figures 28 and 29. Furthermore, the playground serves the area with a

walking distance reaching 400 meters. Also, the sports field serves the community with a walking distance of up to 500 meters.

Moreover, the green areas located in the center of the community help it serve the whole community, as shown in Figure 30. In addition, the community club is located in the center of the community with a walking distance of up to 300 meters, as shown in Figure 31.

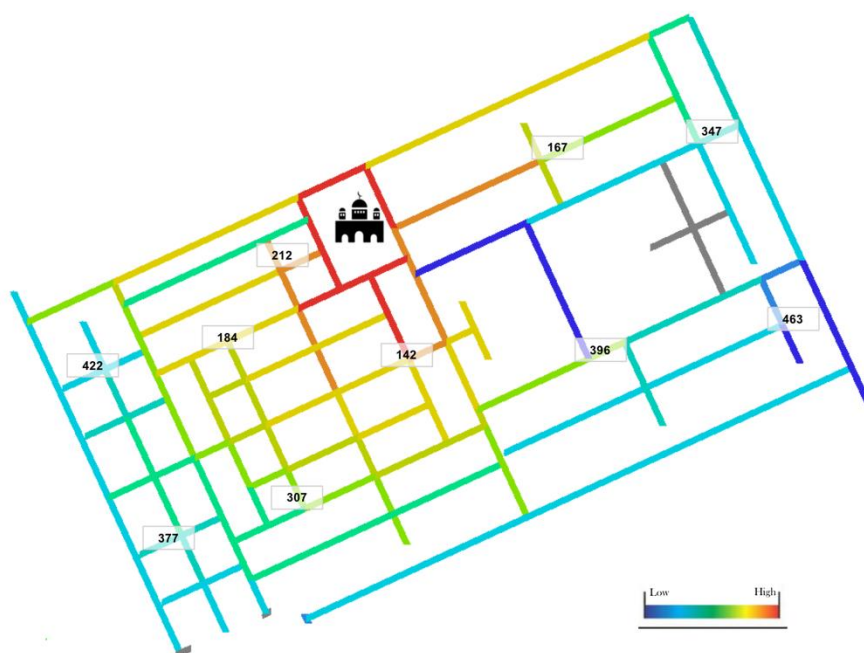


Figure 26: Masjid in MREIFA Compound



Figure 27: Retails in MREIFA Compound

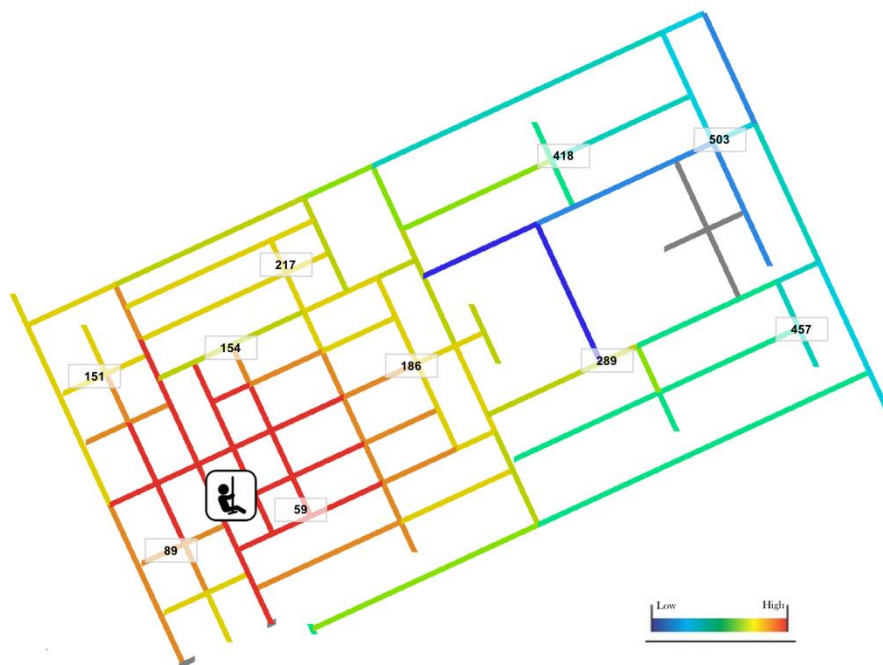


Figure 28: Playground in MREIFA Compound



Figure 29: Sport Field in MREIFA Compound



Figure 30: Green areas in MREIFA Compound



Figure 31: Community Club in MREIFA Compound

Questionnaire

According to the results, 85.7% of the people think that it is easy to reach the provided services within the community by walking, as shown in Chart 7.

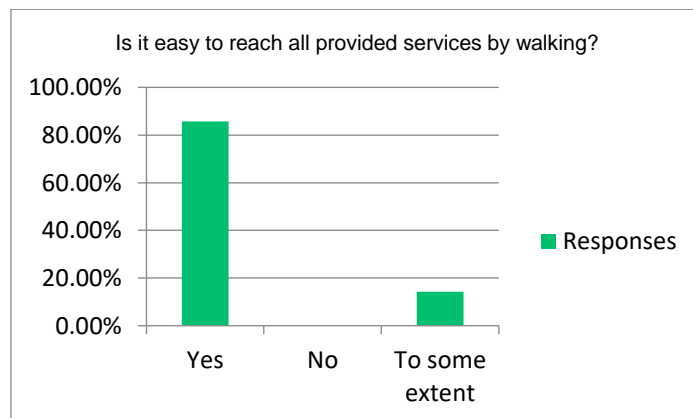


Chart 7: Reaching Services in the Community

On the block level:

Spatial analysis: mapping

As indicated in the map above, most services in the block range between the radiuses of 200 and 1000, which is reflected from two minutes to 13 minutes of walking time, as shown in Figure 32.



Figure 32: Services within the Block with the Catchment Distances

Spatial analysis: DepthmapX software

As indicated in the map, Masjids and retails are distributed all around the block, and it takes around 64 to 869 steps to reach most Masjids, as shown in Figure 33. However, retails are distributed mainly in the top and bottom of the block area and few are distributed in the middle. Overall retails and commercial can be reached by an average footstep of 10 up to 727 steps, as shown in Figure 34.

Moreover, the sports field, playground, and green areas in the block are not provided except for the compound services when it used to be accessible for pedestrians before. Also, as shown in Figures 35, 36, and 37, these facilities can be reached from the block by footstep counts from 119 to 2381 steps.

In addition, the school's location in the block makes the step counts to reach it range from 101 to 2592, as shown in Figure 38. Also, governmental facilities are located near the main road and location of the communities, which makes it accessible even for people from outside the block, as shown in Figure 39.

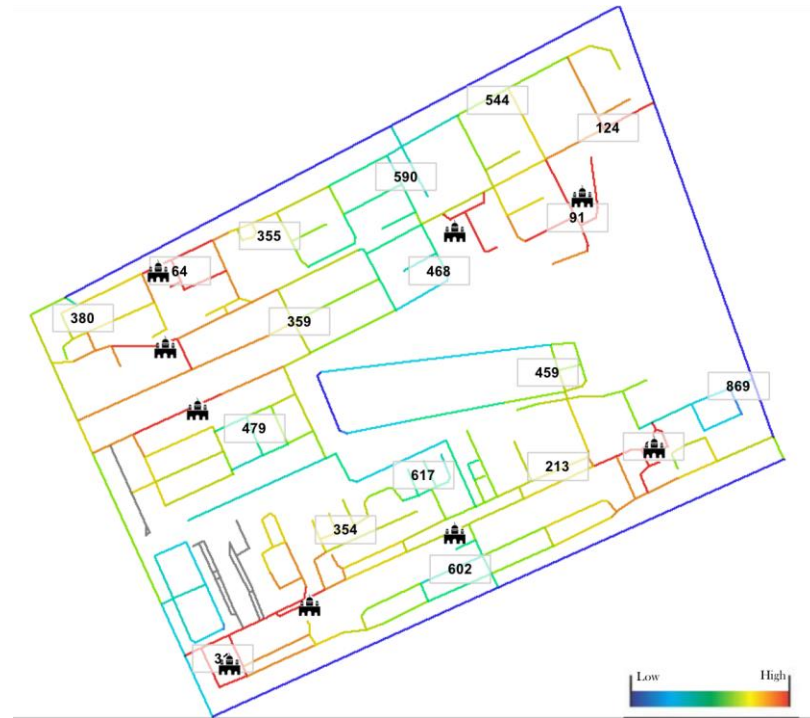


Figure 33: Masjids in the Block

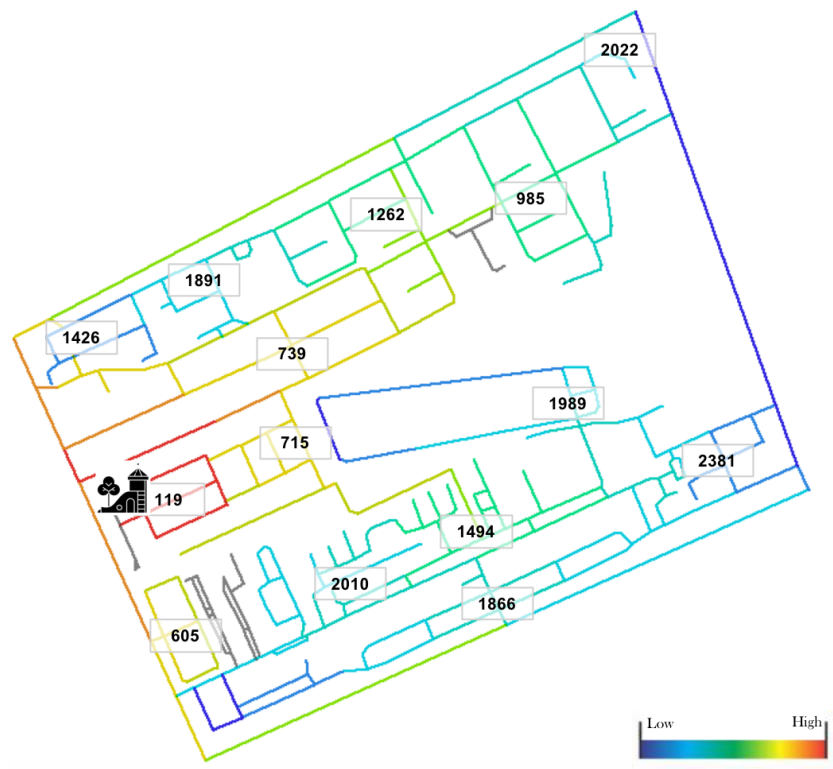


Figure 34: Playground in the Block

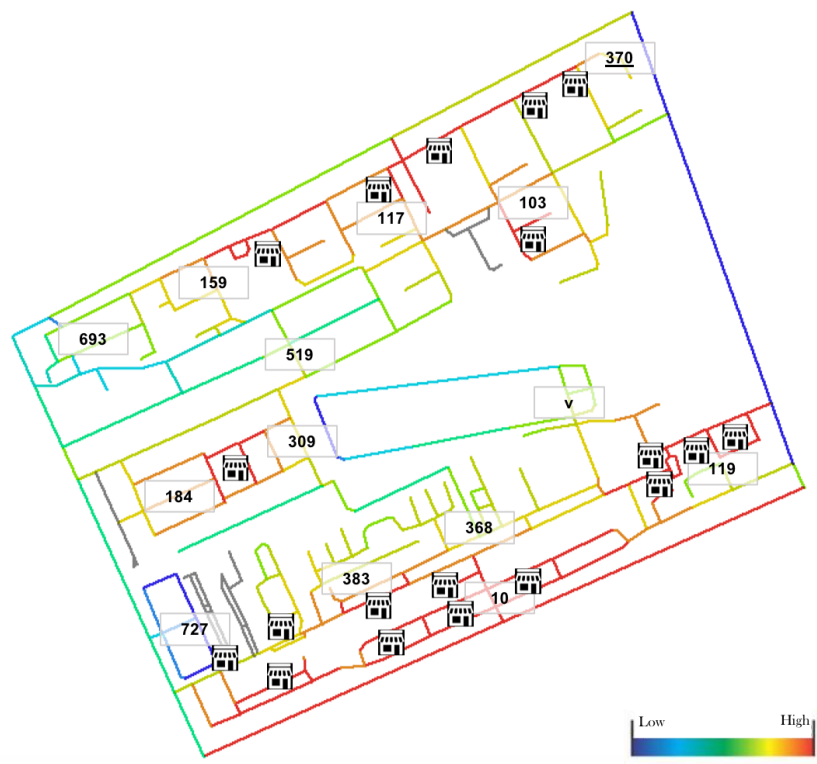


Figure 35: Retails in the Block

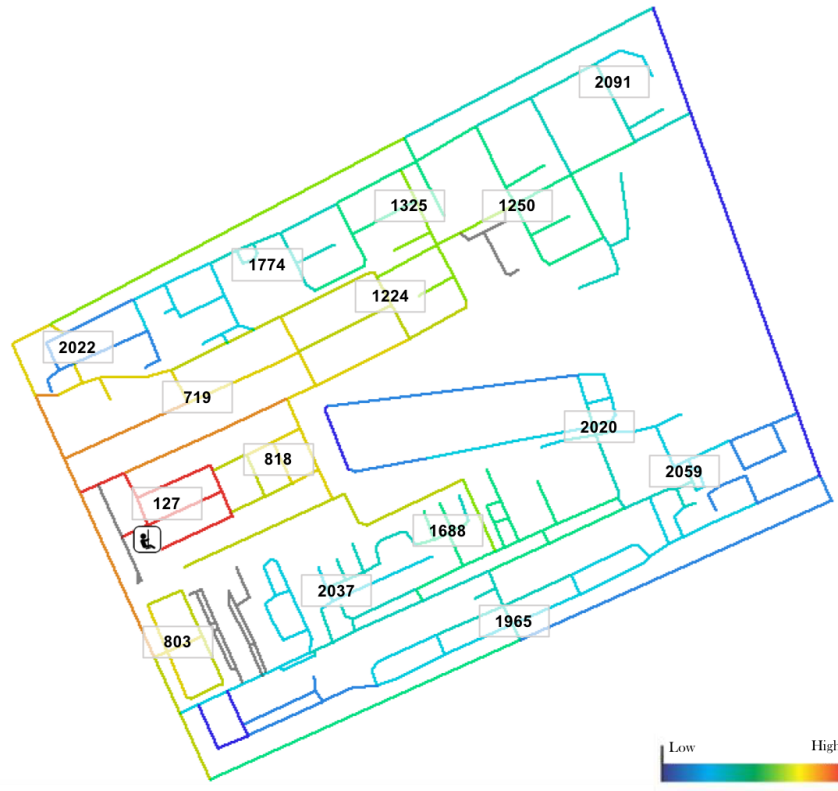


Figure 37: Sport Field in the Block



Figure 36: Green Areas in the Block

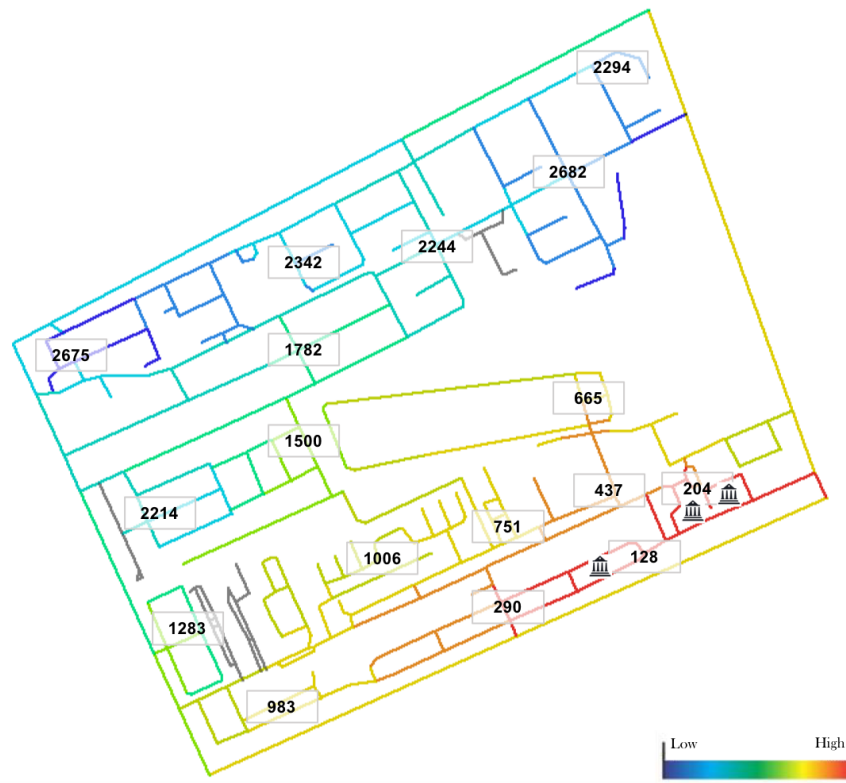


Figure 39: Governmental Facilities in the Block



Figure 38: Schools in the Block

Questionnaire

A majority of people living in the block, i.e., 56.3%, expressed that it is not easy to reach the provided services by walking, as shown in Chart 8.

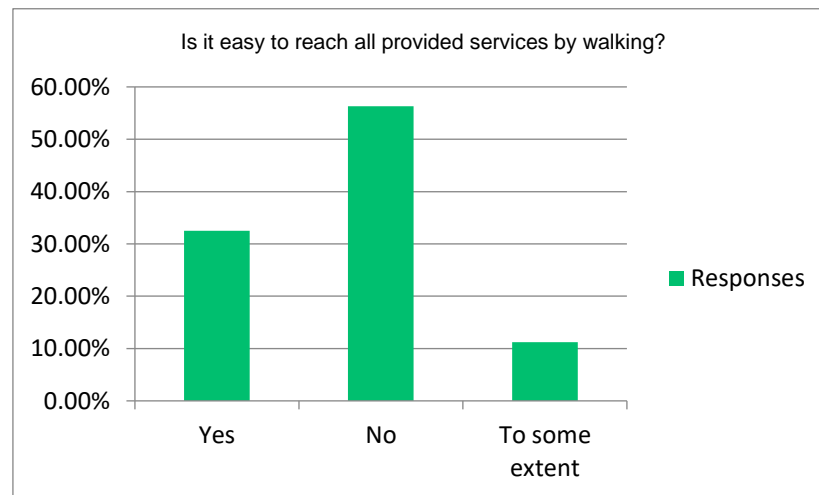


Chart 8: Reaching Services in the Block

- c) Connected network is based on convenient and logical connections between destinations, based on the most direct route possible.

On the community level:

Spatial analysis: DepthmapX software

Choice element indicates how often an element is passed when calculating the shortest path between elements. According to the choice map in Figure 40, the community has an overall low value, as most routes are colored in blue and only one route is colored in red.

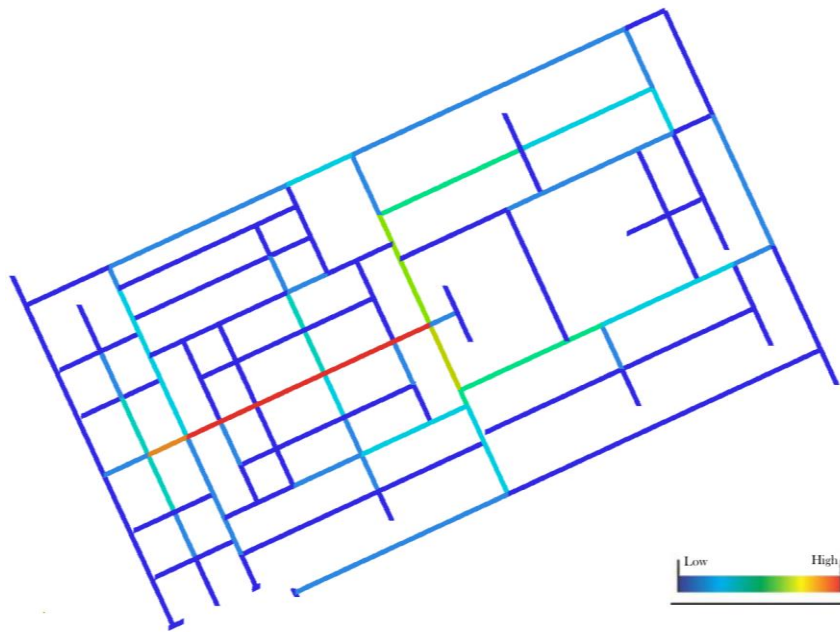


Figure 40: Choice Map Rn in the Community

On the block level:

Spatial analysis: DepthmapX software

As shown in Figure 41, the block also has an overall low choice value in most streets, since only a few streets have high-choice values.

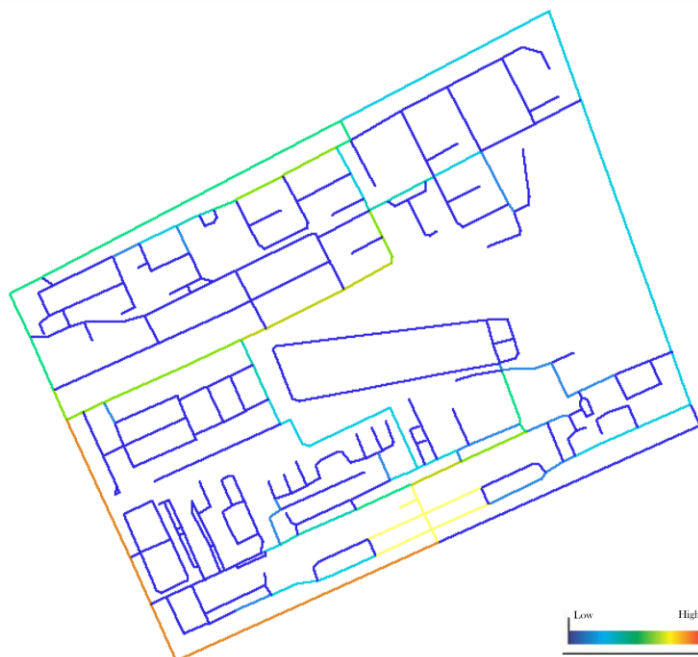


Figure 41: Choice Map Rn in the Block

4.2.2 Land Use Diversity

- a) Variety of land usages within the walkable catchment area.

On the community level:

Spatial analysis: mapping

As demonstrated in Figure 42, the entire community is covered within a catchment distance of 200 to 300 meters, and the provided services are as shown in the map.

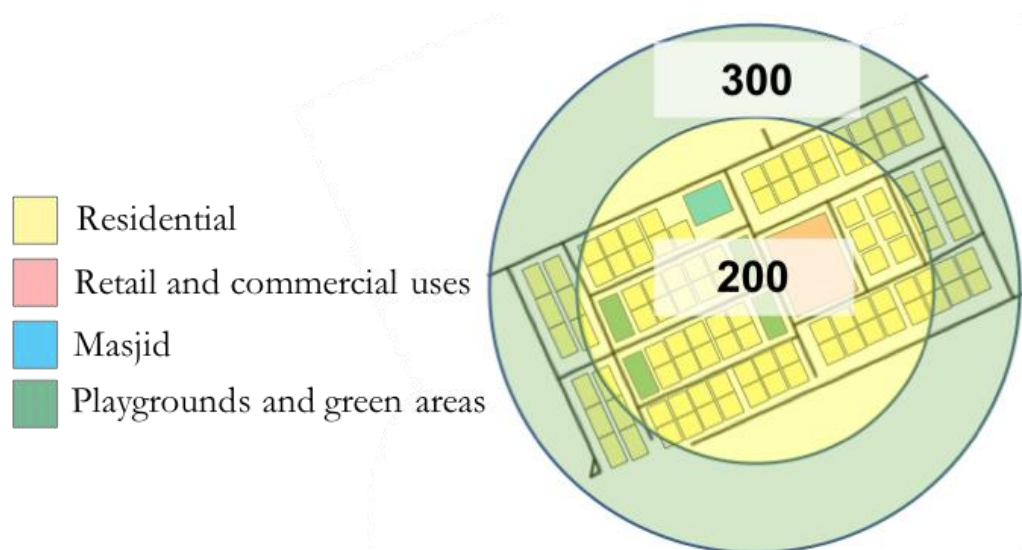


Figure 42: Services in the Community with Catchment Distances

Field analysis: observation

As seen in the observation, most services in the community are located in the center of the community, namely the Masjid, commercial, community club, and green area, except for the playground and the sports field as they are located toward the inside of the community as shown in Figure 43 (a, b, c).

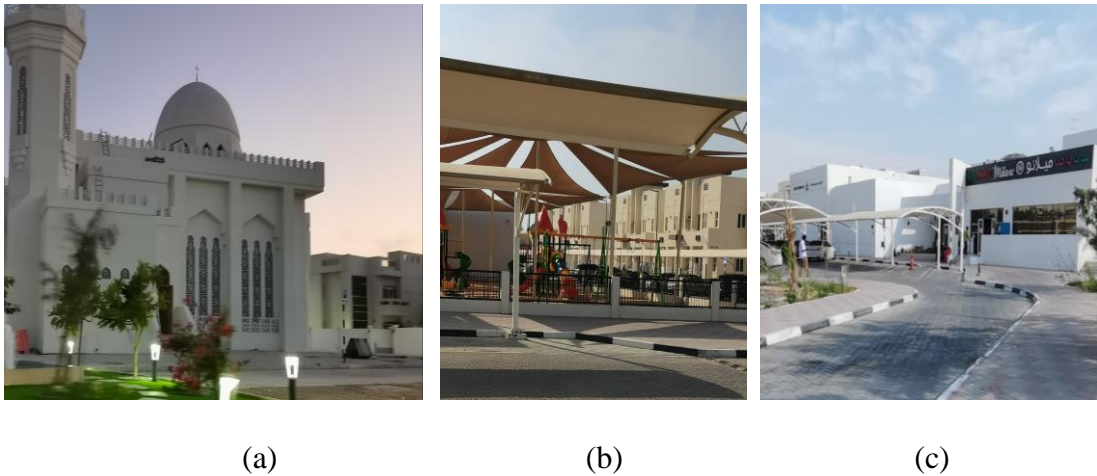


Figure 43: Services and Facilities in the Community

Questionnaire

Most services are provided within the community, as the majority agrees with the availability of most services, as shown in Chart 9. Also, it should be noted that the Masjid has a low indication since it was not opened yet at the time.

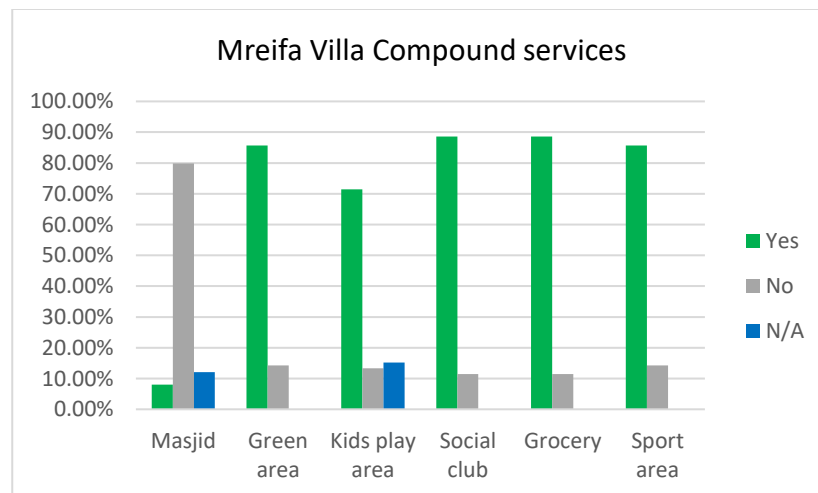


Chart 9: Services in the Community

On the block level:

Spatial analysis: mapping

As mentioned before, most of the services and facilities fall in a walkable distance varying from a 200- to 1000-meter radius. Moreover, the southern area of the block contains most of the facilities, as shown in Figure 44.

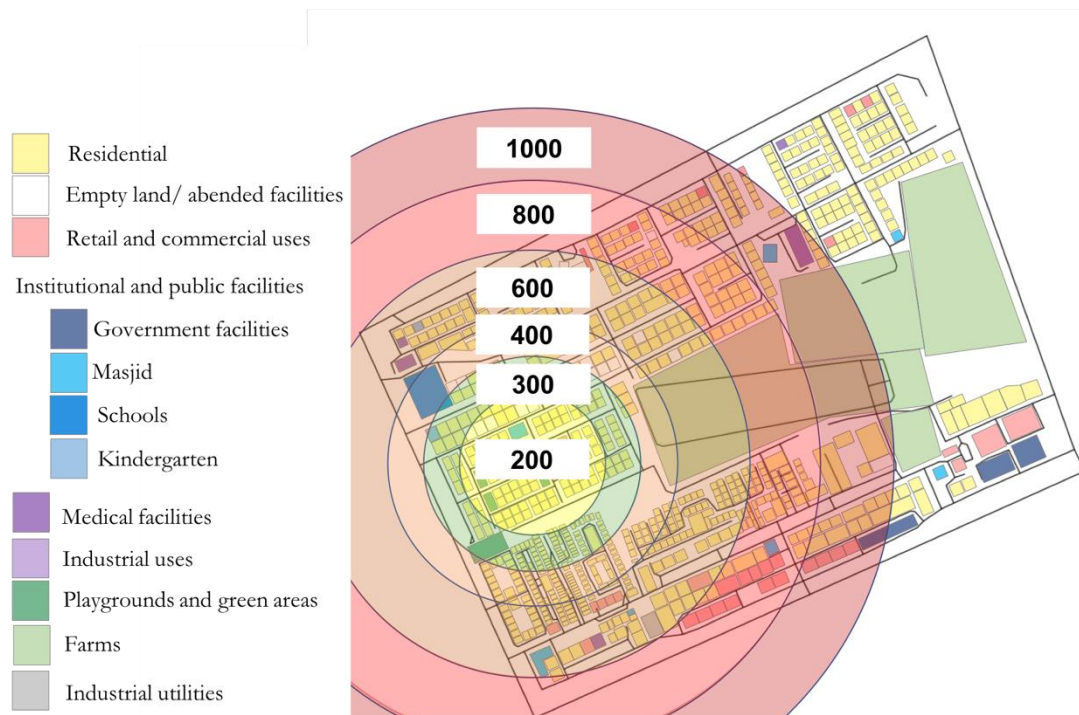


Figure 44: Block Land Use with the Catchment Distances

Field analysis: observation.

Different facilities are allocated in the ground floor of the apartment buildings in the area, namely restaurant, café, pharmacy, grocery store, and many other services, as shown in Figure 45 (a, b, c).



(a)

(b)

(c)

Figure 45: Several Services in the Block

Questionnaire

As depicted in Chart 10, the questionnaire indicates that most facilities are provided within the area, except for the kids' play area, social club, and pharmacy.

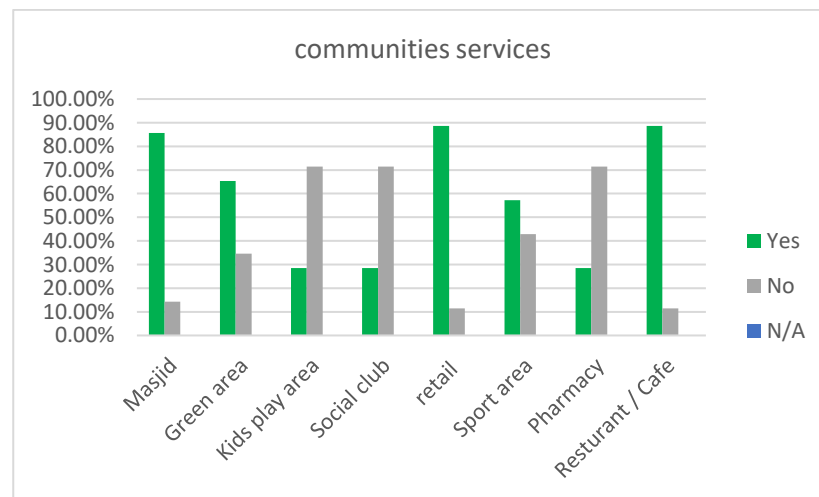


Chart 10: Services in the Block

4.2.3 Local Facilities

a) Connections between important amenities and features should be highlighted through street layout, street trees, and other prompts.

On the community level:

Spatial analysis: mapping

In the land use map shown in Figure 46, it can be seen that services in the community are allocated into two streets. However, as indicated by the choice map in Figure 39, only one street has a high choice value.

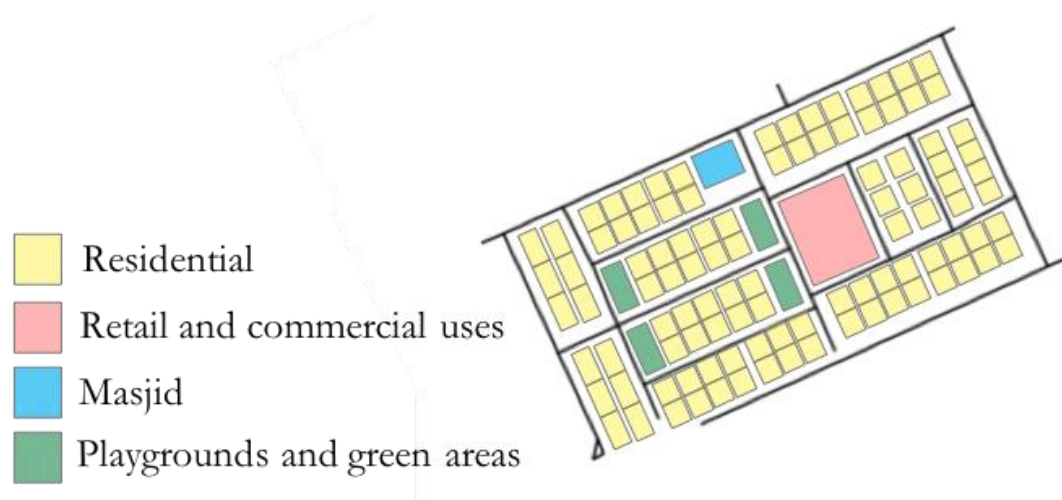


Figure 46: Land Use in the Community

On the block level:

Spatial analysis: mapping

Referring to the previous maps in Figures 33 to 39, several facilities are well distributed among the area, such as retails and Masjids , and several other facilities are poorly distributed, namely green areas, playgrounds, and sports fields as shown in Figure 47. As shown in the choice map in Figure 41, these services are not located in the streets with a high choice value.

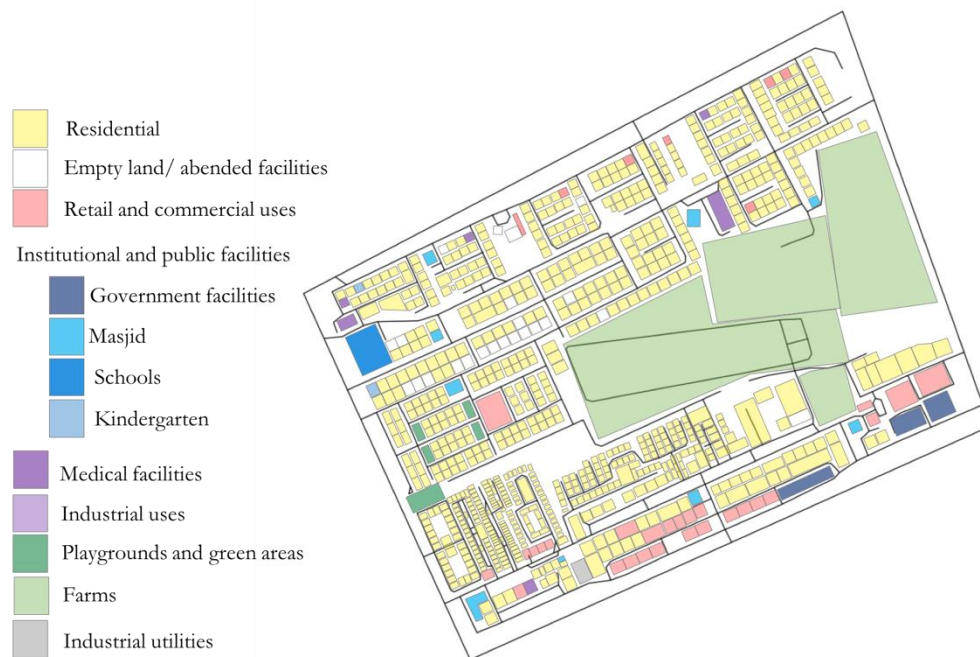


Figure 47: Land Use Map in the Block

b) Locating public open spaces for recreation on flat, usable land in accessible and obvious locations.

On the community level:

Spatial analysis: mapping

There are a few open areas in the center of the community that serve as obvious locations for residents since they are near the main entrances of the community and accessible for pedestrians, as shown in Figure 45.

Observation

As observed, the open areas are not seen from the street since they are blocked by the Masjid in front of the green areas from one side and the houses from the other side. However, they are seen from the inside as they are located in the center near the main entrances of the community.

On the block level:

Spatial analysis: mapping

Figure 47 signifies that there is no open area accessible and obvious, except for those in the community.

Observation

As observed, no open green areas provided to be accessible in the block area; even the ones in the community accessible for pedestrians are not obvious for people from outside the community as they are blocked by the Masjid and houses.

In conclusion, this chapter discussed the analysis of all measuring indicators of sub-principles for safety and connectivity, using tools explained in Table 2. Furthermore, an interpretation of the analysis is explained in the following chapter.

Chapter 5: Results and Discussion

This chapter assesses the interpretation of results regarding safety and connectivity analysis as an urban design principle affecting social capital. This is done through a set of sub-principles and indicators using mixed methodology of qualitative and quantitatively approaches. As such, the qualitative approach consists of tools such as field survey or observation, questionnaires, interviews, and mapping, and the qualitative approach includes tools such as questionnaires and the DepthmapX.

5.1 Safety

5.1.1 Ownership

a) Visibility of ownership

As described in Chapter 3 and based on the interview with the management officer and questionnaires, there is no ownership of residence in the Compound. However, there is diversity of housing options as the Compound offers one-bedroom apartments, two-bedroom apartments, three-bedroom apartments, and villas. Also, families can live in the same compound and move between units to suit their needs, which was the case with seven or eight families who moved between units.

5.1.2 Natural Surveillance

Natural surveillance is examined by two indicators, namely provision of natural surveillance (front and back) and pedestrian routes design using tools such as mapping, interviews, field observation, and spatial analysis via the DepthmapX software.

- a) Provision of natural surveillance (front and back) mapping identifies areas of streets with active building frontage.

Natural surveillance in the outer streets of the community is noticed to be well overlooked through observation and is either seen by the surrounding multistory buildings or villas in the Compound itself. On the other hand, the inner streets are mainly overlooked by apartments, villas, and passing cars in the Compound in most cases based on what is seen in the field observation. As mentioned by (Jacobs, 2007), natural surveillance provides an increased security for pedestrians due to the feeling of eyes on the streets.

- b) Pedestrian routes should be designed to be well overlooked by vehicle lanes and property frontages so as to provide passive surveillance.

As seen in the observation, pedestrians' routes are mostly well viewed by houses' windows or balconies or passing cars and assured through the questionnaire since 85% of the subjects considered the streets as well overlooked. However, the pedestrian alleys are not well lightened at night, which is also reflected in the questionnaire as people avoiding pedestrian routes at night represent 41% and those who are not sure represent 11%, which is a high percentage. However, the choice map in Figure 15 indicates how often an element is passed when calculating the shortest path between elements. Most of the pedestrian routes have a low choice value, which is reflected as having only one street with a high choice value which is the street with no facilities or services within.

5.1.3 Access and Footpaths

Access and footpaths are measured using indicators such as streets that should accommodate a mixture of transport types. Moreover, to ensure safety of all road users,

especially vulnerable pedestrians, street design provides a signal of at what speed a vehicle should be travelling, through elements such as road width, landscaping, and traffic-calming via tools like interviews and field analysis, i.e., observation, questionnaires, and spatial analysis through mapping.

a) Streets should accommodate a mixture of transport types.

Results of the measuring tools indicate that streets are not prepared with different transport types, as seen through the observations. Moreover, the walking path is not continued even for walking and cars parked in front of the buildings create obstacles. Furthermore, according to the interviews, there are no clear paths for cycling despite the fact that residents use bicycles all around since they are easy to use in the streets. Also, security guards ride bicycles to move around in the community. However, based on the questionnaire results, 61% expressed that the streets are not designed with clear paths for different transport types.

b) Safety of all road users, especially vulnerable pedestrians.

According to the Auckland design manual, at some point in life, everyone is limited to moving only as a pedestrian: through age, wealth, medical impairment or choice. As such, streets are not designed to serve all road users, especially disabled individuals, kids, and older people, as seen in the observation. Moreover, the streets have a slope that creates obstacles and threat to their safety. Pedestrians should be able to primarily travel in a straight direction and should never have to walk in the opposite direction to where they are headed (Stevens & Salmon, 2014). Also, in the questionnaire, 41.71% of the results did not agree that the street can serve all road users.

c) Traffic-calming tools

Streets within the community have different speed-reducing tools such as streets humps and speed bumps. Furthermore, different paving between the sidewalk and the street was observed. These observations also reveal the existence of island and landscape areas that encourage drivers to reduce their speed. Aside from that, street design in the community increases the number of intersections that help support this indicator. The questionnaires also showed that 46% of the people agreed with the availability of street-calming methods.

5.2 Connectivity

5.2.1 Movement Structure

- a) Permeability of a street network should contain a high proportion of four-way intersections, few cul-de-sacs, small street block sizes or “street intersection density”.

On the community level:

The community is surrounded from four sides with streets and can be entered from a boulevard street. In this regard, there are access lanes connected with Sikkas, making all streets reachable. As indicated by Hillier and Hanson (1984) and Hillier (1996), whether or not ‘permeable’ and easy to find the way, the layout controls access and movement for pedestrians and can influence other aspects of urban form such as land use or density. Hence, this is what gives the community a high intersection density of 161.53. However, this is supported by the connectivity map in Figure 22, showing that the community has a high connectivity value represented in red lines, measuring the number of streets connected with each other. According to Dill (2004), connectivity is a key component for good neighborhood design.

On the block level:

Network analysis for the block indicates that there are 29 cul-de-sac streets in the area and only 11 four-way intersections, resulting in an intersection density of 5.64 which is an extremely low number. As stated by Cowan (1997), the connectedness and permeability of urban layouts are claimed to determine the nature and extent of routes between and through spaces which, in turn, has an influence on how lively and well-used a space is. This is supported using the connectivity map in Figure 24, measuring the quantity of spaces directly interconnected in a layout space and showing an overall low connectivity value.

- b) Provision of connected streets for pedestrians to reach services, facilities, etc.

On the community level:

According to the mapping analysis, the community is covered by a catchment distance of 200- to 300-meter radius, as also shown using the spatial analysis, signifying that most services are located in the center and are easy to be reached. However, 85.7% of people living in the community expressed that it is easy to reach provided services by walking.

On the block level:

Around three quarters of the block area is reachable by the community in a catchment distance of 200 to 1000 meters, since most services are included in that area. As indicated by the spatial analysis, the Masjid and retails are distributed all around the block, resulting in a high walking map analysis. Moreover, the lowest results represented a poor distribution of playgrounds, sports fields, and open areas. Furthermore, a percentage of 56.3 indicates that it is not easy to reach services and facilities by walking.

- c) Connected network is based on convenient and logical connection between destinations, based on the most direct route possible.

Road placement and orientation should be based on providing route choices that are direct and allow pedestrians to intuitively understand where they are going (Stevens & Salmon, 2014).

According to the Auckland design manual, a connected network is based on convenient and logical connections between destinations, based on the most direct route possible. The choice measure evaluates the extent to which a given street belongs to the shortest path between any pairs of two streets.

On the community level:

The community spatial analysis using DepthmapX resulted in a low choice value for the community, as presented in Figure 39.

On the block level:

The block has low choice values, indicating that most streets in the area are not direct or short to be used, as demonstrated in Figure 40.

5.2.2 Land Use Diversity

- a) Variety of land usages within the walkable catchment area.

According to Porta & Renne (2005), a high value of diversity may increase consumer choice by a greater degree for the maintenance of an urban lifestyle without increasing the need for motorized movements.

On the community level:

The community has a variety of services in the land use map. As for the residents' opinions, most of them found the majority of services to be provided. Also, based on observing the place and questionnaires, different facilities were found to

provide services, such as commercial (grocery shops), social club, playground, and sports field. Also, most of them indicated that there is no Masjid as it was not open at the time.

On the block level:

The block, on the other hand, has different services but no open access to playgrounds or sports fields, as shown in the map. Based on the observation and assured by the questionnaire, 71.4% of the residents expressed that there is no playground, social club or sports field.

5.2.3 Local Facilities

- a) Connections between important amenities and features should be highlighted through street layout, street trees, and other prompts.

On the community level:

As indicated by Giles-Corti et al. (2005), good access to amenities like parks or local shops increases the likelihood that amenities and the routes to them will be used more, and users will feel safer. The land use map, connectivity map, and choice map in the community indicate different facilities in the community that can be linked and located in highly-connected streets. However, they had a low choice value for the choice map.

On the block level:

For local facilities in the block, the block connectivity is low, which affects the distribution of services and facilities and make it not easy to be reached, as previously mentioned.

- b) Locating public open spaces for recreation on flat, usable land in accessible and obvious locations.

On the community level:

Open places for the community are located in the center of the community, as this location is supported by the choice map in Figure 39, showing that open spaces located by the author in the route had high choice values. Also, the observation signifies that it is on an obvious location for people within the community.

On the block level:

For the block, there are no open areas, except for the ones in the community and, as observed, it is not obvious from the street due to being located in the center and blocked by the view of the Masjid from one side and houses from the other side. Even though the choice map in Figure 40 displays two routes with high choice values, there are no public open spaces on this route.

As such, the research objective was to discover what could create a link between inside and outside social life in gated communities. Based on the analysis results, the quasi-gated community has turned into a closed gated community for the preferability of safety. This indicates the difficulty to create a link between the inside and outside of the community. However, the analysis also shows that services can be used as social nodes, where they can be located on the edges of the gated community to be seen and used by the outside community while maintaining the safety of the closed community.

Chapter 6: Conclusions

This chapter discusses the conclusions, research findings, research generalization and reliability, limitations, contributions in future research, recommendations, and occluding remarks.

6.1 Summary of Findings

This research aims to discover what links social life in gated communities to its surroundings through analyzing the two essential aspects of social capital: ‘safety’ and ‘connectivity’. The analysis is based on urban design principles related to social capital. Moreover, the selected approach used in this study is the case study method incorporating quantitative and qualitative tools. The qualitative data collection tools contain field surveys, observation, and mapping while the quantitative tools include the DepthmapX software and questionnaires.

As such, the main research query was about if there is a balance point for gated communities to satisfy both the society within the community and the society outside it. As seen from the case study, it is difficult to find a balance point between inside and outside the community, as viewed in the case study, which was open to the outside society but, as time passed by, its passageway started to be closed little by little. Furthermore, entrance to the gated community was open to pedestrians only, as it allowed pedestrians passing by outside to enter the community. At the beginning, there were street pollards that blocked the entrance for cars, except for the two main entrances. Then, these pollards were closed with barrier tape and later, they were closed by a metal chain while ultimately being closed by lightweight stud partitions.

This can lead to the conclusion that the gated community refuses interaction with the outside society from within.

Another important query in this research is discovering the effect of the urban form of gated communities on safety and connectivity. Safety and connectivity have been examined through indicators of social capital. Indeed, safety was analyzed through several indicators, namely ownership, natural surveillance, and access and footpaths. As such, there is no ownership in the community, but the provided options allow families to stay for a long time and move freely within the gated community. This can make people more familiar with each other and establish relations with the community members. Moreover, safety was strengthened by good surveillance within the community due to an active building frontage in most streets and the streets being overlooked by buildings and cars. Also, access and foot path analysis revealed that streets have issues supporting different transport and different road users. However, there are multiple traffic-calming strategies integrated in the space.

Additionally, connectivity was analyzed through indicators of movement structure, mixed use, and local facilities within the community, and the surrounding urban block. The movement structure in the gated community showed a high street intersection density and a high value in connectivity spatial analysis, except for the choice related to convenient and logical connections between destinations based on the most direct route possible, which shows an overall low choice value. However, the street with high choice value is the one having some of the services or leading to them. The variety of land uses within the gated community supports the connectivity as it supports social capital in the area.

Furthermore, local facilities contribute in supporting connectivity in the community as the location and the connection between amenities helps in creating more connected and used routes.

Connectivity of the urban block was analyzed using the same indicators that measured community connectivity: movement structure, mixed use, and local facilities. The street intersection density for this block is low, with several services not well introduced as previously indicated, such as playgrounds, sports fields, and community centers. These services (grocery stores, restaurants, pharmacies, etc.) are available in several communities like Alain Oasis Villas and Al Markhaniya complex and are shared with the surrounding area. This is because of the services located by the fence edge of the gated community, serving people in the community as well as outside it. Moreover, linkage of the services between inside and outside the gated community helps preserve the safety elements for those inside it while creating a social link with the outside. As seen in the case study, even though it was open for outside pedestrians, it transformed into a closed community in a relatively short period of time. Therefore, using services of a gated community as social nodes to link inside and outside communities with each other can be the most applicable link.

6.2 Research Generalization and Reliability

The selected methodology helps in generalizing the study. This study is true in different settings, despite containing several in-depth findings about the specific case study, as it transformed from a unique case to a conventional case. Also, the selected sample population represented both the inside and outside of the community which, in turn, supports the generalization of this study. However, the usage of quantitative and qualitative approaches contributes to verifying the results and tools to be used in

various cases. Moreover, this helps in the reliability of the study, since several measuring indicators were used to examine each sub-principle related to the main principle. Also, using multiple tools for the same indicator helped in validating data and results of this research.

6.3 Research Limitations

This study's limitations correspond to the implementation of data collection, scope of work, and institutional constraints.

Due to the overall situation caused by the COVID-19 with regard to the implementation of data collection, access to a number of locations was restricted and PCR test results were required. Also, precautionary measures needed to be considered in all sorts of physical contact, in the form of social distancing and wearing masks.

Furthermore, due to the time limitation of this study, the scope of work was specified and focused on two principles only for their major contribution on the case of study. As such, scope and depth of discussions in the paper are compromised in a certain level of analysis, compared to the works of experienced scholars.

As for institutional constraints, dealing with different entities through the study included the issue of recording, since the provided option was to take notes and write down as many details as possible. Also, getting in touch with related people at governmental facilities took time to finalize communication loops and approvals.

6.4 Contributions and Future Research

The aim of this study was to resolve one of the main issues of gated communities, as most studies focus on the concept of community isolation since it

provides possible scenarios that can reduce the isolation of gated communities. However, this has been based on the analysis of only two principles out of four.

Hence, future research can include and assess more elements related to socially-sustainable communities, namely density, choice, mobility, mixed use, social mix or social capital, adaptability or resilience, local autonomy, environmental quality, community safety and security, privacy, and imageability or sense of place or identity. More indicators can be examined in each sub-principle of social capital to explore further possibilities. Also, the social science aspect for studying social capital can be studied and linked to urban design boosters to implement and connect more interrelated factors.

6.5 Recommendations

To contain and reduce the effect of isolation of gated communities, short-term and long-term actions can be taken. Several short-term actions include allowing the engagement of surrounding neighborhoods to have their vital effect on the social sustainability of the community through permitting pedestrians to use facilities allocated in the edges of the community. This can help maintain the safety of residents while allowing more interaction with their surroundings.

For the long run, design of communities can consider connectivity with the surrounding as well as connectivity from within so as to serve and satisfy both. Moreover, other exclusive services can be provided and shared in exchange for fees to those from outside, which can support the community's services.

This type of development in the housing sector is complex as it involves different entities and authorities in regarding to the conditions and characteristics of the community. Thus, all involved parties in the community's development need to be

part of the perspective to update the closed community vision and the exclusivity idea. Starting with the upper hand in this kind of decision the government or policy makers needs to act as a higher authority to overlook these communities and set guidelines that could support the connectivity between these communities and act as a higher authority over all community developers. Urban planners should integrate more solutions to limit the urban fragmentations caused by this kind of development in the city through the allocation of these development or the connection between them. For the developers, the engagement of the surrounding urban areas with the communities can have a capital benefits and even make the facilities in the communities to be more live and active as more people could be attracted to it and use it.

6.6 Concluding Remarks

This study analyzed several social capital principles as the main aspect of social sustainable communities, namely safety and connectivity. This allowed the researcher to examine these important principles inside the community and their relation to the surrounding urban context. Hence, both have proven the vital role they play in the social sustainability of the community. Overall, this study concluded that safety has the higher value for gated community residents rather than connectivity with the urban surroundings. However, more principles can be studied to link the gated community more with the urban surroundings, and more indicators can be used, as this will need in-depth analysis to find a balance point that satisfies the gated community as well as the outside community for both to be socially sustainable and fulfill each other's needs.

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Appendix: Questionnaire

Gated communities in UAE

Welcome

This survey is contributing to an academic research at UAEU to explore the social life of gated communities in UAE. Your participation in this survey shall help in investigating the social aspect inside the community and around. Please note that the participants' information and answers will remain confidential and will be exclusively used for this research. Participants can withdraw at any stage in the process without them being penalized. The questionnaire involves no psychological distress or discomfort. By pressing "Next", participants confirm they have read, understood and agreed on the mentioned above.

Thank you for participating in our survey. Your feedback is important.

مرحباً بكم

يساهم هذا الاستبيان في بحث أكاديمي في جامعة الإمارات العربية المتحدة بغرض استكشاف الحياة الاجتماعية للمجمعات السكنية المسورة في الإمارات العربية المتحدة ستساعد مشاركتك في هذا الاستبيان في التحقيق في الجانب الاجتماعي داخل المجمع وحوله يرجى ملاحظة أن معلومات المشاركين وإجاباتهم ستبقى سرية وسيتم استخدامها حصرياً لهذا البحث. يمكن للمشاركين الانسحاب في أي مرحلة من مراحل الاستبيان كما أن هذا الاستبيان لا يتضمن أي ضائقة نفسية أو إزعاج بالضغط على "التالي" ، يؤكد المشاركون أنهم قد قرأوا وفهموا ووافقوا على ما ورد أعلاه

شكراً لك لمشاركتك في بحثنا. ملاحظتك مهمة.

Gated communities in UAE

اللغة المفضلة

* 1. ما هي لغة الاستبيان المفضلة ؟ / What is your preferred language of the questionnaire?

- Arabic / اللغة العربية
- English / اللغة الانجليزية

Gated communities in UAE

Gated communities in UAE

1. Gender:

- Male
 Female

2. Age:

- Under 18
 18-29
 30-49
 50+

3. Nationality:

* 4. Community name:

* 5. How long have you lived in this community?

- Less than 1 year
 1- 2 years
 3-5 years
 6-10 years
 More than 10 years

6. How many of your neighbors you know and recognize in the community?

- All of them
 Most of them
 Few of them
 Non of them

* 7. What of the following services are provided in your community?

	Yes	No	N/A
Masjid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Green area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kids play area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social club	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grocery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sport area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pharmacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nursery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resturant / Cafe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 8. Do you think that the community is providing all your needs?

- Yes
 No
 To some Extent

* 9. Is it easy to reach all provided services by walking?

- Yes
 No
 To some extent

* 10. Can you use the street in all times day and night?

- Yes
 No
 To some extent

* 11. Is there an alternative path to reach the same place/ facility?

- Yes
 No
 To some extent

* 12. Are there sidewalks to reach all facilities provided?

- Yes
 No
 To some extent

* 13. If yes is the condition of the sidewalk good?

	poor	somehow	good	V.good	Not sure
clear of obstacles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
well lighten at night	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
suitable width	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
barriers separating the side walk from the street	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
well maintained sidewalk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
different paving than the street	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 14. Is the sidewalk well furniture to be used in your neighborhood?

	Yes	No	N/A
bench	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
garbage bins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
lights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
signage system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
shaded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 15. Is there cross walk?

- Yes
- No
- To some extent
- If yes is it enough to serve your walking purposes?
(please spacific)

* 16. Are the pedestrian routes overlooked by cars and houses or not?

- Yes
- No
- To some extent

* 17. Is the street in your neighborhood accommodates different transport types
(walking, cycling)?

- Yes
- No
- To some extent

* 18. Is there street bumps and humps available in all intersection?

- Yes
- No
- To some extent

* 19. Is the street designed to serve all users especially vulnerable pedestrians (old people/ disable individuals/kids ... etc.)?

- Yes
- No
- To some extent

* 20. Are you aware of the facilities in the surrounding communities?

- Yes
- No
- If yes (please specify)

* 21. Have you ever used the facilities in the surrounding communities?

- Yes
- No
- If yes (please specify)

* 22. Would like to have access to facilities in nearby communities?

- Yes
- No
- To some extent

* 23. Do you think there are a variety of facilities and services nearby (within the block)?

- Yes
- No
- To some extent

* 24. Do you think that the facilities nearby is easy to reach by walking ?

- Yes
- No
- To some extent

* 25. Are there any public open spaces for recreation?

- Yes
- No

If yes (Is it accessible and in obvious locations?)

* 26. Is there an access control in the community?

- Yes
- No
- To some Extent
- N/A

* 27. What do you think of the access control in the community?

- Very satisfied
- Satisfied
- Neither satisfied nor dissatisfied
- Dissatisfied
- Very dissatisfied

* 28. Do you think the security system including "CCTV and security guards" in the community is enough?

- Yes
- No
- To some extent

* 29. DO you like the community to have fence?

- Yes
- No
- To some extent

(please specify)

* 30. Do you think it would better to have pedestrian access within the community?

- Yes
- No
- To some extent

Gated communities in UAE

المجمعات السكنية في دولة الامارات

1. الجنس:

- ذكر
 أنثى

2. العمر:

- أقل من 18
 18-29
 30-49
 50+

3. الجنسية:

* 4. منطقة السكن/ اسم المجمع السكني:

* 5. كم مضى على استقرارك في هذا المجمع السكني؟

- أقل من سنة واحدة
 سنوات 1-2
 سنوات 3-5
 سنوات 6-10
 أكثر من 10 سنوات

* 6. كم من جيرانك تستطيع أن تميزه وتعرفه جيداً؟

- جميعهم
 أغلبهم
 البعض منهم
 لا أحد منهم

* 7. ما هي الخدمات المتوفرة في مجمعك السكني من الآتي؟

	نعم	لا	لا أعلم
مسجد	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
منطقة خضراء	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ملعب للأطفال	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
نادي اجتماعي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
بقالة / سوپرماركت	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
منطقة رياضية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
صيدلية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
حضانة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
مطعم / مقهى	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
أخرى	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 8. هل تعتقد بأن جميع احتياجاتك من الخدمات متوفرة في مكان سكنك؟

- نعم
 ل
 الى حد ما

* 9. هل يمكنك الوصول إلى جميع الخدمات في مجمعك السكني مشياً؟

- نعم
 ل
 |
 الى حد ما

* 10. هل يمكنك المشي في الشارع في جميع الأوقات سواء بالليل أو النهار؟

- نعم
 ل
 |
 الى حد ما

* 11. هل هنالك طرق أو مسارات مختلفة للوصول إلى وجهتك عادةً؟

- نعم
 ل
 |
 الى حد ما

* 12. هل هناك رصيف للمشاة لتصل إلى الخدمات المتوفرة؟

- نعم
 ل
 |
 الى حد ما

* 13. إذا كانت إجابتك بنعم فما هو تقييمك لرصيف المشاة؟ *

	ضعيف	مقبول	جيد	جيد جدا	غير متأكد
خالي من العوائق	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
مصنوع بشكل جيد ليلا	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
له مساحة جيدة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
يوجد حاجز للفصل بين رصيف المشاة والشارع	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
يوجد صيانة جيدة للمكان	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
مرصوف بشكل مختلف عن الشارع	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 14. هل الممشى في مجمعك السكني مصمم بشكل جيد ويوجد به التالي؟ *

	نعم	لا	لا اعلم
مقاعد	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
سلة مهملات	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
اضاءة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ارشادات ولوائح	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
مظلل	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 15. هل يوجد معبر للمشاة؟ *

- نعم
- لا
- الى حد ما
- اذا كانت اجابتك بنعم هل هي موجودة بشكل كافي لخدمة حاجتك؟ (يرجى التوضيح)

هل ممرات المشاة مرئية من قبل المنازل والسيارات من حولها؟ * 16.

- نعم
 ل
 ا
 الى حد ما

هل الشارع في مجمعك السكني معد للتنقل باستخدام وسائل مختلفة كالمشي والدراجات؟ * 17.

- نعم
 ل
 ا
 الى حد ما

هل يوجد مطبات ومصدات لتخفيف السرعة في التقاطعات؟ * 18.

- نعم
 ل
 ا
 الى حد ما

هل الشارع مصمم لخدمة حاجات جميع السكان باختلاف أعمارهم وأوضاعهم. * 19.
 كذوي الهمم وكبار السن والأطفال والحوامل وما إلى ذلك؟

- نعم
 ل
 ا
 الى حد ما

* 20. هل أنت مدرك للمرافق والخدمات المتوفرة في المجمعات السكنية المحيطة؟

- نعم
- ل
ا
- الى حد ما
- اذا كانت اجابتك نعم
(يرجى التوضيح)

* 21. هل سبق لك استخدام المرافق والخدمات المتوفرة في المجمعات السكنية المحيطة؟

- نعم
- ل
ا
- الى حد ما
- اذا كانت اجابتك نعم
(يرجى التوضيح)

* 22. هل ترغب بأن يسمح لك بالوصول إلى المرافق والخدمات في المجمعات المحيطة؟

- نعم
- ل
ا
- الى حد ما

هل تعتقد بأنه يوجد تنوع جيد في المرافق والخدمات المتوفرة في محيطك (مربعك السكني)؟

- نعم
- ل
ا
- الى حد ما

هل تعتقد بأنه من السهل الوصول إلى هذه المرافق والخدمات المحيطة عن طريق المشي؟

- نعم
- ل
ا
- الى حد ما

هل يوجد مناطق خضراء أو أماكن مفتوحة بغرض الترفيه في محيطك (مربعك السكني)؟

- نعم
- ل
ا
- الى حد ما

إذا كانت اجابتك بنعم
(هل تتواجد في مكان تسهل رؤيته ويمكن الوصول اليه؟)

هل هناك نظام تحكم للدخول إلى مجمعك السكني؟

- نعم
- ل
ا
- الى حد ما
- لا أعلم

* 27. ما رأيك بنظام التحكم في الدخول إلى مجمعك السكني ؟

- راضي تماما
- راضي
- محايد
- غير راضي
- غير راضي تماما

* 28. هل تعتقد أن نظام الأمن بما في ذلك "كاميرات المراقبة وحراس الأمن" في المجمع كافية؟

- نعم
- ل
ا
- الى حد ما

* 29. هل تحب أن يكون للمجمع السكني سور؟

- نعم
- ل
ا
- الى حد ما

* 30. هل تعتقد أنه سيكون من الجيد أن يكون للمشاة صلاحية الدخول الى المجمع؟

- نعم
- ل
ا
- الى حد ما

Gated communities in UAE
Thank you for participating in this survey

The logo of the United Arab Emirates University (UAEU) is displayed in a red rectangular box. It consists of the letters 'UAEU' in a white, bold, sans-serif font.

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Gated communities are commonly defined as residential areas with restricted access, where commonly public spaces are privatized. Gated communities have been linked with their negative impacts on the communities as socially segregated areas form the surrounding urban context. Nonetheless, other paradoxical theories related to social bonding, sense of safety, and sense of community that gated communities might provide for its residences. The question that poses itself is: what is the balance point, if any, for gated communities to satisfy the social sustainability for both the communities within the gate and the community outside it?

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