

WOMEN'S SENSE OF SAFETY IN HIGH-RISE MASS HOUSING ESTATES:  
THE CASE OF KUSUNLAR TOKI IN ANKARA, TURKEY

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**WOMEN’S SAFETY IN HIGH-RISE MASS HOUSING ESTATES: THE  
CASE OF KUSUNLAR TOKI IN ANKARA, TURKEY**

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## **ABSTRACT**

### **WOMEN’S SENSE OF SAFETY IN HIGH-RISE MASS HOUSING ESTATES: THE CASE OF KUSUNLAR TOKI IN ANKARA, TURKEY**

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Designing and building high-rise housing estates have been a worldwide phenomenon in recent years. A review of the literature shows that there are various advantages and disadvantages of living in such settings. Most of the discussions focus on the impact of these environments on the health and psychological wellbeing of residents. Less is known about how high-rise environments affect individuals’ use of public spaces related to their sense of safety, especially for women who live in high-rise mass housing estates. This thesis asks: To what extent do the women residents of high-rise mass housing estates perceive their public spaces safe? (2) Which physical environmental factors affect women residents' sense of safety in the public spaces of high-rise mass housing estates?

The most fundamental motivation for this study is to understand the relationship between high-rise housing environments and sense of safety. It needs further analysis in the context of Turkey, a country where the number of high-rise developments is dramatically increasing so that better places that promote the sense of safety and higher use of place of their residents can be designed. To answer the above-stated research questions, the author used face-to-face questionnaire survey and follow-up in-depth interviews (integrated with a mapping activity) with 45 women. Findings

show that the sense of safety of women change depending on their age, occupied floor level and the age of their children. Socio-environmental factors such as social disorders, familiarity outweigh the physical-environmental factors in terms of their effect on the sense of safety.

**Keywords:** High-rise Housing Estates, Sense of Safety, Public Spaces, Urban Design, Built-Environment

## ÖZ

### **YÜKSEK KATLI KONUT ALANLARINDA KADINLARIN GÜVENLİK HİSSİ: KUSUNLAR TOKİ ÖRNEĞİ, ANKARA, TÜRKİYE**

Temurer, Sena  
Yüksek Lisans, Kentsel Tasarım, Şehir Bölge Planlama  
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Dünya çapında yüksek katlı konut alanları tasarlamaya ve inşa etmeye yönelik artan bir eğilim bulunmaktadır. Yüksek katlı binalarla ilgili literatür, bu tür ortamlarda yaşamının bazı avantajları ve dezavantajları olduğunu göstermektedir. Tartışmaların çoğu, bu ortamların sakinlerin sağlığı ve psikolojik iyiliği üzerindeki etkisine odaklanmaktadır. Özellikle yüksek katlı toplu konut alanlarında yaşayan kadınlar olmak üzere, yüksek katlı konut ortamlarının bireylerin güvenlik hissiyle ilgili kamusal alan kullanımını nasıl etkilediği hakkında daha az bilinmektedir. Bu tez şu soruları sormaktadır: (1) Yüksek katlı toplu konut alanlarında yaşayan kadınlar kamusal alanlarını ne ölçüde güvenli algılamaktadır? (2) Yüksek katlı konut alanlarında yaşayan kadınların, kamusal alanlarındaki güvenlik hissini hangi fiziksel çevre faktörleri etkilemektedir?

Bu araştırmanın arkasındaki en temel motivasyon, yüksek katlı konut ve güvenlik hissi arasındaki ilişkiyi anlamaktır. Yüksek katlı binaların sayısının önemli ölçüde arttığı bir ülke olan Türkiye bağlamında daha fazla analize ihtiyaç bulunmaktadır, böylece daha fazla güvenlik hissi sağlayan ve sakinlerinin mekanlarını daha fazla kullanmasını teşvik eden daha iyi kentsel mekanlar tasarlanabilir. Yazar, yukarıda

belirtilen araştırma sorularını yanıtlamak için, 45 kadınla yüz yüze anket ve bunu takip eden haritalama etkinliğiyle bütünleştirilmiş derinlemesine röportajlar yapmıştır. Bulgular, kadınların güvenlik hislerinin yaşlarına, oturdukları kat seviyesine ve çocuklarının yaşına bağlı olarak değiştiğini göstermektedir. Sosyal düzensizlik, aşinalık gibi sosyo-çevresel faktörlerin, güvenlik hissine etkisi açısından fiziksel-çevre faktörlerine göre daha ağır bastığı görülmüştür.

Anahtar Kelimeler: Yüksek Katlı Konut Alanları, Güvenlik Hissi, Kamusal Alan, Kentsel Tasarım, Fiziksel Çevre



In the hopes that this work may contribute to our future cities and lives in some way. To the every single person who came across in my path and supported me.

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Now that this thesis is finished, it is time to move on to the next stage!

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## **LIST OF ABBREVIATIONS**

### **ABBREVIATIONS**

CTBUH	Council on Tall Buildings and Urban Habitat
NFPA 101	Life Safety Code of the United States
TOKI	The Housing Development Administration of Turkey



# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Context and Problem Definition**

From the past to the present, there has been a search for creating the ideal form on different scales from buildings to the cities. Professionals are examining the way people live and the problems they have. They look for a structure so that people can sustain their lives in better conditions and the ways to design healthy environments. In recent times, much attention has been paid to the term “sustainable development”. With the debates on sustainable development and increasing population, the interest in building high-rise living is growing in many cities – a trend which we can now see in all over the globe. In many cities around the world, the old city centers started to lose interest and have been moved to new-built development areas with high-rise living spaces. Some cities in the United States (like Detroit), Australia (like Melbourne and Brisbane), England (like London), and Hong Kong are only a few of these examples.

For more than fifty years, high-rise public housing has risen to prominence in terms of building form in the development processes of the cities and so the lifestyles of the majority of the population by constituting an extremely critical part of the future city (Yuen et al., 2006). Turkey is inevitably affected by this tendency as well; from Istanbul to Ankara, the cityscapes of the cities started to change. Mass housing apartments built by the Mass Housing Authority of Turkey (usually called as TOKI apartmets), are a typical example of high-rise living environments in Turkey. As a part of the urban housing strategy, the tendency is towards building high-rise. Belinda Yuen, a professor of environmental urban planning, summarizes the development of high-rises in these words: “Traditional discourse of high-rise

housing is not always positive; on the other hand, new forces are redefining its place in 21st-century urbanity” (Yuen et al., 2006, p.585).

The Economist (2006) reports that about 40 percent of the world’s tall buildings have been completed since 2000. Beedle et al. (2007, p.33) attribute the rapid urbanization of cities by stating that “by the year 2030, two-thirds of the world’s population will be urbanized.” Designing the new cities of today and the future to accommodate large populations while creating a higher quality of urban life will be a challenge.

Experience of high-rise living comes with some physical and social concerns. The growth of high-rise housing estates across the globe implies that more and more children are growing up in such environments. Yuen et al. (2006, p.597) state that “there is a need (now more than ever) for urban scholarship to rekindle the issue of liveability and give voice to the appreciation and concerns residents have of high-rise living.” That’s why issues of livability and concerns of residents living in high-rise housing environments need to be on the agenda.

Because of its new sets of relations in the scale of the building and its environment, high-rise affects its environment in many aspects. In this regard, the safety notion needs to be analyzed because of the negative image of the high-rise in the literature. It is hypothesized that one of the reasons for suicides is dissatisfaction with high-rise living. A study conducted in Singapore suggests that tall buildings encourage suicides (Clarke & Lester, 1989; Lester, 1994). Moreover, Newman’s study (1975) shows that the number of crimes is substantially higher within the public areas of high-rise housing estates because of the increased anonymity by large number of people and decreased surveillance.

The high-rise mass housing projects in Turkey are produced for different segments. Since some of them are produced within the scope of squatter housing transformation, some of the people living in TOKI’s mass housing estates (the high-rise housing estates produced by the Mass Housing Administration of Turkey) can be associated with crime – an issue which generates some problems about sense of safety.

Severcan's (2019) study reveals that several factors negatively influence children's appreciation and use of public open spaces in different high-rise mass housing projects that are built in the context of squatter housing regeneration, and sense of safety is one of the most influential ones. Having undesirable people in the neighborhood of mass housing estates is seen as a problem for children since gangs involved in racketeering, vandalism, and drug selling weaken sense of safety (Severcan, 2019). Due to the lack of sense of safety in high-rise housing estates, isolation is promoted. Severcan's study also shows that greater concerns for safety reduces the use of public spaces and social interaction among children. A review of the literature shows that less is known how living in high-rise housing estates that are specifically built for the poor affect other disadvantaged groups, such as low-income women.

Due to its relation between social interaction and use of near surrounding areas, the notion of public space; its definition, and factors affecting the use of public space need to be discussed in the perspective of building form of future cities.

## **1.2 Aim of the Study and Research Questions**

This thesis examines the high-rise development ethos in urbanism pointing out the reasons behind the tendency towards vertical growth. It is also important to comprehend the broader connection of urban design to social behavior and the ways of the contribution of urban design to the urban experience. This research aims to make inferences about the experience of low-income women residents living in high-rise housing in terms of their sense of safety in public spaces. Examining this groups' sense of safety in the public spaces of high-rise housing environments is important because, arguably, together with children they are the most significant users of public spaces in neighborhood environments. In this regard, this study mainly focuses on the following research questions:

- (1) To what extent do the women residents of high-rise mass housing estates perceive their public spaces safe? Whether they perceive some public spaces safer? If yes, which public spaces receive higher (and lower) sense of safety scores?
- (2) Which physical environmental factors affect women residents' sense of safety in the public spaces of high-rise mass housing estates?

The first focus of the thesis is on the sense of safety; its definition and measurement. The second one is on public space; its definition, and its importance considering the types of activities in public spaces, by mentioning theories affecting the use of public spaces.

By answering the aforementioned questions, this thesis aims to contribute to the design of safer mass housing environments in Turkey. Although there is ongoing research on high-rise housing estates, especially in Australian, Canadian and Israeli cities, which are rapidly urbanizing, Turkey's context offers a richness to the existing knowledge due to the presence of various types of high-rise housing environments.

### **1.3 Gaps in Knowledge**

In the last few decades, tall buildings and high-rise living is an architectural and urban phenomenon, and given the worldwide increase in the number of tall residential buildings, Robert Gifford, a professor of environmental and social psychology, concludes the issue's importance due to the considerably slowing studies in this field (Gifford, 2007). However, the appeals and concerns of residing in a high-rise have yet to be explored (Yuen et al., 1999), and there is still a need to understand the issue of livability and experiences that the high-rise housing residents have. The article by Ng (2017) entitled "Living and Working in Tall Buildings: Satisfaction and Perceived Benefits and Concerns of Occupants" also states that few studies are focusing on the perception, satisfaction and comfort, well-being of the occupants in terms of physically and psychologically.

Urban designers must understand the dynamics of living in a high-rise and the physical environmental factors affecting the ones who are living there. Smith et al. (1998) attribute the importance of the experience of high-rise living with those words: “This is why much of our built environment is so unsatisfactory. High-rise flats were designed and built by those who do not have to live in them” (p. 8). In the end, the cities of the future are designed for their citizens and so this study prioritizes the perceptions and senses of residents of the high-rise.

The high-rise concept has many economic, social, and environmental dimensions besides its technical dimensions to operate multi-story buildings. From an urban design perspective, research on tall buildings mainly focuses on the unique form and aesthetic value of buildings, as well as their impact on the city skyline (Heilbrun, 2000), since imposing heights not only symbolize the economic prosperity of the country but also the natural pride, like in the case of Dubai (Beedle et al., 2007). However, more attention should be paid to the integration of tall buildings in the urban pattern, which represents the dimension of height (Frenkel, 2004). Most researchers examined urban space in terms of size, density, and building intensity (Lynch, 1991; Haughton & Hunter, 1994; Williams et al., 2000).

From the social and environmental psychological perspective, the consequences of high-rise living started to be discussed in the late 1960s. The majority of these debates were centered on the issues that resulted from social, criminal, mental health, physical health effects and influence on families and children (Kearns et al., 2012). Tall buildings are considered in urban design with safety notions both at the building and urban scale since there are some safety concerns, and in particular, the safety of children and the elderly in and out of high-rise buildings, height phobia, and lift breakdown (Yuen, 2005; Gifford, 2007). Additionally, in the minds of a generation of professionals in the areas of planning and architecture, the Pruitt-Igoe Project and its demolition have been ingrained as a disaster. It was designed as 11 stories high building in St. Louis in 1972 with the idea of preserving nature at the ground level and having communal activities on the first floor of the building – a decision which created an unsafe area and dangerous place to walk with high levels of criminal

activity (Newman et al., 1996). This led the Council on Tall Buildings and Urban Habitat (CTBUH) to pay more attention to social issues related to tall buildings in terms of urban design (Beedle et al., 2007). A report called “Roadmap on the Future Research Needs of Tall Buildings” published in 2014 by the CTBUH aims to point out areas of research that is significantly insufficient by suggesting research priorities that require financial support and interest from the scientific community to advance the typology of tall buildings in the next years. The top three highlighted findings in the report consist of the subjects of social sustainability and safety in tall buildings. An important research priority pointed out was the social impact of tall buildings on the nearby neighborhoods and those who work and stay at height on a city and building scale (Oldfield et al., 2014, p.11). Therefore, it is necessary to look into the effects of the physical environment on the safety concerns of high-rise residents, and some studies exist in different urban contexts (Rujibhong et al., 2005).

Moreover, the absence of urbanity around high-rise buildings at street level is one of the problems concentrated on, and so further studies are essential on the urban part of tall buildings. Since the physical environment at the street level and morphological variables affect the perception and active use of areas in tall buildings’ lower public spaces (Ye et al. 2020), urban design discipline shall examine these built-environment factors and contribute to sustainable high-rise living. The subject is examined in many cases with different groups, especially through women and families with children (Ginsberg & Churchman, 1984; Gifford, 2007) in terms of child supervision and safety related to playing activities. That is why the influence of the high-rise on the use of public space is another research topic considering multiple users and activities in these areas.

Another topic, that needs further research, is social interaction in high-rise housing environments. In countries like Singapore, Australia and Israel some studies have been conducted on the implication of high-rise residential buildings for the adaptation of them as a living place for various demographic groups and the interaction that exists among the residents (Yeung, 1977; Ginsberg & Churchman, 1984, 1985). It is also mentioned that forthcoming designs of high-rise housing



complexes offer suitable opportunities and spaces to encourage and support social interaction in itself among inhabitants and some privacy and safety are important in terms of spatial design interventions (Nguyen et al., 2020). Additionally, Lehrer and March (2019) drew attention to the inadequacy of studies about the function of public space in and around high-rise buildings since many studies concentrate on the themes of isolation, abandonment, safety, security, and crime. In the context of Canada, there is some research about vertical urbanism and public space suggesting that high-rise housing estates have several spaces that can be called public when it is considered a socially constructed issue. However, in the case of the Greater Toronto and Hamilton, tall buildings featured as “tower in the park” design, which are surrounded by shared, open green spaces, plazas, and parking lots. Studies refer to the need for research about the forms of public space that might emerge from social interactions and encounters in vertical spatial practices by revealing its complex relationship not separating from the horizontal environment due to its verticality (Lehrer & March, 2019).

In the context of Turkey, high-rise development gets an attraction, especially in the biggest cities, and there are studies on the historical development of high-rise housing. In this respect, many studies focus on the change of the skylines of the cities (Safaralipour, 2019; Ulutaş Okan, 2018; Sarı & Dülgeroğlu, 2019). The image of high-rises is discussed in terms of architectural-aesthetic relations, architectural-urban relations, and architectural-presentation relations (Sarı & Dülgeroğlu, 2019) and the branding of a city (Ulutaş Okan, 2018). One recent study analyzed the relationship between high-rise and urban public spaces in these areas by examining the relationship between the physical form of the building and the function of public space (Safaralipour, 2019). It is also highlighted that the development of high-rises does not contribute to the production of urban space since they generally develop suggestions based on parcels and buildings in the context of Turkey (Yolal Bekmezci, 2019).

There are some studies about the sense of safety in the built environment, which cover this notion in the campus environments of universities in Ankara and İstanbul

(Froughisaeid, 2018; Yorulmaz, 2017). A more detailed study of Çınar's (2012) evaluates the elements influencing the perception of security related to crime in Boğaziçi district, İstanbul, and focuses on demographic, social, and environmental factors. Gerçek and Güven (2021) analyze perceived safety in a neighborhood of İzmit, and factors affecting the safety with the aspects of criminal activity, public order, and sense of social cohesion.

Public space is much more studied in different aspects. Inclusivity of public spaces and the gender roles in public spaces are discussed in the use of public spaces (İnceiş, 2006; Memlük, 2012). The impact of the physical environment on the use of public spaces, and the affordances provided by urban open spaces is another research topic (Yorulmaz, 2017)

In Turkey, there are not enough studies linking the design of high-rise housing estates to the residents' sense of place and use of public spaces (some exceptions include Gokce & Chen, 2018; Severcan, 2019). Different from what is discussed in the existing literature, this study gives information about the physical environmental factors affecting the sense of safety in high-rise housing estates. Therefore, this thesis aims to enrich the literature on this topic.

#### **1.4 Assumptions of the Study**

There is growing scientific study on the impacts of high-rise housing developments, especially in countries like Australia, Israel, and Canada due to the intense pressure of urbanization in those countries. However, this topic is still not explored enough in the case of Turkey from the viewpoint of urban design aspects. This study seeks the impacts of the physical environment of high-rise housing estates. Lack of urban design, in other words, lack of adequate public open spaces and social spaces, lack of greenery which gives people comfort and pleasure, lack of lighting elements and poorly designed spaces with signs of disorder such as the presence of garbage, vandalism, gangs in high-rise housing estates increases the sense of unsafety while

limiting the use of public spaces. Additionally, it is assumed that the increased density of people affects the sense of safety negatively. Moreover, women's sense of safety is expected to be parallel with their children, and assumed to be affected by the supervision of children. Referring to the disadvantages and advantages of high-rise housing can lead a way for designers in terms of social sustainability in the search for building form. The study will comment on the safety notion in high-rise housing estates, pointing out that residents' sense of safety is critical in the use of public spaces. At the same time, there will be references to define the parameters of safety. Effects of high-rise housing on the use of public space may give design guidelines for better design ideas improving social and environmental dimensions.

This thesis suggests that giving voice to the residents of the building as a methodology will give professionals an understanding of the built-environment design parameters. Now, high-rise living seems like the future of the city, and so the perceptions of users will be a guideline in this manner for better design solutions.

The challenge is differentiating the diverse factors that determine the perceptions of residents. It also differs depending on the context; each context has its parameters.

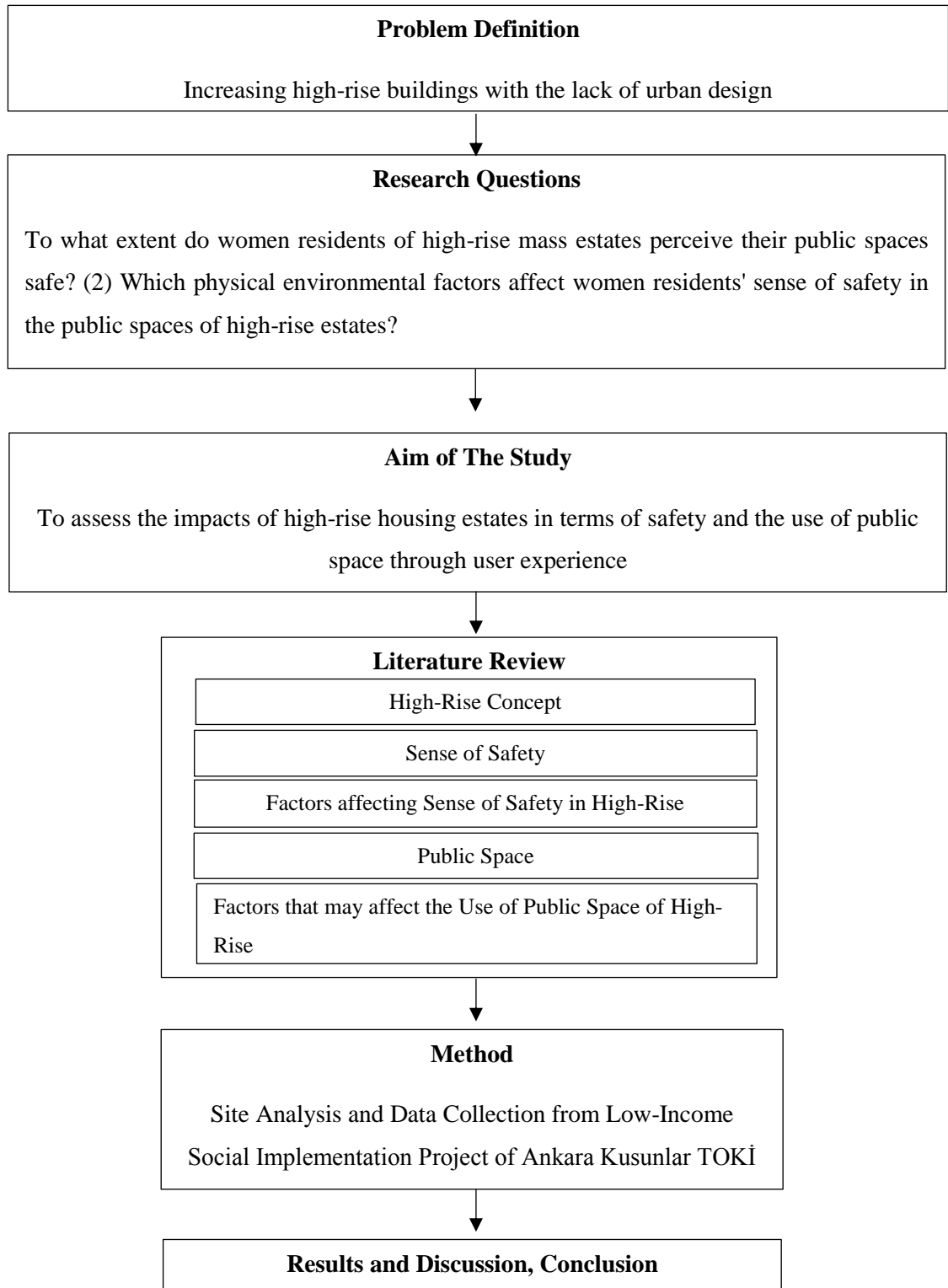
## **1.5 Structure of Thesis**

Two main notions structure this study: the notion of safety and the notion of public space in high-rise housing estates. Therefore, these notions are covered in Chapter 2, of the Literature Review. Before going into detail about these notions, and understanding them, it is important to create a framework by addressing the definition of high-rise, and giving a brief explanation of the development of high-rises in urban planning. The second part continues with the term safety by categorizing factors affecting the sense of safety. Then the study explores on the notion of public space and theories affecting the use of public spaces. Each notion is also covered in the framework of the high-rise in the literature review. The literature review aims to achieve an understanding of the historical background and parameters

of these notions. Factors affecting the sense of safety will be extracted from the literature. An analysis will be formed based on a model incorporating the factors of safety that people value while using public areas.

Chapter 3 focuses on the methodology of the study. In order to assess the context of Turkey in terms of high-rise housing and the perception of residents who live in high-rise housing estates, a qualitative study has been done. The residents of a high-rise mass housing built in the context of a squatter housing regeneration participated in a mapping activity and in-depth interviews. Participants are low-income women who live in high-rise mass housing estates in TOKI's housing projects constructed for low-income groups. A face-to-face interview is conducted to understand how people truly see their environment. Since the definition of high-rise has changed in the literature, it is necessary to define what a high-rise is. In the context of Turkey, according to the Fire Regulation Standards, high-rise buildings are accepted as buildings, which have 21.5m in height or higher than 7 floors, and while selecting cases from buildings this definition is accepted and including residents living on various floors seen as valuable.

Chapter 4 include the results of the case study. The the key findings of the factors affecting the residents' sense of safety and the use of open public spaces in high-rise housing estates are highlighted. The thesis is concluded in Chapter 5 with a discussion of the study's findings, implications, limitations, and recommendations for further research.



**Figure 1.**Structure of Thesis



## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter provides a literature review on high-rise buildings and high-rise housing estates, a sense of safety and the use of public spaces in relation to residents' sense of safety. The aim is to clarify the related concepts, theories and factors that influence the dependent variables of this study. These discussions aim to guide the methods of this thesis and help the author better interpret the results of this study.

#### **2.1 High-rise Housing Estates**

##### **2.1.1 A Definition of The Term High-Rise**

How many stories a building must have in order to be considered and designated as “high” vary. One definition of high-rise could not be defined in the literature (Gregonetto & Reis, 2012). According to the Council on Tall Buildings and Urban Habitat (CTBUH) the definitions change depending on the context, proportion, and embracing technologies in tall buildings. Gifford (2007) considers a building over three stories as tall, while residential buildings over ten stories and commercial buildings over fifteen stories are considered as tall in a study in San Francisco (Dornbusch & Gelb, 1977). What was considered as tall or high 50 years ago is not considered as high anymore.

Meanwhile, local codes and regulations define high-rise buildings by the exact heights. However, it should be acknowledged that there are different interpretations in local jurisdictions that use different height and measurement criteria. United States, as the place of the rise of high-rise, defines high-rise as “a building more than 22.5 m in height where the building height is measured from the lowest level of fire

department vehicle access to the floor of the highest occupiable story” (see Life Safety Code of the United States, NFPA 101 (Ed et al., 1981). According to the Turkish Regulation Concerning Fire Protection of Buildings (2020, p.5247), in the context of Turkey, the definition of high-rise buildings are given “as buildings whose height is more than 21.50 m or higher than 7 floors or whose structure height is more than 30.50 m or more than 10 floors.”

### **2.1.2 The Growth of High-rise Buildings**

For centuries, humankind has symbolized the importance of particular buildings by increasing their height. The origins of high-rise buildings can be traced back to earlier periods when it is seen as a religious symbol, reaching higher seemed as a way to reach the sky and God. In the genesis of tall buildings, tall buildings and towers were built for defense and shelter, besides their prestige and social and religious status. Examples of some early tall structures include the Egyptian Pyramids and The Tower of Babel (Beedle et al., 2007). Except for Europe’s medieval cathedrals and six/seven-story high Roman apartment buildings, tall structures did not appear until the late 1600s (Gifford, 2007). With the construction of the first modern tall building in Chicago in 1885, which is the Home Insurance Building ten-story high, American cities became a pioneer and encouraged the world to build higher (Gottmann, 1966). High-rise building was a symbol of advanced Western society and became a model of 20<sup>th</sup>-century urban development, additionally a symbol of the contemporary city; the effect of Le Corbusier’s monumental towers is not negligible in the development of high-rise in the post-urban renewal period (Yuen et al., 2006).

This urban development model is supported by technological developments, which made it easier to build high-rise buildings, making it possible to reach higher. The invention of the elevator with automatic brakes, steel, methods of fireproofing the iron, and the development of deep foundation systems are significant in this manner (Beedle et al., 2007).



There are many reasons why cities are growing high. These reasons are related to population density and land consumption, economics and use of resources with the sustainability idea, social and cultural factors, and symbolism and prestige. Carol Willis (1995), an architectural and urban historian, in her book *Form Follows Finance* mentions the notions of economic dominance and power behind the tendency of high-rise buildings. Especially investors approach tall buildings as businesses since space, location and image have value, and urban planning and design processes are closely related to these notions.

According to Beedle et al. (2007), one of the fundamental reasons behind the rise of tall buildings is the growth of the urban population by creating a growing demand for tall buildings:

“The ever-increasing population and growing economies in major cities of the world mean increasing urbanization globally and the continuing rise in population density in urban areas. Arable land areas are constantly being eaten away by urban spreading through suburban developments. The tall building can accommodate many more people on a smaller land than would be the case with low-rise buildings on the same land. A tall building is in effect a vertical transformation of horizontal expansion ” (p. 13-14).

Sustainability and quality of life are considered as the second fundamental reason, and some scholars draw attention to the need for improvement of the public realm by planning authorities while mentioning the impact of tall buildings not only on the horizon of the city but also on the urban fabric at ground level:

“The outward expansion of cities into the suburbs has resulted in increased travel time and traffic gridlock. The prospect of traveling for a long time, to and from work, is detrimental to the social well-being of the commuter and results in losses of fuel and productivity. Clustering of buildings in the form of tall buildings in densely built-up areas is the opportunity for creating open spaces like playgrounds, plazas, parks, and other community spaces by freeing up space at the ground level” (Beedle et al., 2007, p.13-14).

In recent decades, tall buildings are designed in a way that include multiple functions, both residential and non-residential. The advantages of them lead designers to build high-rise buildings, and so high-rise living becomes part of our lifestyles. With the increase in the number of high-rise buildings across the globe, their impacts have been questioned by various scholars.

### **2.1.3 Concerns About High-rise Buildings**

Constantine Doxiadis (1974, p.86) states his opinions about high-rise buildings in the following sentences:

“High-rise buildings work against man himself because they isolate him from others, and this isolation is an important factor in the rising crime rate. Children suffer even more because they lose their direct contact with nature, and with other children.

High-rise buildings work against society because they prevent the units of social importance-the family, the neighborhood, etc. from functioning as naturally and as normally as before.”

According to some studies, the advantages of high-rises include the economical use of space, ease of architectural design and services, whereas, disadvantages are waiting for elevators, the absence of green spaces, fear of fire, and designs that lead to being impersonal or monotonous (Beedle et al. 2007, as cited in Haber 1977).

As Ginsberg and Churchman (1984) categorize, there are two main characteristics of a high-rise: one of them is height, and the other one is the number of people. The advantages related to height include light, sun, fresh air, a view, and silence; meanwhile, the advantages related to density are a broader range of adults and children from which to pick friends or acquaintances. The disadvantages of height are usually regarded to be the limitations put on children's outdoor play, whereas the disadvantages of higher density are noise, loneliness due to difficulties in making a contact, and loss of control over children (Cooper Marcus & Hogue, 1976).

In addition to the advantages of tall buildings, many research show that the characteristics and limitations of tall buildings somehow cause concern for residents.

Robert Gifford (2007) identifies at least six fears in high-rise dwellers, referring to the influence of personal attributes and physical environmental features on provoking fears:

- fear of falling from high levels,
- fear of emergencies and having no escape chance,
- fear of earthquake and collapsing of the building,
- fear of terrorist attack on the tall building,
- fear of sharing space with a stranger or experiencing crime incidence,
- fear of contamination via air- and touch-borne.

Challinger (2008, p.5), in the Report on Connecting Research in Security to Practice (CRISP), concludes the risks and safety concerns of living in a high-rise in three groups:

- Crimes, examples include theft and robbery, property damage, an offense against person, unauthorized access
- Behavioral disorders, examples include drug dealing, protesting, hostage-taking, suicide risk, etc.
- Emergency situations and natural disasters, examples include fire, terrorist attacks, elevator malfunction, power outages, etc.

The relationship between high-rise living and children's development, and mental health are some of the major concerns of impacts of high-rise buildings (Beedle et al. 2007; Gifford, 2007; Fujiwara et al., 2014). Conway & Adams (1977) emphasize the difference in social groups and differentiation in their satisfactions and concerns due to the activity in the physical environment. Newman (1972) suggests that high-rise living is more favorable among middle-and high-income groups:

“Middle- and upper-income families who choose to live in high-rise buildings in cities rather than in single family suburban houses, are able to

compensate in a variety of ways not open to the poor, they get away for vacations, send the kids to camp or recreation clubs, and take off by subway or car to the large regional parks serving the city. Most of these options are simply beyond the means of low-income families” (p. 24)

From the perspective of the neighborhood and urban development, buildings must be considered not only in their own right, but also as vital aspects of the urban environment, using ecological thinking as a framework. Therefore, the issue of placing tall buildings in the existing urban fabric and its surrounding is generally a challenging discourse (Ruchelman, as cited in *Second Century of the Skyscraper*, 1988).

Open space, the skyline, vistas, cultural and historical landmarks, or transportation patterns are some ecological traits that citizens may perceive as the impacts of tall buildings. Beedle et al. (2007) mention the influence of tall buildings on the city block in which it is located, in terms of public spaces and street life. They state that its large size and dense human population have clear implications for the massing of city blocks, pedestrians on the street, and the streetscape itself. Place making is substantial to give the tall building some sense of civic use and to form linkages with the surroundings to reinforce the city’s urban fabric (Beedle et al., 2007). Ruchelman (as cited in *Second Century of the Skyscraper*, 1988) supports the concern over street effects, by mentioning the evaluation of residents’ quality of life, and stating that present-day high-rise buildings have made neighboring streets impersonal and constrained places. Furthermore, many high-rise structures prioritize the vehicle as a mode of transit by neglecting the pedestrians and therefore essentially walking neighborhoods.

According to Downs (1981), other factors that local citizens are concerned about the impacts of tall buildings include:

- “The withdrawal of a key local institution such as a hospital, a school, a church, a park, or a shopping center,
- The transition to either higher-income or lower-income occupancy,

- Negative effects on the street level such as too much shadow, wind currents, or increased congestion
- An increase in transient uses
- A decline in mixed uses
- An increase in automobile traffic
- The quality of building maintenance and appearance
- The adequacy of public and private services” (Ruchelman, 1988, p.82 as cited in Downs, 1981).

Access to key institutions is important for a sustainable neighborhood, it needs to have its own health, education, mercantile, and spare time activity opportunities. For example, in Turkey, new development high-rise housing estates are generally planned far away from the city center and so these institutions, show a lack of urban design and a decrease in mixed uses. Moreover, high-rise office blocks are another example causing a decrease in mixed uses. These places lose their vitality outside of working hours, which becomes a concern with safety issues at night. Prioritizing the vehicle as a mode of transit and locating different functions far away from each other also cause an increase in traffic due to the high amount of people in these areas.

Additionally, gentrification is one of the problems of mega projects or slum transition projects. Some people are excluded from their living environments, and a new group of people starts to use these new-developed areas, which leads to sociodemographic homogenization. For economic purposes, the excluded people, who were once living in one- or two-storey housing environments are often forced to live in tall buildings, which are usually built in the urban periphery.

The aforementioned impacts of tall buildings made some believe that tall buildings have passed the red line when it has become damaging, especially with personal, social, ecological, and environmental concerns. However, vertical urbanism seems inevitable tendency in future cities, which needs further studies.

This thesis is concerned with the residents’ sense of safety in high-rise housing estates. It is anticipated that in some places in high-rise housing environments,

residents feel less secure than the way they feel in other places, and accordingly use these areas much less frequently. As mentioned before, the thesis aims to understand the reasons for these differences from the perspective of urban design.

## **2.2 Sense of Safety: Its Definition and Measurement**

People's sense of safety can affect their lives in a variety of ways. The ways to define and measure the sense of safety have been critically discussed in the literature. According to Price (2007, p. 120), a “sense of safety refers to the participant’s physical and emotional comfort.” Zou and Meng (2020) related this concept to an individual’s emotional experience. They state that each needs to feel safe in their environment; the safety conditions of an environment affect the way individuals feel safe, and that sense of safety is connected with the individual’s subjective assessment of the threats in the environment and how they feel at the end of this assessment process. Different terms are relatively close and used interchangeably in the literature, such as “safety” and “security”; “perception of safety” and “fear of crime”.

Firstly, despite the differentiation in definitions, the terms ‘safety’ and ‘security’ are used interchangeably. Spencer Coursen (2014) explains the difference between safety and security as follows:

“Safety has both emotional and physical attributes; Think of security as a tool and physical means to insure the physical aspect of safety. Therefore, security is the process of ensuring our safety.”

Secondly, an individual’s sense of safety is highly associated with the way they perceive the safety of an environment (perceived safety of a place). According to Hinkle (2014), there is not a consensus in research on how to define and assess the notions of “perceived safety” and “fear of crime”.

Some define “perceived safety” as “an individual’s experience of the risk of becoming a victim of crime and disturbance of public order” (Jansson, 2019, as cited in Uittenbogaard et al., 2018, p. 60), whereas “fear of crime” is referred to as “an

emotional response of dread or anxiety to crime or symbols that a person associates with the crime” (Ferraro, 1995, p.4). Ferraro (1995) states that it is a psychological condition, which is caused by physical elements as well as the interpretations of people on the basis of their socio-cultural backgrounds. From the perspective of urban planning and design, the influence of the environment on individuals’ sense of safety is discussed in many studies. In most of these studies, the perception of safety (or individuals’ sense of safety) is considered with fear of crime (Austin et al., 2002; Baba & Austin, 1989; Newman & Frank, 1982; Rollwagen, 2014).

Perception of safety and fear of crime in urban spaces have environmental, sociocultural, psychological, physiological and political dimensions, while factors affecting them are based on two theoretical perspectives of environmental design and socio-cultural variables (Ratnayake, 2014).

Çınar (2012) categorizes the factors affecting the sense of safety into three categories: the personal attributes of the individual, the attributes of the social structure of the environment, and the features of the physical environmental conditions.

In this thesis, factors affecting the sense of safety are discussed in three main categories as demographic factors, socio-environmental factors, and physical environmental factors.

### **2.2.1 Socio-demographic Factors**

Individual demographic attributes like age, gender, and ethnicity affect people’s sense of safety in public settings to a great extent. Some researchers believe that sociocultural and demographic variables have an impact on people’s fear of crime in the public realm (Bennett et al., 2007; Byrne & Wolch, 2009; Garafalo, 1981).

According to Skogan and Maxfield (1981), sociodemographic features can be classified into two key categories that are in line with fear/risk perception: physical vulnerability, and social vulnerability. Physical vulnerability refers to perceptions

of the situation of being open to attack including factors of gender and age, whereas social vulnerability refers to greater exposure to the risk of victimization including ethnicity and socio-economical status.

#### **2.2.1.1 Gender**

Many studies regarding urban safety indicate that gender is one of the drivers having an effect on the sense of safety and women's personal and social activities are limited by heightened fear of crime (Keane, 1998).

The National Survey for Wales finds out people's experience of safety in their local environments at night time and the Report claims that the sex of participants changes the sense of safety since women were discovered to have a tendency to feel less safe in their neighborhood at night (at home, when walking alone, and when traveling) compared to men (Hafferty, 2020). The study conducted in a social housing renewal neighborhood in Sydney reveals that the feeling of unsafe increases at night for the female residents by a significant amount, in comparison with daytime, but this pattern cannot be observed significantly for the males (Arashteh, 2020). Another study in Australia, Bendigo, which examines the sense of safety of university students in public spaces, determines some differences in perceived safety at night in compliance with gender, and women in the general sense feel less safe than men (Ratnayake, 2017). In Turkey's context, studies also show that perceived safety changes depending on gender as well, where females feel less safe (Gerçek & Güven, 2021).

Mehta (2014) assessed public spaces in terms of their level of safety, finding out that women perceived public areas to be more welcoming and enjoyable but less safe than men did. By comparing men and women, it is suggested that women claim public spaces to be more open and accessible, as well as more appealing and intriguing, but they also think that the design and layout of places are inappropriate to use because they were concerned about their safety in urban public areas, especially at night.



According to Bloobaum and Hunecke (2005), males' and females' perceptions of risk in public spaces are related to distinct types of occurrences. When going alone in a park after dark, males are more likely to expect a fight, while females are more likely to dread rape or sexual assault.

Studies highlight demographic inequalities in the perception of safety as mentioned before. Rollwagen (2014) indicates that women are much more prone to be afraid as his study finds out that women are five times more likely than men to be fearful in their neighborhood, and they are roughly three times more likely to be fearful at home.

According to Gillis (1977), functional demand on dwellings may differ depending on gender, which is related to the traditional sex roles imposing different activities. Increasing the height of the building increases the strain on the woman, whereas a shared floor, which allows socializing and playing for children, decreases the psychological strain on women because they are generally the ones who watch over children, in turn, have more concerns in tall buildings because of the safety of children.

#### **2.2.1.2 Age**

Another demographic factor affecting perceived safety is the age factor. Residents' perceptions of their neighborhood's condition and attitudes toward crime appeared to be influenced by neighborhood social dynamics. Rountree and Land (1996) underline the heterogeneity of the neighborhood with the link between local conditions and perceived safety, which is stronger. Having different groups of people of heterogeneous race and age composition in the neighborhood cause higher levels of fear.

Many researchers have found that women and elders have similar levels of fear of crime, and hence they can be the two predictors of crime fear that are related to vulnerability (Hale, 1996). The safety perceptions of elderly people do not go parallel

with the younger people, they usually tend to perceive areas and situations as less safe compared to younger ones (Brå, 2014; Mehta, 2014; Australian Bureau of Statistics, 2010). Younger people spend most of their time outside the home and therefore are exposed to more danger than the elderly. Despite this, elderly people are more afraid of crime (Hale, 1996). The National Survey for Wales also examines the relationship between feeling safe in the local area and age, revealing that People aged 75 and up were the least likely to feel safe in their living environment (Hafferty, 2020).

On contrary, some other studies examining the tie between fear of crime and age state that the relationship between fear of crime is not as clear as the relationship between gender and fear of crime. That is to say, some claim that there is no linear correlation among age and crime fear (Bloobaum & Hunecke, 2005; Braungart et al., 1980; Clarke, 1984).

Besides the young children, another group much more affected by high-rise living is elderly people. When the studies of the elderly people in high rises and the studies of elderly in low rises are compared, it has contradictory deductions. As Conway and Adams (1977) find out elderly people appreciates privacy, and views and become more neighborly when living off the ground, even though they tend to prefer lower floors of the block due to the lack of elevator, and a sense of isolation. This situation is explained by the disturbance and feeling of unsafe at ground floor dwellings. On contrary, Newman and Frank (1982) argue that elderly individuals may consider themselves safer in a large building compared to a single-family house. Gifford (2007) gives reference to research in India, stating that although comparisons with other housing types were not done, he indicates that the elderly are largely displeased with high-rise living.

#### **2.2.1.3 Ethnicity/Race**

A significant amount of research has also been conducted on race as a factor in affecting residents' sense of safety. According to a research conducted in Sydney and Melbourne, minority people such as Arabs, Asians, and Jews are particularly vulnerable to racial violence (Human Rights and Equal Opportunity Commission, 1991).

According to Rountree and Land's (1996) study in a white-dominant neighborhood in the United States, blacks felt less fear of crime than whites despite their racial minority. Clemente and Kleiman (1976), on the contrary, argue that blacks and other racial groups have higher levels of fear than whites.

In studies focused on the relationship between fear of crime and race, individuals in the ethnic minority class in the community have a higher level of fear (Liska et al., 1982).

In this regard, people's race and/or ethnicity becomes important depending on the context where they live.

#### **2.2.1.4 Level of Education and Income**

A noticeable positive correlation between education and increased feelings of sense of safety is identified (Austin et al., 1994), whereas Skogan, and Maxfield (1981) identified a link between higher social status and lower levels of fear. In Ramsay's study (1989), it is claimed that people with low social status have a higher amount of fear, despite the similar crime rates of people with high social status and those with low social status. Similarly, Sundeen and Mathieu (1976) reveal that when race, age, and gender are kept constant, income level is inversely related to fear of crime.

However, the findings of Baba and Austin (1989) in a multivariate study do not show an influence of socioeconomic status (i.e., home ownership/personal property) on perceived levels of neighborhood safety.

## **2.2.2 Socio-environmental Factors**

### **2.2.2.1 Social Integration/ Community Cohesion**

One of the other defining elements affecting the sense of safety is linked to social integration in the neighborhood. It can be categorized as social/natural surveillance, familiarity, belonging and social networks.

#### **2.2.2.1.1 Social Surveillance**

The effect of social or natural surveillance on fear of crime/perception of safety has been discussed by various scholars (Borooah & Carcach, 1997; Greene, 2003). According to Murray et al. (1980), social surveillance is the situation in which residents observe criminal acts or suspicious characters of strangers. Similarly, according to Newman (1972), natural surveillance allows the neighbors to be observed, thus enabling the observing of foreigners' criminal activities and reducing the potential to commit crimes.

Surveillance is a significant element that many designers have relied on it as a way to increase the sense of safety and decrease fear. Newman's (1972) and Jacob's (1961) analysis shows that when individuals are observed by others, it enables natural surveillance, and those bystanders may assist in unsafe situations. That is why people are more comfortable acting in urban areas in the case of not being isolated from a contact with the larger urban realm. Hillier and Hanson (1984) explain surveillance in these words "strangers police the space, while inhabitants police the strangers" as a factor affecting the perception of safety (p. 18). The presence of other individuals may affect people's fear of crime in public places. Studies suggest that the presence of appropriate others and additional social signs have a positive influence on the environment by giving people a clue about a safe place (Warr, 1990; Whyte, 1980).

According to Newman (1972), high-rise buildings invite criminal activities since it is impossible to recognize who is a neighbor and who is an intruder due to a large number of people, which limits citizens' opportunity to execute informal surveillance.

#### **2.2.2.1.2 Familiarity**

Kanan and Pruitt (2002) believe that social integration includes indicators such as if occupants identify outsiders in their neighborhoods or have relatives or acquaintances in their communities. In his study, Greene (2003) states that the familiar neighbor criterion is one of the factors most related to the sense of safety depending on trust and claims that it increases with the increase in the number of familiar neighbors. Hale et al. (1994) found that an individual's fear of crime in their environment increases with the absence of friends in the neighborhood.

The study of Ginsberg and Churchman (1984) indicates that the presence of too many people is seen as a disadvantage for high-rise residents because there exists a large number of people in semipublic areas, who are unfamiliar and it makes the area less safe and it is also more difficult to make friends. In other words, as the building height increases, the number of neighbors known decreases resulting in a decrease in familiarity and perception of safety.

Rollwagen's study (2014) reveals that the effect of familiarity based on the number of neighbors a person knows is not significantly important by implying that social links mediate the connection between the type of housing and fear of neighborhood crime. As a matter of fact, it shows that social relations have a significant influence on the sense of safety: When compared to individuals who know many or most of their neighbors, those who do not know any neighbors are 2.5 times more likely to feel unsafe in their area.

#### **2.2.2.1.3 Belonging**

One viewpoint on social integration variables is neighborhood or being as apart of community, which refers to the level of emotional commitment or attitude that persons have for their living estates. According to Taylor (1996), the perceptions of residents towards their area as a "real home" vs a "simply a place to live," depends largely on whether they would miss and lose their neighborhood if they have to move, are correlated with increased levels of fear.

In some studies, the link between a sense of belonging and fear of crime has been examined and it has been claimed that as the level of belonging increases, the fear of crime decreases (Ferguson & Mindel, 2007; Gibson et al. 2002).

Borooah and Carcach (2009) examined the neighborhood relationship related to belonging under the title of "social cohesion" and measured it according to the high level of people in one place coming together to help one another, or whether they did not help one another and went on their way.

Place attachment can be related to belonging to the environment. In this sense, Hidalgo and Hernandez (2001) assert that the strength of the social and physical levels of place attachment differs depending on spatial scales. Their study showed that at the home and city scale, place attachment is at higher levels than for the neighborhood level. The physical dimension of the place attachments was not as strong as the social dimension. Moreover, Brown et. al. (2003) state that, fear of neighborhood crime is less and the attachment to one's neighborhood is associated with fewer perceived incivilities on one's block on a smaller scale.

#### **2.2.2.1.4 Social Interaction**

Another set of integration variables uses social cohesion indicators, such as local social networks or connections among residents of a community (Kanan & Pruitt, 2002). However, the conducted study analyzed the relation between fear of crime

and social networks has contradictory outcomes. Several researchers come up with that social relations considerably reduce levels of fear (Skogan & Maxfield, 1981; Taylor et al. 1984), whereas others find that social bonds may contribute to enhancing the impacts of local victimization, or fear of crime (Skogan 1986; Covington & Taylor 1991). Meanwhile, Liska et al. (1988) underline that fear of crime and sense of safety has a two-way relationship by being both a result and a reason for weaker levels of social bonds.

Newman (1982) claims that because of the increasing privacy among building occupants, in other words, social isolation, residents of multifamily buildings are more afraid of crime. Studies show that high-rise buildings may create a fortress effect, which means that individuals are isolated in physical space by high-rise structures, which provide safety in the home but also create isolation physically and socially from the rest of the community (Rollwagen, 2014). Residents' sense of safety at home is increased in tall buildings by recent security upgrades but may have negative consequences for residents' sense of safety in the neighborhood: "turning tower blocks into fortresses may increase residents' alienation from the typically poor landscape which surrounds them" (Green et al., 2002, p.14-15). As a result, feeling safe in one's own house can cause the loss of one's opportunity to interact in public (Rollwagen, 2014).

Children are seen as the most vulnerable group in high-rise living which are exposed to social isolation as Stewart (1970) reviews that accommodating in a high-rise restricts the child's surroundings and practice at an early age. Little children have challenges keeping in contact with their parents in outdoor spaces of the high-rise building and as a result, they do not feel safe because the caretaker of the child loses visual contact and the environment around the high-rise generally does not afford a playground (Björklid, 1982).

Moreover, in high-rise housing, the elderly and the handicapped occupants might have a stronger tendency to become inactive and isolated in comparison to other groups since high-rise housing restricts their daily activities to socialize. Solitude is

especially found among the elderly in high-rises and the absence of safety in high-rise buildings and their surrounding is one of the limitations for elderly people, which is concluded from a study conducted in Hong Kong (Ekblad & Werne, 1990).

### **2.2.3 Physical Environmental Factors**

Some claim that the physical features of a place might influence our senses and direct our behavior in regards to the way we use space, related to environmental factors. Sociologist Anthony Giddens (1984) also states that with the attributes of enabling and constraining, built form structures social behavior of individuals.

Jacobs (1961) stated that spatial design and architectural form might deactivate social cohesions and undermine unofficial social control. According to Jacobs (1961), we should be concerned about how planning and design might decrease or increase people's sense of safety. Oscar Newman (1972) underlines the relation between physical environment and crime, and his theory of “Defensible space” offers a strategy for reducing crime in urban environments. This idea focuses on the importance of spatial settings in designing environments that are less likely to attract potential criminals, such as those with surveillance, physical barriers, and difficulties in escaping.

Similarly, Kim Dovey (1998) in his conference speech highlights that land use, the design of public space, and access to public places can contribute to safety and danger in the urban areas, additionally stating that physical intervention cannot solve social problems itself. On the other hand, some argue that although urban design has a catalyst effect, there isn't a straight connection between environment and avoidance behavior and the sense of safety. They believe that a sense of community can not be established by the environment itself deterministically by just bringing people together (Crenshaw & John, 1989; Talen, 1996).

Many studies analyzing the physical environment factors affecting fear of crime focus on different physical properties (Appleton, 1975; Fisher & Nasar, 1992;



Greene, 2003; Bloobaum & Hunecke, 2005; Nasar & Jones, 1997; Newman & Franck, 1982).

Height, and so the building size is one of the physical attributes of tall buildings that causes some advantages and disadvantages. Studies show that building height is correlated with the sense of safety with the concern of kids falling out of windows. Especially, the ones with infants not older than 6 years are the ones who are the most negatively reacting to high-rise living in that manner (Ginsberg & Churchman, 1984).

The greater building size causes a lack of territory and some occasions for natural surveillance. Newman and Franck (1982) explore the effects of building size on crime fear, suggesting that occupants of larger buildings are more likely to fear crime, which may be based on partially by the belief of the residents' minimal impact on public spaces and outdoor areas. They correlate this relationship with the frequency of residents' usage of the space outside their apartments. They expect that as the building grows in size, the frequency of use of common spaces decreases and so control over the spaces of residents decreases. The increase in the rate of personal crime and so a high level of fear resulted, in a turn of low use and control.

#### **2.2.3.1 Prospect (Open View) and Refuge (Protection)**

The Prospect–Refuge theory proposed by Appleton (1975) describes human preferences towards the environment and places an emphasis on two environmental elements that are considered to be the key indicators of safety. It explains that individuals benefited from living in an environment that provided them prospect (open views) as well as refuge (protection). Regarding this matter, humans select locations that offer both open view and protection because doing so makes it possible to observe potential offenders, react to and defend against potential threats, so a defensible space prevents oneself from being harmed (Ratnayake, 2014).

Similarly, Jacobs (1961), Jeffery (1971) and Newman (1972) also state that people feel safer on the streets with an open view because of the chance to observe and prevent dangers when necessary. Bloebaum and Hunecke's studies (2005) on the campus environment concerning the relation of prospect and fear of crime, reveal the inverse relationship between the prospect for the victim and the fear of crime, and the fear of crime increases as the open view decreases, thus people feel less safe in this condition. Individuals are surrounded by barriers in the physical environment, like walls, floors, ceilings, fences, high and dense bushes, and entry points such as gates, and passages to these barriers. Trees, tall bushes, high walls, and tall buildings or pillars along the road are defined as physical elements that obstruct the view and provide hiding opportunities in the public space (Bloebaum & Hunecke, 2005; Nasar & Jones, 1997).

The relationship between the height of the buildings on both sides of the street, the presence, location, and dimensions of elements such as walls, fences, trees that form the facade along the street, and the building opening consisting of the front garden, pavement, and road trace are indicators of the level of enclosure in a place. Warr (1990) argues that these lines mark the boundaries of regions, providing a hiding place for a potential attacker and at the same time obstructing his view. Open view and movement are obstructed by solid surfaces such as tree groups and walls, thus providing a high level of enclosure in the space (Stamps & Smith, 2002).

Fisher and Nasar (1992) typology for measuring people's perceptions depending on how much prospect and refuge they have in their surroundings, claims that areas with a high refuge and low prospect would evoke the most fear. In other words, 'Blind spots' decrease the perception of safety for individuals.

Public stairwells and elevators may have the same effect and can be considered blind spots in high-rise buildings. Studies suggest that many people who live in high-rise buildings are afraid of crime, related to the possibility of exposed to criminal activity in the elevators (Yuen et al., 2006). Moreover, Jacobs' (1961) criticism of high-rise public housing architecture included long, unwatched corridors, unwatched

elevators, stairwells, and courtyards that became targets for rape, robbery, and vandalism by creating an unsafe environment.

#### **2.2.3.2     Escape Route**

Apart from open view and protection, Fisher and Nasar (1992) claim that individuals' sense of safety is affected by the degree to which space allows escape. They discovered that when the chances of escaping were low, the fear of crime was significantly greater. Provided escape route from a potential hazard or reaching out a way to others who can react in the event of an attack are some ways of the escape possibilities (Newman, 1972). In other words, having routes in the neighborhood where criminals can easily escape (maybe without being seen by anyone) increases the likelihood of crime, and therefore reduces the sense of safety.

#### **2.2.3.3     Quality of Physical Surrounding**

People interpret visual objects subjectively based on their social context. Buildings, streets, vistas, and parks, for example, serve as visual landscape or environment features in this setting, carrying meaning to people (Gottdiener, 2010).

Regarding the relationship between environmental elements and sense of safety in terms of fear of crime, the Broken Windows Theory was introduced by Wilson and Kelling (1982). It suggests that disorder have an influence on people's sense of safety. It is related to environmental elements and assumes that people if a building has a broken window, which is not repaired, people will believe that no one cares. Disorder brings disorder and the other part of the building will be harmed. In other words, environmental factors influence people's perceptions of disorder, and so safety (Jiang et al., 2018).

Community "incivilities" like deteriorating buildings, trash, and the presence of unsupervised youth create disorder affecting the sense of safety (Austin et al, 2002).

Many researchers mention that objective indicators such as graffiti, poor landscaping, rubbish, poor illumination, and vandalism influence people's perceptions of disorder (Osgood et al., 1996; Sampson & Raudenbush, 2004; Seymour et al., 2010).

Some researchers (Nasar & Jones, 1997; LaGrange et al., 1992) have grouped incivilities in two conceptual categories as “disorderly physical surrounding” and “disruptive social behavior”. Signs such as garbage, vandalism, abandoned buildings, and houses in physical collapse are physical ones; where, features such as gangs, prostitution, the presence of street beggars and substance abuse, stray dogs, and drug use in public spaces were defined as social ones.

Moreover, as many studies claim (Lang, 1987; Bell et al., 1990; Rapoport, 1990; Whyte, 1980) the sensory experience of the public space is enriched by the factors such as lights, noises, scents, touches, colors, forms, patterns, and semi-fixed, and mobile components. At the same time, other people and activities, and architectural characteristics in public areas stimulate the senses as well (Grey et al., 1970; Whyte 1980). In other words, smell and sound are important indicators in sense of safety. For example, bad smells, gunfire, shouting, and swearing make people feel unsafe.

Additionally, declining investment in the neighborhood economy leads to the gradual aging of sidewalks and other structures undermining the sense of safety by weakening trust among members and withdrawing residents from using outdoor spaces. Physical features of the neighborhood environment can be modified to optimize older adults' social and physical engagement and thus encourage older adults to participate in activities such as socializing in public spaces and taking neighborhood walks (Velasquez, 2021).

#### **2.2.3.4 Urban Form and Land Use**

The discourse over the connection among spatial form and urban vitality and livability is focused on the issue of public safety. The notion of the neighborhood

unit has been related to the issue of public safety from its earliest spatial conceptualizations through their development and lived experience. The mediators of the sense of safety include patterns of natural surveillance, co-presence of people and mixing of residents and outsiders, which may be supported and formed by the arrangement of urban structures (Novakovic & Djukic, 2015).

During the increasing number of vehicle domination in American cities, streets were still a popular spot for socializing, walking, and children's games, but started to become dangerous for everyday use. The issue of the pedestrian is one of the key issues Perry (1998) examined while formulating the concept of the Neighborhood Unit. The concepts of the spatial unit include clearly defined spatial borders, self-sufficiency, functional autonomy, and blind streets which reduce the speed of traffic. Nevertheless, the neighborhood unit's practical application didn't succeed in forming a sense of community and, on the opposite, made a contribution to social fragmentation at the city level. Perry (1998) approaches streets as high-traffic areas that pose a significant risk to children, whereas Jacobs (1961) considers streets to be the primary spot of socialization out of the family and the first encounter with urban diversity.

Jacobs (1961) argues that the physical and functional diversity in the neighborhood and the coexistence of different forms of use make a place safer. She argues that land-use type is a factor, affecting how much the user of the place can be seen by other users in the environment, therefore a combination of different functional areas reduces the fear of crime. Similarly, in case of a possible attack, it is thought that the use and intensity of the area increase the chance of obtaining help from the environment. It is claimed that the existence of commercial activities such as kiosks and markets, the distribution of social reinforcement areas, and the existence of public transport stops and routes make people feel safe.

#### **2.2.3.5 Physical Proximity**

Physical proximity can be considered in two ways, being close to people or being close to functions. In high-density areas people may feel unsafe due to the lack of private areas and the proximity of unfamiliar people may discomfort them. Living in close proximity to the people who are associated with a crime may increase the perceived crime risk by undermining the sense of safety in the home territory (Zahn timer et.al., 2021)

Proximity is also one of the factors that affect the use of open spaces in the neighborhood. Silbaugh (2007) mentions the importance of proximity in urban design considering the traditional urban neighborhoods that have closer proximity between land uses, between the private realm and public realms such as parks, retail, and workplaces. It results in an increase in urban vitality and less car-dependent regions due to the high pedestrian activity. Cuthbert (2006) adds that dense urban spaces empowering effect on women since suburban developments cause exclusion of social networks and urban facilities for women. Silbaugh (2007, p.1818) also draws attention to the characteristics of suburban communities that lead lack of vitality and urban design as follows: “lower density development, meaning the consumption of greater and greater amounts of land for the same uses that are effectuated with far less land in urban neighborhoods” and “single-use zoning, meaning residential areas are separated from retail areas, creating a nearly complete reliance on cars for commuting to work as well as for small local errands such as retail shopping, school drop-offs and social and civic activities”.

### **2.3 Public Space**

#### **2.3.1 Definition of Public Space**

A review of the literature shows that the term "public space" has so many different meanings and types of uses associated with such settings. Thus, in a study that

focuses on the impacts of high-rise housing estates on residents' sense of safety in public spaces, it is required to, first of all, contextualize and define this term.

Public space, like the concept of place, exists at many scales ranging from the small physical scale of a street, square, or park to the neighborhood, city, and country, and levels of understanding, including the media, local and national governing bodies (Relph, 1976; Smith & Low 2006). Urban designers and architects view public space primarily as a physical space as they are mainly focused on the interactions of people and space; whilst urban sociologists explain public space in the context of social dynamics; political scientists and geographers study public space in the context of civil society and individual and collective rights. (Mehta, 2014).

Public places provide a range of roles including social, physical, psychological, political, economic, and aesthetic functions. Concerns of ownership, control, access, and usage separate distinct interpretations of public space in literature. For this thesis, the focus is on the issues of the use of the space by the public, not on the ownership of the space (since there is assumed to be a direct link between decreased levels of sense of safety and decreased levels of use of public spaces in high-rise housing estates).

Carr et al. (1992) proposed a definition of public space, stating that in addition to being “meaningful” and “democratic”, public spaces should also be “responsive”. In other words, they should enable people to build strong bonds between the place, and their personal lives, allow being free to act and protect the rights of users, and at the same time, should meet the needs of their user groups. According to them, there exists five characteristics of public spaces which are: being supportive, being democratic and meaningful, tackling fundamental needs of people like comfort, passive and active engagement, and discovery. They define it as "publicly accessible areas where people go for group or individual activities" (p. 50), highlighting space accessibility along with activities in public areas (Carr et al., 1992).

Arendt (1958) defines public spaces as “the space of appearance” pointing out the “self-expression” and “actualization of the individuals” in these spaces.

According to Lynch (1992), public spaces are open spaces; they are open to freely chosen and spontaneous activities. In the Article, The Openness of Open Space, Lynch (1992) addresses the issues of access, control, and equity, as well as stimulation and social contact.

Some describe public space as "space that is not controlled by private individuals or groups, and hence is available to the general public", addressing the control issues (Madanipour, 1996, p.144). According to Parkinson (2009), public spaces are areas where everyone has an unrestricted right to enter or access information, as contrasted to settings with control methods that restrict access to and utilization of space.

The most important aspects of open public spaces, according to Cunningham (2009), are openness and anonymity. Being non-exclusive and demographically open make a public space accessible to the all community with the coexistence of different groups and available for communal acts.

Public spaces were previously used to meet basic survival, communication, and amusement needs, as well as an array of social and civic, political, religious and commercial functions (Mehta, 2014). It is also viewed as a forum for existing community values and attitudes, together with zones that add value to urban social life (Jacobs, 1961; Low, 2000; Whyte, 1980).

One of the functions of public space is to create arenas for 'social interaction,' or areas where people can engage in active and social interactions with one another (Carr et al., 1992; Lynch, 1992). According to Thomas (1991, p.222), "public space is an essential arena which provides opportunities for individuals and communities to develop and enrich their lives". Thomas (1991) highlights the social role of public space by identifying four points showing how important public spaces are to self-expression as a society:

- “-an arena for public life,
- a meeting place for different social groups to interact and coexist,
- a space for the display of symbols and images in society,
- a part of the communication system between urban activities.” (p.210)



Public spaces provide a social platform for individuals to meet and exchange information, being an essential characteristic of articulating democracy (Mehta, 2014; Arendt, 1958). As Madanipour (1996) states, encouraging everyone and enabling one another to interact socially support the coexistence of diverse groups of people regardless of their sociodemographic qualities including class, ethnic origin, gender, or age. Jacobs (1961) evaluates public space as a place where urbanity is formed. Where urbanity is defined as the combination of urban sociability and urban space, which involves multiple features such as the mix of indoor and outdoor uses, diversity of building form, appearance, and age.

Sennett (1991) evaluates public space “as a place of coexistence and mixing of individual differences”. Several personal reinvention possibilities are offered by public space since it is "the cultures of city" (Sennett, 1991).

These definitions of public space highlight the attributes of public spaces with the notions of openness and access, in other words, its inclusiveness is a significant factor to create a space for democracy, self-actualization, and social interaction by allowing different types of users and activities. As Mehta (2014) proposed, a good public space provides high levels of sense of safety to its users.

### **2.3.2 Type of Activities**

The extent to which public spaces are perceived as safe also affects the activities in the public space and the places of these activities (Jacobs, 1961). She mentions how the safety notion is a significant part of a livable urban environment with the mixed type of activities that attract people at all hours of the day. In high-rise residential areas where the sense of safety is weak, public space is a place to pass through, whereas in residential areas that are seen as safer by the residents, thus people engage in many activities in public open spaces.

Public spaces provide places for a ‘variety’ and ‘diversity’ of activities. The debate and discussion over public space frequently revolve around whether activities and behaviors are regarded suitable within this place. It is also discussed that activities which are provided by the place make it public, differentiating it from others. Each activity needs its own place, the absence of these facilities affects the use of open spaces and thus the feeling of safety. The type of activities in public spaces is significant since it is a determinant of the quality and use of space that provides urban vitality or dangerous urban spaces that undermines the sense of safety.

That is one more point to discuss since the public space is not generally seen as a safe space in studies carried out in high-rise residential areas, for example, because families do not allow their children to play outside in studies with children, children meet their play needs in the corridors of high-rise buildings instead of meeting their needs in open spaces (in the corridor of the apartment, like skipping rope) (Tezel, 2011).

Jan Gehl (1987), an architect and urban designer, in his book *Life Between Buildings: Using Public Spaces*, suggests three categories of outdoor activities in public spaces by giving a basic structure to explain the usage and sociability of public space: “*necessary activities, optional activities, and social activities*” (p. 9-14).

*Necessary activities*- include those that are more or less compulsory. Examples include daily routines, for example, walking to school or to work, shopping, waiting for something – in other words, all activities in which those involved are to a greater or lesser degree required to participate. Gehl (1987) claims that these activities are more or less independent of the exterior environment, and it is a requirement. Accordingly, it is very essential that individuals feel safe while doing them. As these are daily activities, it greatly influences their perspectives and feelings about the environment they live in.

*Optional activities*- occur when there is a desire to participate in these activities and a time and a place favorable to participating in these activities. Examples include sitting outside or playing catch. These activities are

especially dependent on exterior physical conditions. In dense urban settings of low quality, optional activities exist at a minimum level. However, in a good physical environment, optional activities occur with high frequency since the place invites people to stop, sit, eat, play, and so on. These opportunities may be the factors that increase the sense of safety due to the surveillance

*Social activities*- are all activities that depend on the presence of others in public spaces. Examples include children playing, friends coming together to converse, and passersby briefly acknowledging each other. Such activities emerge when people congregate in a place and socialize.

As a result, a specific physical set-up is needed for every sort of activity for it to happen in the spaces, and the physical environments necessary for various types of activity differ markedly (Huang, 2006). Mehta (2014) approaches meaningfulness in terms of a space's potential to encourage activity and sociability, as well as the resultant place attachment. Public spaces provide meaningful activities; their usefulness refers to the ability of the environment to meet necessities such as eating, shopping, entertainment, and so on. In addition, other needs of gathering, displaying, expressing, discussing, demanding, and protesting should be met by good public spaces.

According to Seamon (1980), familiarity with the environment is encouraged by the recurring visits and increased frequency of usage to meet daily demands since it becomes a daily ritual, creating a sense of place by declaring a place meaningful as Mehta (2014) refers, and sense of safety in the neighborhood increases.

### **2.3.3 Gender Roles**

Gender started to be considered in urban studies since 1960s with the introduction of feminist thought in urban studies (Bondi & Rose, 2003). According to McDowell

(1983), space is segregated into two as public and private because of its social and gender roles, and women are excluded from public spheres.

Brenner (1998) suggests that entering the public sphere by leaving domestic realms threatens the masculinity of public realms and the traditional approach to women's femininity. In the urban space, some argue that disempowering women is a consequence of the distinction between home and work in the suburban built environments by isolating women (Hayden, 1980; Madanipour, 2003).

Besides the isolation of women due to the residential zoning and layouts of dwellings, public spaces also isolate women because they are insensitive to the needs of women and designed for men by men (Jarvis et al., 2009). Numerous studies in feminist literature focus on gendered use of public space and fear of crime to design more safer and inclusive environments (Pain, 2000; Whitzman, 2007; Valentine, 1990). Public spaces have never been completely inclusive since certain groups have been excluded from public spaces in history. Women, young people, and the homeless were never completely included in public spaces, and their rights to use those spaces were rarely recognized on the basis of customs and economics (Memlük, 2012). Cuthbert (2006) also points out that there is limited research in the literature considering urban spaces with their physical characteristic from the perspective of women.

According to Cuthbert (2006), although, open public spaces such as parks are opportunities for leisure time activities, women do not perceive these spaces with the same enthusiasm compared to men because these open spaces are perceived as male dominant spaces. Cuthbert (2006, p.145) adds while using public space, women's sense of safety changes depending on different variables, but "physically designed environment is also deterministic of psychological content as to which spaces are perceived as 'safe', 'dangerous', 'welcoming', 'threatening', or other qualities." Furthermore, the masculinity of space is reinforced by the physical quality of the space; isolated areas, poor lighting, limited visibility, and lack of escape routes give cues to women about threats by causing fear (Hayden, 1984).

The feminist approach also argues about the public realm in the context of children and their caregivers (Weisman, 1994). Open public spaces have a significant role, especially for certain groups of users such as mothers with children (Lestan et al., 2014) since for many people one of the main reasons for visiting open spaces is taking children to play (Dunnett et. al., 2002). Accessibility and availability of public spaces in the neighborhood such as parks, gardens, pedestrian pathways, and streets provide activities for women with children (Relph, 1976). Besides, women's anxiety and fears are parallel with their children while using public spaces, since children are seen as vulnerable and incompetent (Valentine, 1990). Additionally, parents' decisions on the use of outdoor areas are dependent on the young children's mobility since the age of their children is a significant force that guided their activities (Wolf et al., 2017). In line with this, older children expand parents' activity while younger children are seen as barriers to limiting mothers' activities. Parents take children to school, lessons, or playdates for the older ones (Wolf et al., 2017).

#### **2.3.4 Safety**

Safety is considered one of the most important factors to determine the quality of open spaces since the perceived safety of a place by its users is an important indicator of the decision to make use of or avoid it. Safety in public places refers to the condition in which an individual is protected from dangers, harms, and risks, such as crime and traffic (Mehta, 2014). It is generally believed that "perceptions and feelings of personal safety are prerequisites for a vital and viable city" (Oc & Tiesdell, 1999, p.265). As broadly mentioned before, social and environmental factors have a straight effect on creating a sense of safety.

A sense of safety can be obtained through explicit means and controls or simply through the constant presence of people and "eyes on the street", where the environment becomes self-policing. Individuals' perceptions of safety in public areas are influenced by a variety of elements. Schroeder and Anderson (1984) and Mehta (2014) refer to the perceived safety, maintenance of the area, prospect and refuge,

the presence of green areas, the presence of water, streetlights, the number of visitors, and the time of day and season as these elements.

People's presence may sustain safe feelings in urban parks and public places or promote others to use these places (Warr, 1990; Whyte, 1980). According to Whyte (1980), the way people use open spaces affects users' perceptions since it is a social or a safe cue for others to use the places if individuals observe others engaging in approved usage.

Another factor affecting the use of public space is becoming far away from traffic which makes it a safe area. Appleyard (1981) points out the negative link between the density of traffic and neighboring behaviors. Lack of pedestrian walkways while accessing gathering areas may decrease the motivation for people to use these spaces, meanwhile decreasing their sense of safety.

### **2.3.5 Theories Affecting the Use of Public Space**

#### **2.3.5.1 Affordance Theory**

In his book *The Ecological Approach to Visual Perception*, James J. Gibson (1979, p. 127) put forth the Theory of Affordances, in which he suggests, "The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill." According to Gibson (1979), micro-environments, including elements and features of outdoor spaces afford people possibilities. All features such as people, animals, objects, surfaces, and so on provide micro-environmental spaces within their affordances. In other words, affordances are the possibilities and threats that people face due to physical, social, and psychological characteristics.

Lang (1987) analyzes the environment's affordances concerning an individual's environmental experience. According to Lang (1987), individuals may alter the affordances that the designed environments provide them in order to fit their preferred behaviors. An environment provides a set of affordances, including

possible environmental activities for individuals and aesthetics that might draw people's attention to activities that are meaningful to them in their active environment (Lang, 1987).

Besides the attributes of the environment, the attributes of the individual including his/her needs, intentions, and characteristics define affordances as well (Clark & Uzzell, 2006). Similarly, Yilmaz et al. (2007) evaluate the affordances of public space based on two categories. One of them is *objective affordances*- “which are the potential possibilities created by the space components, which the designer brings to the environment for the activities designed for the users.” The other one is *subjective affordances*- “which are the ones that are formed together with users’ creativity and skills to use for the spatial components.” (Yilmaz et al., 2007, p.3)

An opportunity for access and exposure is provided by the activities in public spaces, and being an activity node supports this opportunity (Archea, 1977). Common spaces between houses have been identified to be an essential element that contributes to the social activities of the neighborhood (Cooper Marcus & Sarkissian, 1986). Hadavi et al. (2015)’s study highlighted the residents' sensitivity to attributes that might have a positive impact on the beauty and functionality of outdoor spaces, especially when it comes to the importance of small greenery that allows important actions like socializing and gardening. Residents appreciate adjacent natural environments for many reasons, considering the interaction within and between the affordance and attribute categories.

All in all, studies show that affordances affect the use of public spaces significantly.

#### **2.3.5.2 Eyes On the Street Theory**

Jane Jacobs (1961), in her book *The Death and Life of Great American Cities*, put forth the Theory of Eyes On The Street, which highlights the essential contribution of surveillance in the use of public spaces. She believes that to make a city safe and livable, it is essential to keep an eye on the streets, with a sense of connection to

the environment that comes from an environment where private and public spaces are well separated.

“There must be eyes upon the street, eyes belonging to those we might call the natural proprietors of the street. The buildings on a street equipped to handle strangers and to ensure the safety of both residents and strangers must be oriented to the street.” (p.45)

Additionally, Jacobs (1961) also states that the main function of city streets and sidewalks is to keep the city safe and to encourage its use for a variety of activities. Eyes on the street come from public spaces, such as stores, bars and restaurants, and people there such as street vendors and pedestrians. She suggests three indicators that define a good, safe city environment:

- “a clear demarcation between what is public space and what is private space,
- eyes upon the street, eyes belonging to those we might call the natural proprietors of the street,
- the users on it fairly continuously, both to add to the number of effective eyes on the street and to induce the people in buildings along the street to watch the sidewalks in sufficient numbers.” (p. 35)

Due to the surveillance, Jacobs (1961) opposes additional open spaces in cities if they result in neglected and dangerous parks, therefore she claims that “crowded neighborhood sidewalks are the safest places for children to play” (p.106). It has been accepted as successful when parks offer a wide range of activities and users.

The debate for safety focuses on the range of street life and the proximity of buildings to the street ensured 'passive surveillance' or 'eyes on the street,' thus effectively monitoring antisocial behavior, while also opposing the installation of fences and security guards.



#### **2.3.5.3 Broken Window Theory**

Wilson and Kelling's (1982) Broken Window Theory addresses the effect of environmental disorder on crime rates and people's perception of the environment. It states that obvious indicators of disorder and disobedience in the surroundings stimulate even more disorder and disobedience. The effects of signs include graffiti, poorly maintained landscapes, poor lighting, and vandalism on the sense of safety are revealed by several studies (Osgood et al., 1996; Sampson & Raudenbush, 2004; Seymour et al., 2010). This approach suggests improving perceived safety by changing the environment's physical appearance by providing a more welcoming social image.

Moreover, it explains the interactions between people and space. Foster et al (2014) claim that the sense of safety influences the use of public spaces, based on Wilson and Kelling's theory. They add that the relationship between sense of safety and disorder is bilateral by explaining that the more disorder in the environment exists, the more people's sense of safety decreases in turn. It results in avoidance of the environment with a lowered perceived safety thus leading to an increased number of disorders (Foster et al., 2014). In other words, a decrease in disorder in the built environment may cause an increase in the use of public spaces.

Similarly, Ross and Mirowsky (1999) state that residents withdraw themselves from public spaces because of the disorder that compromises perceived neighborhood safety.

#### **2.3.5.4 Defensible Space Theory**

Theory of Defensible Space (1982) by Oscar Newman claims that the design of physical space has an impact on how inhabitants and visitors interact with it, particularly in urban settings. When residents of a building may extend their control into a place within or outside of the structure, it is termed defensible space.

He defines “defensible space” as “a space that has territorial markers, opportunities for surveillance, and clear indications of activity and ownership.” (Newman, 1982, p.70)

*Territorial features*- include visible boundaries such as walls, hedges, and fences to create private yards; and privatization of public services so that residents must take greater personal responsibility and ownership.

*Common surveillance features*- include external lighting; windows and doors that open directly to the outside of first-floor dwellings; mailboxes located in open and well-trafficked areas; and well-maintained courtyards, playgrounds, and walkways that increase pedestrian activity and casual surveillance.

*Common symbolic barriers*- include picnic tables, swings, flowers, and lawn furniture—any symbol that conveys that the owner of the property is actively involved in using and maintaining the property.

These features improve the safety in the neighborhood, thus enabling the use of public spaces.

## **2.4 Factors Affecting the Use of Public Spaces in High-rise Estates**

For high-rise buildings, public spaces can be considered as various forms of common indoor and outdoor areas. Examples of indoor spaces include the entrance to the building (a lobby or a short way to the elevators and staircases), the hallways, the elevators and examples of outdoor open spaces include resting areas with benches, playgrounds, car parks, etc. (Lehrer & March, 2019). One of the challenges of tall buildings is the conflict between creating and maintaining accessible spaces for all and expanding privatized spaces that limit access and activity. It shall be noted that high-rise buildings’ lower spaces may be clustered with physical barriers and isolated from the neighborhood as gated communities, or maybe integrated directly into the structure of the city depending on the design.

Furthermore, the clustering of tall buildings creates semi-private outdoor spaces for the residents of these buildings somehow limiting the use of these open spaces by strangers. Meanwhile, these spaces create buffer zones between residential blocks and their surrounding areas. Therefore, the greatest opportunity for access and exposure is offered by being a hub of activity, while having the quality of “defensible space” (Huang, 2006 as cited in Archea, 1977).

The factors affecting the use of public space have been mentioned and much more discussed in the previous section. Considering the high-rise buildings and their relationship with their surrounding environment, it is assumed that a change in the use of public spaces in high-rise urban estates is inevitable. In this section, the factors affecting the use of public spaces in high-rise housing areas in the literature are discussed.

#### **2.4.1 Floor Level Which Residents Occupy**

The relationship between the environment and individuals is affected by the floor level, which residents occupy.

The results of a height preference survey show that the proximity to the ground level makes it more preferable because of the comfort for children, and the lack of elevator dependency. On contrary, peace and solitude are seen as the advantages of the upper floors (Conway & Adam, 1977). Their statistical data also shows that more than 30% of floor choices of residents for a 24-story building were selected from floors 1 to 2, 15% from floors 3 to 5, and 20% or more from the 21st floor up to the 23rd floor (Conway & Adams, 1977). Choice of the floor depends on various reasons, but Cook and Morgan (1982) mention that “Living in a high-rise flat seems hazardous and stressful for certain vulnerable disadvantaged groups” (p. 846).

#### **2.4.1.1 Supervision of Children**

It is a factor affecting the choice of floor level which families with young children and the use of public space. It becomes more difficult in highly dense environments, and from the top floors of a high-rise building, supervision of children who are playing outside is more difficult (Gillis, 1977, as cited in Wallace 1952). Therefore, due to the problems of supervision, Kumove (1966) states that preschoolers who live in high-rises spend less time outside compared to their lower living counterparts, resulting in a decrease in social interaction.

In high-rise buildings, there are few opportunities for those with young children due to the lack of activities such as outdoor play and safety. According to Ginsberg and Churchman's (1984) research, parents of small children under the age of six years have the most unpleasant reactions to high-rise living. Conway and Adams (1977) state that children prefer being close to home while playing, but high-rise apartments' physical features provide long distances, thus enabling spaces for children's play at a certain amount of distance. At the same time, height increases the anxieties of families, especially mothers', and their concerns about the safety of their children. Therefore, families with children prefer houses with lower floors or gardens (Conway & Adams, 1977).

#### **2.4.2 Environmental Affordances**

Residents in public housing have fewer options for where they spend their time and, as a result, for the social experiences they have, and are related to the affordances they have.

##### **2.4.2.1 Design of Semi-private Spaces**

Newman (1982) argues that the design of semiprivate social spaces because of their characteristics of them are very often lacking in public residential houses. Coley et

al. (1997) contribute that semi-private social spaces are lacking in high-rise buildings because large buildings with relatively small external spaces result in a lack of private space outside individual dwellings.

Semiprivate spaces allow people to have a sense of ownership and territory, to control and care for the place, and to monitor what is happening. As Newman suggested in his Defensible Space Theory, and as Yancey (1971) asserted that the physical design of Pruitt-Igoe public housing project affected the sense of safety of people. The lack of semiprivate spaces was a problem that caused the issues of safety since it reduced the social interaction opportunities significantly, which is found in densely populated and underprivileged urban areas. As a result, there was a lack of neighborliness, a high level of apathy, and criminality. Because these factors affect the use of public space, the location and design of semi-private spaces have a relative influence on the use of near public spaces of high-rise estates.

Moreover, Coley et al. (1997) argue that open spaces between high-rise blocks are often unsupervised and unused and so they criticize external areas of high-rise buildings.

#### **2.4.2.2 Design of Physical Outdoor Environment**

Certain landscape elements in public outdoor spaces encourage individuals to communicate informally, which leads to social interaction (Huang, 2006). According to Coley and colleagues (1997), being satisfied with one's surroundings may lead to increased usage and enjoyment of outdoor places. As a result, landscaping, especially the presence of greenery in outdoor areas of housing estates affects the way how people use these spaces. The more residents use common open spaces, the more neighborliness and territoriality increase since it enhances the interaction between residents. Therefore, the design of elements in the high-rise housing's exterior areas becomes critical in the production of socially desirable living environments. The presence of a natural environment may increase the attraction of residents to a

shared open space, thereby resulting in more frequent communication. The healing aspects of nature may appeal to occupants of public housing in cities with limited options (Coley et al, 1997). In addition, in high-density residential neighborhoods, landscape elements and open spaces are significant in reducing perceptions of crowdedness (Rapoport, 1975).

#### **2.4.2.3 Lack of Opportunities**

According to Ginsberg and Churchman (1985), the lack of meeting places inside and outside the building is another problem within high-rise buildings. Casual interaction in public places in and around the building is discouraged by strong norms in high-rise buildings (Michelson, 1977, p.192). In Singapore; family residents express worries about high-rise living, mostly concerning limited neighborhood amenities in dense areas (Yuen et al.2006). The findings of Nguyen et al.'s study (2020) conclude that it is important to develop interventions to create opportunities and common spaces in buildings for social interaction amongst residents. The need for a common space close to the houses comes up with the frequent use of corridors for multiple purposes instead of the use of common spaces which are far away from the houses of residents. The rare use of common public spaces due to the distance also becomes a factor that decreases the sense of safety.

Furthermore, the lack of play opportunities in high-rise blocks is generally discussed by considering children who grow up in these buildings. There is a positive relationship between the playing opportunities of children and social contact between children and caregivers. If one of them increases, so does the other one. Due to the lack of space, as Coley et al. (1997) reveal that facilities for children's play are unsatisfactory at very high densities, social isolation in high-rises increases with less use of public spaces (Cooper Marcus & Sarkissian, 1986).

#### **2.4.2.4 Physical Barriers**

Gated communities enhance another layer of safety between public and private spaces by having shared and controlled access through limited entrances and sometimes access under the surveillance of security guards or cameras. The added level of protection imposed by apartment buildings further isolates people from public spaces. Rollwagen (2014) and Low (2004) suggest that the isolation of individuals from the rest of the area comes from the lifestyles of gated communities. Additionally, Blakely and Snyder (1997) also mention that constant reminder of the perceived dangers around the living environment reduces the sense of safety in outdoor open spaces. The presence of security in different forms such as physical barriers like gates, fences, or security personnel, all reminds outside risks unconsciously.

#### **2.4.3 Safety**

##### **2.4.3.1 Lack of Defensible Space**

Gifford (2007) states that high-rise apartment buildings have less defensive spatial properties. Recognizing strangers is more difficult so they move more easily, visibility is poor, and there are more hiding places. That is why having controlled access and the design of integration with the public open spaces change the fear of crime in high-rise buildings. In a survey of 29 medium- and high-rise residential areas in Europe, the lack of safety, architecture, and urbanism that promotes personalization and anonymity was highlighted as the problems for residents (Musterd & Van Kempen, 2005, p. 21). Personal crime and fear of crime change depending on building size by affecting the residents' use of space. Therefore, the size of common public areas in large buildings and the presence of more than one escape route have the effects of encouraging and increasing crime and vandalism (Newman & Franck, 1982). Huang (2006) emphasizes the importance of design in

creating defensible spaces and mentions that designing enclosed central courtyards within and between high-rise blocks creates defensible spaces. Meanwhile, if they maintain scenic spaces with the landscaping elements like fountains and sculptures, which have visual focal points, they support greater social interactions. On the other hand, Lowry (1990) points out that the lack of defensible space leads to the degradation of public space in high-rise estates.

Research shows that parents who raise young children in high-rise apartments are more likely than other parents to leave their children at home due to safety concerns and the difficulty of remote supervision (Kearns et al., 2012). Additionally, Kearns et al.'s (2012) study find out that poor area reputation is much more highlighted in high-rise buildings, and therefore, residents of high-rises because of feeling unsafe do not prefer the use of public spaces and walking alone after dark. Lehrer and March (2019) state that safety concerns limit the use of common spaces in high-rise housing estates and have led to the increase in the installation of cameras, security guards, and occasionally self-policing by residents. In other words, the number of gated communities has increased with the securitization of these estates in order to create defensible spaces through additional installations.

#### **2.4.4 Spatial and Physical Characteristics**

##### **2.4.4.1 Decrease in Social Interaction**

Proximity characteristics such as the density of people in a block, the number of units sharing a common entrance, and the configuration of plan schemes of floors are thought to be major determinants of social interaction success (Gehl, 1987). According to Glaeser and Sacerdote (2000), large apartment buildings minimize the distance between inhabitants while increasing the distance between residents and streets. As a result, residents who live closer together feel more connected to their neighbors. On the contrary, some argue that an uncontrolled level of privacy and involuntarily encounters decrease the social cohesion in the neighborhood and are



seen as negative effects of density and proximity because residents' social contact is reduced in high-density residential areas due to a lack of private space (Altman, 1977; Gifford, 2007; Thompson, 2018).

According to Kearns et al. (2012), the sense of community is poor among high-rise residents with decreased social cohesion and increased anti-social behaviors. Living in high-rise estates leads to less social interaction and social support networks, altering everyday life. Evans and others (2003) also reveal that residents are not capable of regulating their social interaction within high-rise environments, which results in social isolation. Successful high-rise housing public areas can create possibilities for residents to have considerable interaction, fostering a sense of neighborhood. The diversity, quality, accessibility, and visibility of public spaces can be considered fundamental design characteristics that influence social interaction. As a result, it is critical to think about how to build a community such that residents are encouraged to leave their homes and venture into the public realm.

#### **2.4.5 Segregation of Land Use**

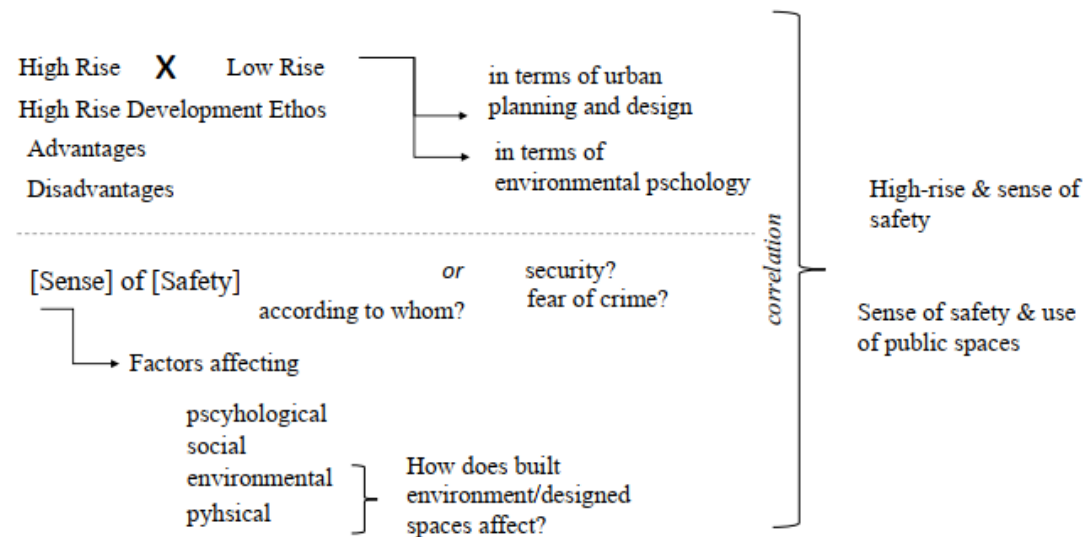
Jacobs (1961) concerns with the impacts of the removal of dense street networks and mix-use areas, which provides social control, in the 'rebuilt parts of cities'. She argues the effects of land use segregation into large blocks which result in reduced pedestrian traffic, and circles of acquaintance and eliminated casual visual surveillance.

In regenerated urban areas, reducing or even removing mix-use functions and decreasing the density in street networks raise concerns about surveillance and so the safety of sidewalks (Jacobs, 1961). According to Jacobs (1961), the segregation of land use is a factor affecting the sense of safety due to the natural surveillance since it reduces pedestrian traffic and circles of acquaintance in public open spaces.

Considering that today, the newly built areas in cities are going towards high-rise, these results can be considered with high-rise residential estates.

### 2.5 Concluding Remarks

Before the initiation of the study, the notions of high-rise and sense of safety were discussed and defined. The motivation behind this thesis is to understand the relation between high-rise housing estates and the sense of safety in the public spaces of these housing environments. As CTBUH suggests the definition of high-rise changes depending on the context and proportion. In this thesis, a high-rise building is defined as a block that has higher than 7 stories, which is defined in the context of Turkey according to the regulations.



**Figure 2.** Development of the Notions and Relations

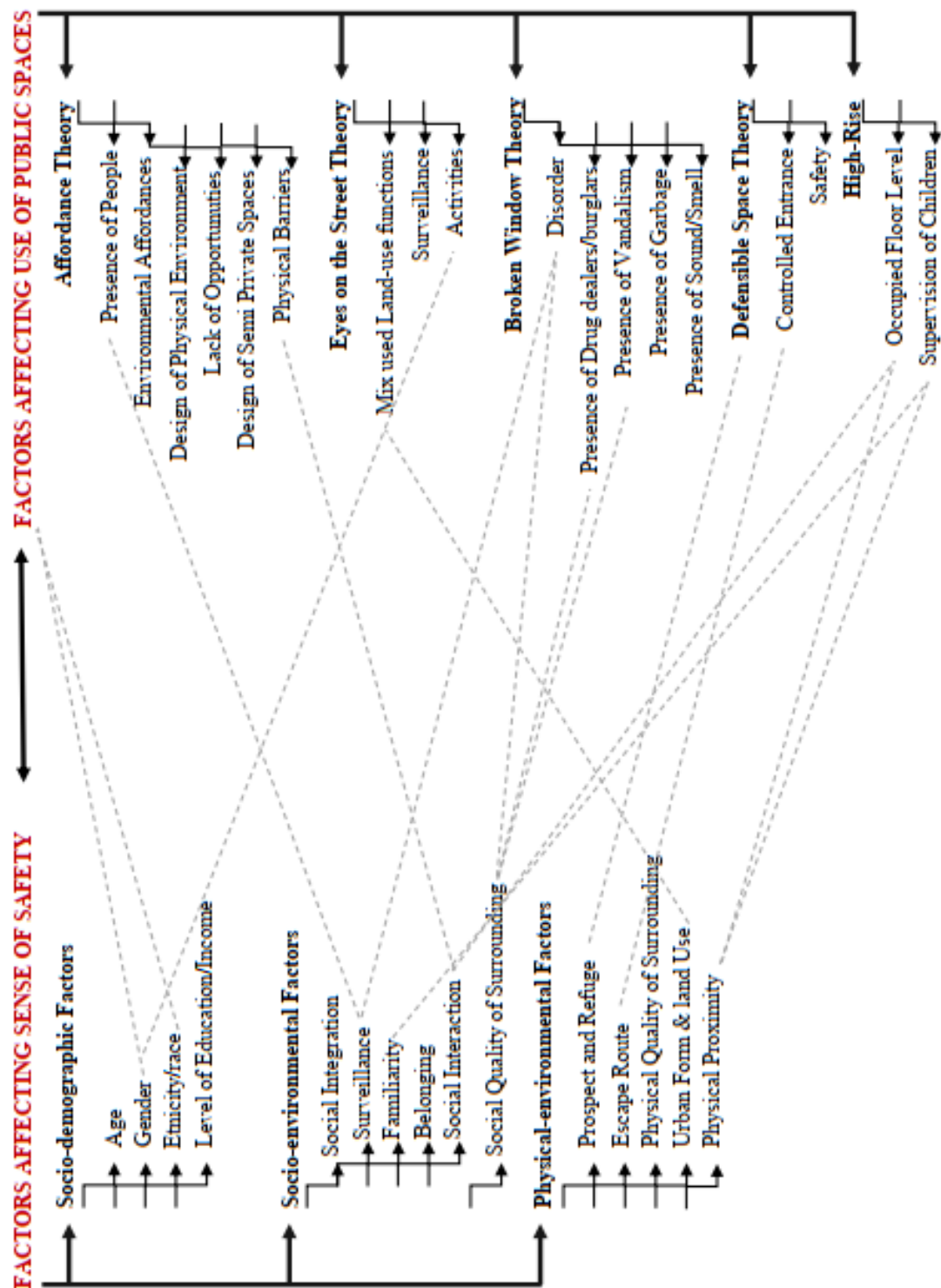
In the literature review, it is found that factors affecting the sense of safety can be categorized into three main factors: demographic factors, socio-environmental

factors, and physical environmental factors. Age, gender, ethnicity/race, and level of education/income are the factors affecting the sense of safety regarding a vulnerability in society. Vulnerable groups with elder people, women and children, and low-income groups are affected by the built environment in different ways, which change their perceptions. Social integration and the social quality of the neighborhood have a great impact on levels of sense of safety and the use of public spaces. As social integration decreases, the sense of safety is generally affected negatively. Physical environmental factors affecting the sense of safety include prospect and refuge, escape routes, physical quality of the environment, urban form and land use, and physical proximity.

Moreover, individuals' perceptions about the built environment shape their use of these spaces. Their use of public open spaces is dependent on the basis of theories of "Affordance", "Eyes on the Street", "Broken Window", and "Defensible Space" that emphasizes the presence of people, activities, opportunities, natural surveillance, social relations, and safety.

In high-rise housing estates, it is generally observed lack of affordances and weak relations with their surroundings in terms of urban design, which weakens social relations, safety, and use of public spaces. A high density of people and large building forms affect their environment as well due to the surveillance, familiarity, and supervision of children.

Therefore, in light of these criteria and explanations, the Ankara TOKI Kusunlar Mass Housing Project area is considered a high-rise housing estate and is an example of low-income high-rise housing implementation in Turkey. The method of the study will be discussed in the next chapter of the thesis.



**Figure 3.** Factors Affecting Sense of Safety and Use of Public Spaces in High-rise Housing Estates Derived from Literature Review

## **CHAPTER 3**

### **METHOD**

This chapter focuses on the method of the present research study. It consists of three parts. First, a general information is given about the “Social Affordable Housing” concept in the context of Turkey with the implementation of the Mass Housing Administration of Turkey (TOKI). Second, the focus is on the site selection with the spatial characteristics of the chosen high-rise housing estate in Ankara. Low-Income Implementation of Kusunlar TOKI is selected as a case for high-rise mass housing development. In the third part, the data collection process is discussed.

The author posed the following research questions:

- (1) To what extent do the women residents of high-rise mass housing estates perceive their public spaces safe? Whether they perceive some public spaces more safe? If yes, which public spaces receive higher (and lower) sense of safety scores?
- (2) Which physical environmental factors affect women residents’ sense of safety in the public spaces of high-rise mass housing estates?

To answer these research questions, the author conducted in-depth interviews in a selected case study area.

#### **3.1 A Social Housing Implementation in Turkey: TOKI**

As a housing policy for low-income and middle-income households, the concept of “Social Affordable Housing” has emerged as an important implementation in many countries. In the context of Turkey, the Mass Housing Development Administration of Turkey (TOKI) is the leader in social housing implementations. Its mission is to

assume a leading and supportive role in ensuring that everyone has adequate and livable housing in urban and rural areas.

A framework law, called The Mass Housing law (1984), defines the fundamental principles and gives direction to the housing problem in Turkey, especially in terms of organization and funding. For that purpose, in 1984, TOKI was established and it became an advantage, especially for the ones who are unable to own houses within the current economical conditions. In other words, the first target group of TOKI was low and middle-income families in order to provide social housing implementations (TOKI, 2019).

One can observe urban transformation projects in collaboration with TOKI across the country at a growing rate in many cities of Turkey.

One of the most criticized parts of social housing implementations of TOKI is social integration. Since they serve the vulnerable side of society, it is important to prevent social exclusion through planning and urban design. However, Gülcan (2020) mentions that, in Turkey, social houses are generally built out of the city center where the public lands are located because of financial concerns. Being outside of the city has a detrimental impact on social integration. In addition, some of them are constructed in areas where infrastructure is incomplete, thus provoking a sense of exclusion and causing problems.

### **3.2 Selection of the Site and Participants**

#### *Site Selection*

TOKI Kusunlar Project area is selected in the scope of this study. Considering the high-rise residential areas in Ankara, a choice was made between Karacaören TOKI and Kusunlar TOKI. The physical environmental conditions of Karacaören TOKI were relatively better. This character of Karacaören TOKI made this case quite distinct from many of the mass housing projects that are built for low-income people. In order to increase the generalizability of the findings, the author focused on

Kusunlar TOKI case – a high-rise housing area that is located in the periphery of the city, surrounded by barren lands.

Kusunlar TOKI Social Housing Project appeals to the lowest income group in Ankara. The residents of Kusunlar TOKI settled here as a consequence of the squatter housing transformation projects that have been ongoing in the city (mostly in around the citadel). Thus, it can be assumed that many of the residents of this area do not have the economic power to buy a house in Kusunlar TOKI. Most of them were forced to leave their former dwellings in squatter settlements so that these areas can be opened up for the accumulation of capital.

#### *Selection of the Participants*

Sense of safety changes depending on demographic inequalities, and gender is one of them (Bloobaum & Hunecke, 2005; Mehta, 2014; Rollwagen, 2014). In order to control and compare the results, it is focused on only women in the scope of this study. Focusing on one gender group provides a better understanding of the factors affecting the sense of safety by eliminating the differences in gender roles. More importantly, women (especially low-income women) can be considered the most significant users of public spaces. They rely highly on these places for socialization and increasing their level of economic self-sufficiency. In addition, it is known that if women have children, they may adopt the safety of their children as their own. Supervision of children in high-rise estates affects their sense of safety concerns (Gillis, 1977). Children's age and its relation to the sense of safety of women are also examined. Interviews were conducted with 45 women, all of whom were of different ages, with different numbers of children, and who lived in this neighborhood for different periods of time. They also live on different floors and blocks, so a general idea is collected for the whole neighborhood without concentrating on just one area. Women participants were selected haphazardly by using non-probability sampling techniques (both by using convenience sampling and snowball sampling techniques).

### **3.3 Low-income Mass Housing Implementations of TOKI: Ankara Kusunlar Case**

TOKI Kusunlar Project area is in the outer city of Ankara, which is approximately 12 km away from Mamak Town Center, away from urban areas. It is located in the South part of the city in Mamak and also close to the southern ring road. The selected suburban development is surrounded by vast open spaces (see Figure 8).

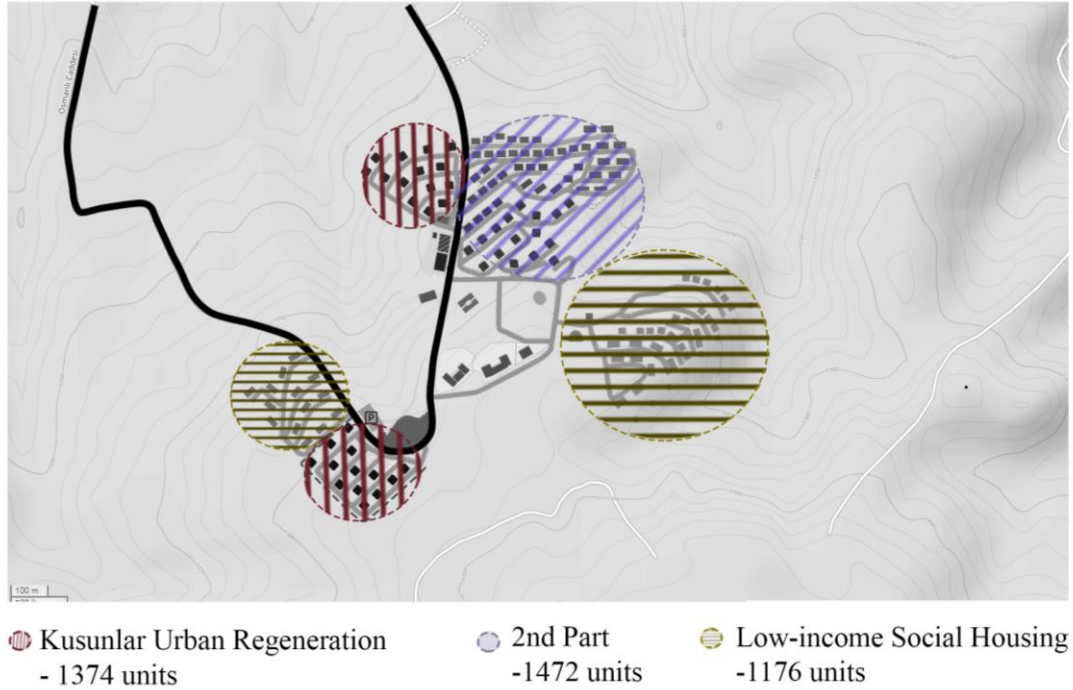
The Kusunlar project area is on the border of the Eastern and Southern Planning Regions; it is located within the Eastern Planning Region. East Planning Region, which includes the chosen TOKI project area, includes the least developed areas. The chosen area is newly developed and experiences a variety of problems related to transportation, infrastructure, and safety.

Although it was reserved as an area to be afforested in the 1/25000 scale Master Plan dated 2007, it was transformed into a "Medium Density Housing Development Area" with the revision made in 3 parcels belonging to TOKI in 2008. After the revision of the Master Plan, the Implementation Development Plans were prepared and the social housing project in the region was implemented (Savran, 2014). Savran (2014) argues that this is an approach that disrupts the integrity of the plan, and states that as a result of the revision, a higher amount of population was assigned to the region that was not foreseen in the upper-scale plan.





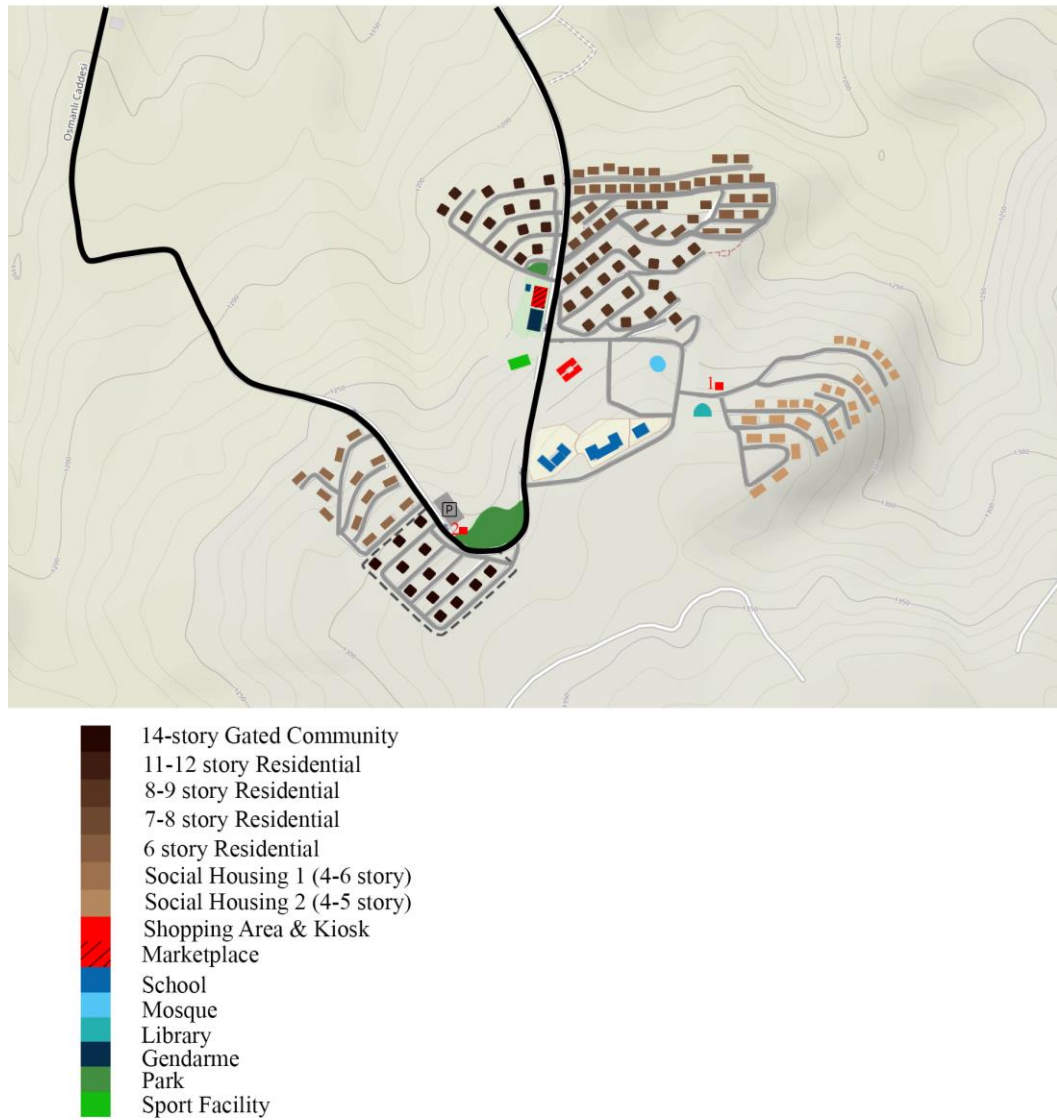
**Figure 4.** Location of the Study Area



**Figure 5.** The parts of the Study Area

In Kusunlar TOKI, one can see different stages (or parts) of development: (1) the 1st Part of the Kusunlar TOKI Urban Regeneration Project (part of which also contains a project area called Liderkent), (2) the 2nd Part of the development, and (3) Low-income Social Housing (see Figure 5). The number of mass housing units is 1374, 1472, and 1176 respectively, which can be seen in Figure 5. The heights of the apartment building vary from 6 floors to 14 floors in the region (see Figure 6).

In addition to the residential apartments, the chosen mass housing area includes a trade, a marketplace (bazaar), a religious facility area, education facilities (a kindergarten, and a primary and secondary school), and a socio-cultural facility area.



**Figure 6.** Diagram of the Land-use of The Study Area

Severcan (2019) mentions the physical characteristics of TOKI's mass housing estates throughout Turkey with the following points, and the study area's properties are in line with those properties. "Buildings are looked alike and are designed only for residential purposes; high-rise apartment buildings are arranged in superblocks separated by wide roads. While some apartments are clustered around small parks and playgrounds, others are grouped around large parking lots. Parks and

playgrounds, located together, are places with few standard play equipment and sitting furniture. They rarely contain outdoor gym equipment and none have sports fields. Supermarkets exist only in the outer-city mass housing developments,” (p.65-66)

However, different from some other TOKI projects that can be observed across the country, Mamak Kusunlar TOKI includes apartments in different heights.



**Figure 7.** Views from the Study Area



**1.** 7-8 story residential block area



**2.** A park between the blocks



**3.** 6 story residential block area



**4.** 14 story gated community (Liderkent)



**5.** Social Housing Area 1



**6.** 11-12 story residential block area



**7.** Social Housing Area 2



**8.** Mehmet Akif Ersoy Park



**9.** Shopping Area



**10.** 14-story gated community and park area



**11.** Marketplace and Gendarmerie Station



**12.** Social Housing Area 1, and Library



### **3.4 Data Collection**

This study is done based on a face-to-face questionnaire survey and follow-up in-depth face-to-face interviews (integrated with a mapping activity) with the target group of women who have been residing in the low-income high-rise housing estate of Kusunlar TOKI. Participants in face-to-face questionnaire survey and interviews were the same women. This process took place in open areas of the neighborhood, especially in the evening time, it was seen that women came out in front of their apartments to socialize. So, it was held with women sitting in front of their apartments, with women encountered in parks and gazebos. After the participants were interviewed, they called other neighbors they knew and had them interviewed as well. Some of the women did not want to participate because they were illiterate. Some found the issue of safety meaningless and mentioned that there were other issues to be discussed, such as management issues. However, it was not difficult to invite the participants to the study; they were generally very helpful when it is asked for their ideas for a research project. The time allotted to one participant was approximately 20 minutes. To ensure that they could talk about anything openly without fear, no audio was recorded, but notes were taken so that they could also see them.

The survey and interviews were anonymous and consisted of a few questions that asked participants their age, number of children, age of children, and year of residency in the neighborhood. In addition, the floor level they occupy was important regarding their proximity to public spaces. To understand their senses and attitudes, the author aimed to develop a simple instrument that is easily understood, so the Likert-scale ranging method was preferred as a data collection method. The Likert scale is a 3- or more-point ordinal scale to measure the attitudes of respondents by rating the degree to which they agree or disagree with a statement (Likert, 1932). In this study, a 5-point Likert scale was used; the scores refer to the following statements:

- 1: I feel not safe at all (least safe)
- 2: I feel not safe
- 3: I feel neither unsafe nor safe
- 4: I feel safe
- 5: I feel very safe (most safe)

That is why, during the interview process, an A3 satellite map of the study area from Yandex and an unlimited amount of labeling stickers from 1 to 5 were given to the participants. The author guided participants so that they could understand and interpret the map. They were asked to label and rate each location (public space in the high-rise housing environment) from 1 to 5 points to what extent they feel safe while using the open spaces in their living environment. In this way, they were asked to indicate how safe or unsafe they felt in each area that they have been using.



**Figure 8.** A3 satellite map of the study area from Yandex

In the next step, the participants were asked some further questions about these points. The interviews include questions about the respondents' feelings toward their surroundings and the built environment. First, open-ended questions were asked about the places where they feel safe (4-5 points). The questions were as follows: Why do you feel safe here? You gave 4 or 5 points to both of these areas, is it for the same reason or are there any different reasons why you call them both safe? Second, open-ended questions were asked about the places where they feel unsafe (1,2,3 point). Here, if the participant indicated something, the author asked participants to open and elaborate on what they meant. The aim was to obtain information about the area which people felt (and perceived) safe or unsafe and the reasons of their responses. It especially focused on the physical factors affecting the women residents' sense of safety in the open spaces. In order to understand the effect of this from their perspectives, if the participant mentioned only social problems and did not state anything about the physical environment, the following question was asked: You always talked about social problems, do you think that the physical environment does not affect whether you feel safe or not, or did you not mention the physical environment because social problems outweigh? Thence, an assessment of their level of sense of safety depending on different variables was done. Moreover, after talking about their ideas at first, they were asked the survey questions to go over, and information was obtained about the extent and factors affecting their sense of safety and use of public space.

The last step focused on women's assessment of their level of safety and comments considering future generations. Women respondents were asked to rate their overall sense of safety in the area on a five-point Likert scale from one (not safe at all) to five (very safe).

### **3.5 Data Analysis**

As it is mentioned above, the Likert Scale ranging was used for the data collection method which is an ordinal scale. Participants stated their responses with exact



numbers from 1 to 5. It cannot be assumed that even though there are numbers, the distance between the answers is the same assigned to that answer. For example, the senses of individuals may not be defined with exact numbers, sense of pain or sense of safety continuously increase or decrease in an interval.

As an alternative to the Likert scale, continuous measure scales that provide interval responses can be designed. Additionally, Sullivan and Artino (2013) state that “there has been a longstanding controversy regarding whether ordinal data converted to numbers, can be treated as interval data” (p.541).

Some believe that while analyzing Likert scale responses, descriptive statistics, such as means and standard deviations have unclear meanings. For that reason, for Likert scale data, experts have preferred to use the calculation of the median instead of the mean as the measure of central tendency. Parametric tests such as t-tests, analysis of variance, Pearson correlations, and regression require interval data, so experts similarly have preferred non-parametric tests such as the Spearman rho assessment, or the Mann-Whitney U test for analysis of Likert scale data (Jamieson, 2004). Numerous methodologists have cautioned that a small sample size implies low statistical power, that is, a high probability of Type II error (Cohen, 1970; Rossi, 1990). According to Siegel (1956), traditional parametric tests should not be used with extremely small samples. On contrary, another belief is that parametric tests give stronger statistical results in studies with fewer participants (smaller sample size; n value) and that the results of parametric tests and non-parametric tests give similar results in finding differences between groups (Sullivan & Artino, 2013).

In the analysis process of data, at first, the dataset found in a study is summarized and the data sample is described in the part of characteristics of participants, in other words, descriptive statistics, which helps to a better understanding of the data. A dataset consists of a distribution of scores or values, graphs, and tables are used to summarize the frequency of each possible value of a variable expressed as a percentage or number. Dataset's average or center is estimated with the measures of central tendency (three methods of mean, mode, and median). The total score of

sense of safety in different places was calculated by the addition of all the points given to one place, then divided by the total number of samples to find the mean score of sense of safety in this place since the number of samples of each place changed. Thus, the difference between the places can be discussed. The scoring rate of the participants was taken into account.

Second, motivation is understanding the relationship between different variables and sense of safety. The statistical relationship between two continuous variables or the association between variables of interest is measured by the method of Pearson's correlation test which gives information about the direction and magnitude of the correlation. In the scope of the study, the correlation between floor level which residents occupy and sense of safety, the correlation between age of women's children and sense of safety, and the correlation between age of women and sense of safety were explored, arguing that sense of safety changes depending on these factors. The correlation measurement was calculated with 45 women and it can be accepted as a study with small sample size that tests the hypothesis.

$$-1 < r < 1$$

The correlation coefficient ( $r$ ) is defined within the range of -1 and +1. A positive relationship is interpreted in the values between 0 and 1, whereas a negative relationship is interpreted in the values between 0 and -1. In the positive relationship, two variables are proportional and if one of them increases/decreases, the other one operates in the same way. In the negative relationship, two variables are inversely proportional, and if one of them increases, the other one decreases. There does not exist a relationship and the two variables are independent in the case of the coefficient value being 0. The degree of a correlation and its interpretation are seen below in Table 1:

**Table 1.** The correlation coefficient (r) and its interpretation

The magnitude of the correlation coefficient	The degree of the correlation between two datasets
$r < 0.2$	no relation or very weak relation
$0.2 < r < 0.39$	weak relation
$0.40 < r < 0.59$	moderate relation
$0.60 < r < 0.79$	strong relation
$0.80 < r$	very strong relation

Another method of analysis is the two-tailed t-test, which hinges on hypothesis testing (P-Value approach). The extent to of two factors move together is measured with a correlation test while *t*-tests focus on only one factor by comparing means in different samples.

Hayes (2022) explains two-tailed test methods in these words, “a method in which the critical area of a distribution is two-sided and tests whether a sample is greater or less than a certain range of values. It is used in null hypothesis testing and testing for statistical significance. If the sample being tested falls into either of the critical areas, the alternative hypothesis is accepted instead of the null hypothesis” (parag.1, as cited in San Jose State University)

A p-value (probability value) describes the level of statistical significance that is expressed between zero and one. The larger the p-value, the weaker the evidence for rejecting the null hypothesis.

The research question needs to be articulated before starting this process and it is converted into null and alternative hypotheses.

*The null hypothesis,  $H_0$  is a statement of “no difference,” “no association,” or “no treatment effect.”*

*The alternative hypothesis,  $H_a$  is a statement of “difference,” “association,” or “treatment effect.”*

$H_0$  is assumed to be true until proven otherwise. However,  $H_a$  is the hypothesis that the researcher wants to strengthen.

Hypothesis testing was used in order to compare the results of the two groups. In the scope of this study, two comparisons were made. The definition of a high-rise building in the context of Turkey is a building that is higher than 7 floors (Turkish Regulation Concerning Fire Protection of Buildings (2020, p.5247). So, the first one is about determining the difference in the values of the sense of safety between the women residents who live on up to 7 floors and the women residents who live on above 7 floors.

The other one compares the results of the sense of safety of women residents who have children aged between 0-12 and above 12. Due to child development, attention is drawn to women who have children between the ages of 0-3, but the number of samples in the interviews was not enough. For this reason, the range of age of children has been determined according to the age group depending on education level.

In the scope of this thesis study, hypotheses of comparison of two data sets are as below:

*First Hypothesis:*

Null hypothesis ( $H_0$ ): The mean sense of safety of women who live on up to 8 floors and the mean sense of safety of women who live on above 7 floors do not change depending on the occupied floor.

The alternative hypothesis ( $H_a$ ): The mean sense of safety of women who live on up to 8 floors is higher than the mean sense of safety the women who live on above 7 floors.

*Second Hypothesis:*

Null hypothesis ( $H_0$ ): The mean sense of safety of women who have children aged between 0-12 and the mean sense of safety of women who have children aged above 12 do not change depending on the age of children.

The alternative hypothesis ( $H_a$ ): The mean sense of safety of women who have children aged between 0-12 is lower than the women who have children aged above 12.

The program Microsoft Excel is used in the calculations of values of the tests. It shall be noted that a significance threshold for the P-Value in this study is taken as 0.05. While interpreting results, if P-Value between two data set is higher than 0.05, it means that there is no or weak relationship between the two datasets. However, if the opposite is the case for P-Value, the two datasets are associated with a strong relation.

A dataset with more observations, in other words, a greater number of samples, would have resulted in a different conclusion. A statistically significant result cannot validate the research hypothesis (as it implies 100% certainty). A slight probability of 5% or less than 5% that the results occurred by chance exists, which means that the null hypothesis was correct. Therefore, the results “provide support for” or “give evidence for” the research hypothesis (McLeod, 2019).

Besides the analysis of the correlation between variables, to understand how women’s sense of safety changed (negatively/positively) the responses to the open-ended questions were content analyzed. To this end, the author began by reviewing the data closely. Segments of text were coded and then grouped into similar subjects, which were later grouped into larger categories depending on the factors affecting the sense of safety and use of public spaces, which are discussed in the literature review. To increase the validity of the results, these factors were compared with the survey responses.



## **CHAPTER 4**

### **RESULTS**

This chapter presents the results of the study. In the first part, general statistical information of the research about the socio-demographic properties of participants and their sense of safety scores are presented. Thereafter, the correlation between different variables and sense of safety of women in mass housing estates has been illustrated in detail.

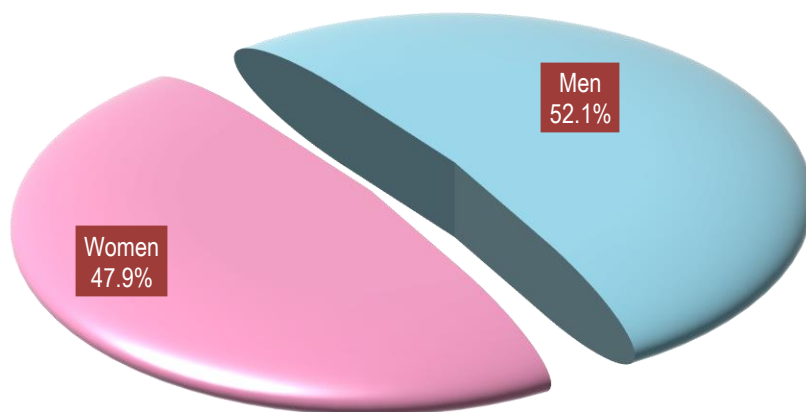
#### **4.1 Characteristics of the Participants**

Socio-demographic properties of the participants have an effect on their sense of safety in their environment (Bennett et al., 2007; Byrne & Wolch, 2009; Garafalo, 1981). Studies highlight socio-demographic inequalities in the perception of safety as mentioned before. Age (Hale, 1996; Mehta, 2014), gender (Bloobaum & Hunecke, 2005; Rollwagen, 2014), ethnicity and race (Liska et al., 1982), and level of education and income (Sundeen & Mathieu, 1976) have effects on individual's sense of safety. Information about the population in the area and then the participants are given in the following part.

According to the statistical information obtained from Zirvekent Neighborhood Headmanship (muhtar of the Kusunlar TOKI), 3111 females and 3390 males were registered in the region. The total population of the area was 6501 people. While men constituted 52.15 percent of the population, women constituted 47.81 percent (Figure 9).

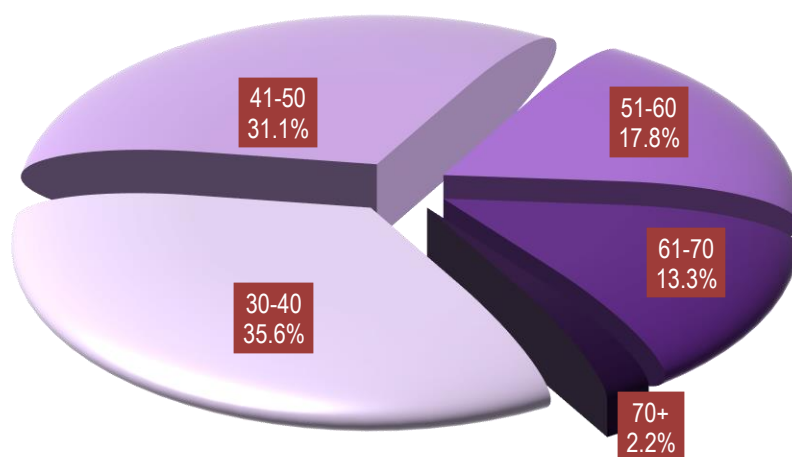
Immigrants consisted of about 10% of the population. The Headmen of the region stated that there is mostly migration from Arab countries to the region. There exist

different ethnicity and racial groups such as Kyrgyz, Afghan, Arab and Black groups in the region.



**Figure 9.** Percentages of Male and Female Population in the Region

This study represents 1.45% of the women population ( $N=3111$ ) in this region. The mean age of women participants was 46.69 ( $SD=11.07$ ). The age range of women was from 30 to 71. 35.6% of the participants were 30-40 years old, 31.1% were 41-50 years old, 17.8% were 51-60 years old, 13.3% were 61-70 years old, and 2.2% were older than 70 years.

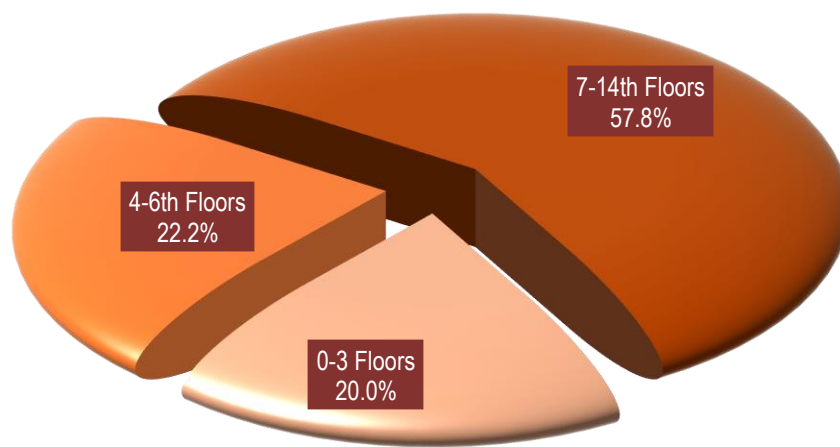


**Figure 10.** Distribution of the Participants' Ages



While the number of high-rise blocks is higher than the low-rise blocks in the region, the occupied floor level of participants changed from the ground (zero) level to the maximum 14<sup>th</sup> floor, but the median of occupied floor level was 7th floor.

More than half of the participants occupied the 7th floor or higher than the 7th floor. In other words, 57.8% of the participants occupied floors that are considered high according to the definition of a high-rise in Turkish Regulations. The distribution of participants' floor levels which they occupied can be seen in Figure 11.



**Figure 11.** Distribution of the Participants' Floor levels which they occupied

The population in Kusunlar TOKI, a low-income group who moved to this area in the context of squatter housing regeneration projects of the government, received their flats as of May 2013. Therefore, by the time this study was conducted, the year of residency for most of the participants was 9 years, but the mean year of residency of participants was 7.24 ( $SD=2.33$ ).

Moreover, while some women had no children ( $n=3$ ), the maximum number of children they had was 5 ( $n=1$ ), and the median number of children that the participants had was 2. The mean age of children was 17.86 ( $SD=9.76$ ).

The summary of descriptive statistics; the number of samples(n), mean/median (M) depending on the sub-group variables, and their standard deviations( SD) can be seen in Table 2.

**Table 2.** Descriptive statistics: Demographic characteristics of research participants

Women (N=3111)				
	n	M (SD)	min.	max.
Age	45	46.69 (11.07)		
Occupied Floor level	45	7	0	14
Number of Children	45	2	0	5
Age of Children		17.78 (9.76)		
Years of Residency	45	7.24 (2.33)		

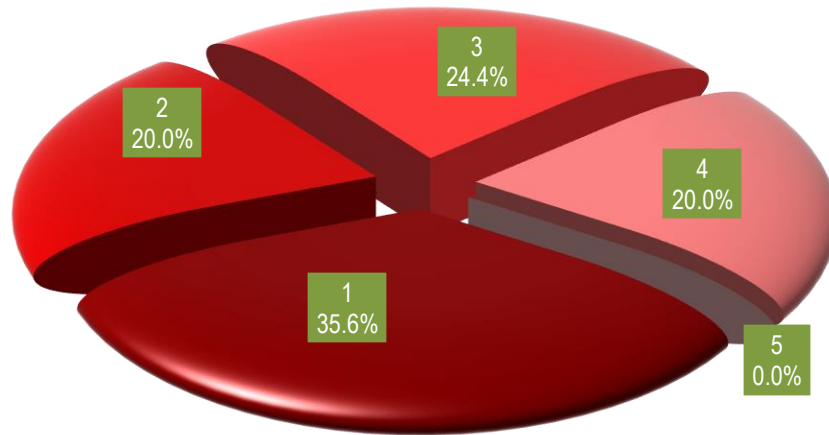
## 4.2 Sense of Safety in Kusunlar TOKI

The overall score of mean sense of safety of women who lived in Kusunlar TOKI area was 2.33 ( $SD=1.17$ ) out of 5 (Table 3.). It means that the majority of the women in this interview found the area not safe.

While none of the participants gave 5 points, which refers to “I feel very safe in the area”, 35.6% of them gave 1 point, which refers to “I feel not safe at all” (Figure 12.)

**Table 3.** Mean sense of safety scores of women in Kusunlar TOKI mass housing area

Women (N=3111)		
	n	M (SD)
Overall Sense of Safety	45	2.33 (1.17)



**Figure 12.** Percentages of participants' sense of safety scores in the mass housing estate of Kusunlar TOKI

The sense of safety from the perspective of women was very low in the neighborhood ( $M=2.33$ ,  $SD=1.17$ ,  $n=45$ ) and they were generally not satisfied because of this reason. One woman expressed her feeling about her neighborhood in these words:

“There is nothing to rate here. Not a place to live for our children. If we could afford it, believe me, I wouldn't stay here for a second. But how will you take it, how will you go? My daughter just got married, it was very good for her.”  
(Subject 18, age 42, occupied floor level 10)

While the mean sense of safety score was 2.33 ( $SD=1.17$ ), the scores they gave varied according to the regions. Some people rated an area high in terms of feeling safe, while others gave it a low score. Some people rated some regions, while others did not refer to those regions at all. It shall be noted that they did not draw attention to a specific point, they interpreted it regionally. Therefore, these areas are divided into 16 categories.

The total score of sense of safety in mentioned area by participants and their percentages over the total score of sense of safety are given below, in Table 5. The number of samples, in other words, the frequency of mention and ranking of each

area is different. It would be misleading to evaluate by looking only at percentages. Therefore, the ratio between the number of samples and the score of the sense of safety should be considered while interpreting results. Additionally, the Likert scales given by participants to the different areas can be seen in Table 4 as well.

The total score of sense of safety of the mosque is the highest with a mean of 4.75, but only 8.89% of the participants rated the mosque (n=4). This means that it is not enough to evaluate this area as the safest place. The place with the 2nd highest mean sense of safety score with 4.33 points is the 14-story gated community area, which is known as Liderkent, and 15 people have rated this score. In other words, 33.33% of the participants found Liderkent as a safe place. The marketplace follows the Liderkent, with a mean sense of safety score of 4.07 and 33.33 % of participants in the same ratio as Liderkent (n=15). This shows that Liderkent was found safer than the marketplace.

**Table 4.** Likert Scale Ranging Values of Different Regions

	1	2	3	4	5
14-story gated community			3	4	8
11-story residential area	1	3	5	5	3
8-9 story residential area		2	4	1	2
7-8 story residential area		2	2	4	1
6-story residential area (pink blocks)	1	2	3	5	3
Social housing area 1	32				
Social housing area 2	26	1			
Market place		2	1	6	6
Shopping area	13	1	2	4	
Mehmet Akif Ersoy Park		2	2	2	
Mosque				1	3
School Area				5	
Kiosk 1	1				
Kiosk 2	1		1		
Library	1				
Streets	17	4			
Parks between blocks	3	8	5		2

**Table 5.** Sense of safety scores of women in different areas of TOKI mass housing area

	<b>n</b>	<b>%</b>	<b>Total Score of Sense of Safety</b>	<b>Mean Score of Safety</b>
14-story Gated Community	15	33.33	65	4.33
11-story Residential Blocks	17	37.78	57	3.35
8-9 Residential Blocks	9	20.00	30	3.33
7-8 story Residential Blocks	9	20.00	31	3.44
6 story Residential Blocks	15	33.33	51	3.40
Social Housing Area 1	32	71.11	32	1.00
Social Housing Area 2	27	60.00	28	1.04
Market place	15	33.33	61	4.07
Shopping Area	20	44.44	37	1.85
Mehmet Akif Ersoy Park	6	13.33	18	3.00
Mosque	4	8.89	19	4.75
School Area	5	11.11	20	4.00
Kiosk 1	1	2.22	1	1.00
Kiosk 2	2	4.44	4	2.00
Streets	21	46.67	25	1.19
Parks Between Blocks	18	40.00	44	2.44

On contrary, Kiosk 1, which is located at the entrance of social housing, and near the library, and Social Housing Area 1( have the lowest mean score of sense of safety with 1.00 points. However, a sample size of 1 does not represent validity for this result of Kiosk 1 (2.22%). Nevertheless, the top three areas with the highest number of samples were as follows; social housing area 1 (n=32), social housing area 2 (n=27), and streets (21) respectively. %71.11 of the participants have rated Social Housing 1 (n=32). It was the most rated area of the neighborhood and was found as the least safe place. It was followed by the Social Housing Area 2 and streets with the mean scores of 1.04, and 1.19 respectively. They were also claimed as unsafe areas. Thereafter, parks between the blocks (M=2.44, 40.00%, n=18) and shopping areas (M=1.85, 44.44%, n=20) were found as unsafe places in the neighborhood.

### 4.3 Variables of Women's Sense of Safety and Use of Open Public Spaces

Before the initiation of this study, it was assumed that there is a correlation between the age of women, the age of their children and occupied floor level, and their sense of safety. Their relationship is analyzed with the Hypothesis test and Pearson correlation method.

**Table 6.** Independent T-test (t) and Pearson Correlation Values

	P(T<=t)	r
Age of Women		0.25
Age of Children(0-12 vs. 12>)	0.000000037	0.29
Floor Level (0-7 vs. 7>)	0.000084	-0.18

Note. \* Statistically significant difference between the two variables if (p< .05).

\*\* Statistically not a significant difference between the two variables if (p> .05).

First, the relation between the age of women and the sense of safety is analyzed. The correlation coefficient is found 0.25. It is between the values of 0.2 and 0.39 ( $0.2 < r < 0.39$ ) which refers that the correlation is weak. There is also a positive relationship; as the age of the woman increased, the feeling of safety also increased.

Second, the relation between the age of children and the sense of safety is analyzed. As mentioned in the previous chapter, the sample size of the age group between 0-3 was not enough since the mean age of children is 17.78 ( $SD=9.76$ ). Therefore, the results for the age group of 0-12 and 12+ were compared.

*Null hypothesis ( $H_0$ ):* The mean sense of safety of women who have children aged between 0-12 and the mean sense of safety of women who have children aged above 12 do not change depending on the age of children.

*The alternative hypothesis ( $H_a$ ):* The mean sense of safety of women who have children aged between 0-12 is lower than the women who have children aged above 12.

The P-Value for these two datasets is 0.000000037, in other words,  $p < .05$ . There was a statistically significant difference between the sense of safety of women who have children in the age group 0-12 and above 12. Thus, the alternative hypothesis is accepted.

Moreover, the correlation coefficient is 0.29, which indicates that there is a weak relation, and the variables are proportional. As the age of children increased, women's sense of safety increased as well.

Third, the relation between the occupied floor level and the sense of safety is analyzed. The median occupied level of participants was 7 (min=0, max=14), and the mean sense of safety scores of the women who occupied levels 0-7 and above the 7<sup>th</sup> floor were compared.

*Null hypothesis ( $H_0$ ):* The mean sense of safety of women who live on up to 8 floors and the mean sense of safety of women who live on above 7 floors do not change depending on the occupied floor.

*The alternative hypothesis (H<sub>a</sub>):* The mean sense of safety of women who live on up to 8 floors is higher than the mean sense of safety the women who live on above 7 floors.

The P-Value for these two datasets is 0.000084, in other words,  $p < .05$ . The results of this study show that the alternative hypothesis is true.

Moreover, the correlation coefficient is -0.18 which indicates that there is a very weak relation where  $r < 0.2$ . There is a negative relationship between the increase in height and the sense of safety, two variables are inversely proportional. An increase in the occupation level reduced the sense of safety of women.

#### 4.3.1 Factors Affecting Use of Open Public Spaces in Project Area

Besides the factors affecting sense of safety, the aim is to understand which factors women care about when using open spaces and their importance.

**Table 7.** Factors Affecting Use of Public Open Spaces in the Neighborhood

Women (N=3111)		
	n	M (SD)
<i>Safety Concerns</i>	45	4.24 (1.05)
<i>Number of Trusted People who can help/supervise children</i>	45	4.20 (0.97)
<i>Care Taken by Neighbors to environment</i>	45	2.76 (1.26)
<i>Proximity to home</i>	45	3.80 (1.29)
<i>Lack of opportunities</i>	45	4.13 (1.04)



Amongst five factors, which can be seen in Table 7, the most influential factor affecting the use of open public spaces was pointed out as safety ( $M=4.24$ ,  $SD=1.05$ ). Findings reveal that safety-related concerns seriously affect women's use of open space in Kusunlar TOKI region. However, it cannot be said that physical properties do not affect the use of open spaces. Proximity to home ( $M=4.24$ ,  $SD=1.05$ ), lack of opportunities such as greenery, activities, and variable facilities ( $M=4.13$ ,  $SD=1.04$ ) also have a considerable effect on the use of public spaces in the neighborhood.

#### **4.3.2 Factors Affecting Sense of Safety in Kusunlar TOKI**

##### **4.3.2.1 Survey Results**

To examine the factors that affect the sense of safety of women and to understand to what extent and how these factors affect the sense of safety, 10 questions were asked to rate from 1 to 5 (where; 1: Not at all, 2: A little, 3: Partially, 4: Mostly, 5: Completely). The results as listed below in Table 8.

As it is the most frequently mentioned reason in the interviews, the presence of drug dealers and burglars is found as the most frightening reason which reduces the sense of safety ( $M=4.60$ ,  $SD=0.65$ ). Familiarity with people is found as the second reason that affects the sense of safety levels ( $M=4.44$ ,  $SD=0.81$ ).

In high-rise housing estates, the density of people is high which is a factor that comes as a consequence of the building size and it resulted in a decrease in the sense of safety ( $M=3.58$ ,  $SD=1.31$ ). However, when the effect of building form on the sense of safety is directly asked, participants found it as the least contributing factor affecting the sense of safety ( $M=2.71$ ,  $SD=1.01$ ).

All in all, the findings show that socio-environmental factors, social quality of the neighborhood and familiarity between neighbors have a strong effect on the sense of safety of women who reside in Kusunlar TOKI. Increase in social disorder results in

a decrease in sense of safety. Meanwhile, an increase in familiarity results in an increase in the levels of sense of safety.

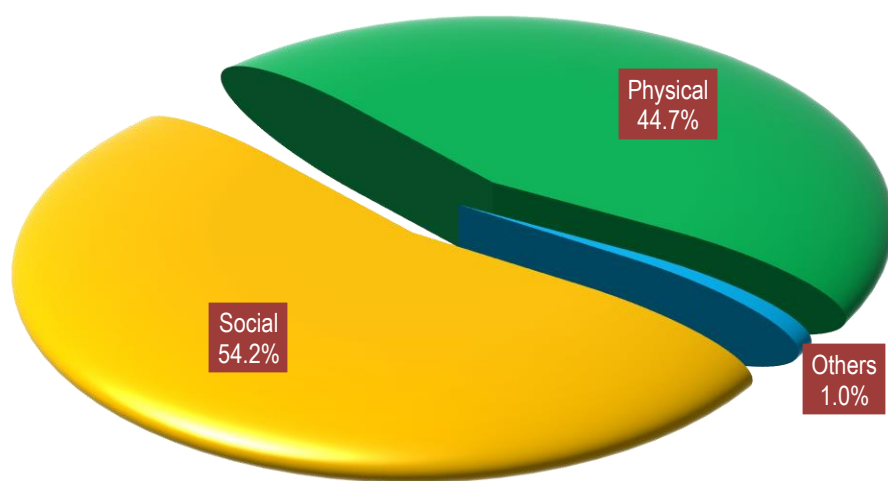
**Table 8.** Reasons for Feeling Unsafe in the Neighborhood

<b>Women (N=3111)</b>		
	<b>n</b>	<b>M (SD)</b>
Absence of people	45	3.33 (1.35)
Decrease in Familiar People	45	4.44 (0.81)
Decrease in Social Interaction	45	2.60 (1.37)
High Density of People	45	3.58 (1.31)
Presence of Drug Dealers/Burglars	45	4.60 (0.65)
Presence of Physical Disorder	45	2.80 (0.97)
Lack of Lighting At Night	45	2.76 (1.43)
Lack of Well Designed Greenery/Playgrounds	45	2.96 (1.00)
Building Form	45	2.71 (1.01)
Occupied Floor Level	45	3.33 (1.11)

#### **4.3.2.2 Results from the Interviews with the Women Participants**

Neighborhoods are defined as “social constructions named and bounded differently by different individuals” (Lee et al., 1994). In line with this definition, it is noted that residents usually consider social relationship ties while defining their neighborhood rather than its physical qualities such as form (Burton & Price-Spratlen, 1999). In this study, it is observed that women also define their sense of safety in the

neighborhood by the level of social relationships at a higher rate than physical qualities. Socio-environmental factors affecting the sense of safety were mentioned in the percent of 54.2, while physical factors affecting the sense of safety were mentioned in the percent of 44.7.



**Figure 13.** Factors Affecting Sense of Safety of Participants'

The interview results revealed that numerous factors negatively influenced women's sense of safety in the open spaces of the mass housing estate. The frequency and percentages of mentioning vary, but the factors listed in Table 9 were mentioned as factors affecting the sense of safety by the participant, albeit slightly.

**Table 9.** Percentages of Mentioned factors affecting women's sense of safety

	<b>n</b>	<b>p</b>	<b>%</b>
Social Surveillance	32	0.11	10.85
Familiarity	28	0.09	9.49
Belonging	12	0.04	4.07
Social Interaction	10	0.03	3.39
The Social Quality of the Surrounding	78	0.26	26.44
Prospect and Refuge	10	0.03	3.39
Escape Route	4	0.01	1.36
Quality of physical surrounding	9	0.03	3.05
Urban form and Land use	3	0.01	1.02
Physical proximity	24	0.08	8.14
Supervision of children	21	0.07	7.12
Design of semiprivate spaces	8	0.03	2.71
Design of Physical Outdoor Environment	22	0.07	7.46
Lack of Opportunities	12	0.04	4.07
Physical Barriers	19	0.06	6.44
Others	3	0.01	1.02

**Table 10.** Percentages of Mentioned factors affecting women's sense of safety depend on the women who live on up to 8 floors or who live on above 7 floors

	<b>Low-rise (n)</b>	<b>p (%)</b>	<b>High-rise(n)</b>	<b>p (%)</b>
Social Surveillance	11	34.38	21	65.63
Familiarity	13	46.43	15	53.57
Belonging	6	50.00	6	50.00
Social Interaction	4	40.00	6	60.00
The Social Quality of Surrounding	30	38.46	48	61.54
Prospect and Refuge	4	40.00	6	60.00
Escape Route	1	25.00	3	75.00
Quality of Pyhsical Surrounding	3	33.33	6	66.67
Urban form and Land Use	0	0.00	3	100.00
Physical Proximity	9	37.50	15	62.50
Supervision of Children	9	42.86	12	57.14
Design of Semi-private Spaces	3	37.50	5	62.50
Design of Physical Outdoor Environment	13	59.09	9	40.91
Lack of Opportunities	10	83.33	2	16.67
Physical Barriers	9	47.37	10	52.63
Others	2	66.67	1	33.33

Quality of the surrounding in terms of social features was the most influential one with a percentage of 26.44 (n=78). Many researchers (Austin et al, 2002; Jiang et al., 2018; Wilson & Kelling, 1982) state that the sense of safety of women residents' were influenced negatively by disorder, in other words, incivilities in the environment. However, with the categorization of incivilities as "disorderly physical surrounding" and "disruptive social behavior" (Nasar & Jones, 1997; LaGrange et al., 1992), results show that disruptive social behavior poses a more significant problem than "disorderly physical surrounding". Disruptive social behavior identified with the presence of gangs, prostitution, street beggars and substance abuse, drug use, and stray dogs in public spaces define as social ones (Nasar & Jones, 1997; LaGrange et al., 1992), and all of these disorders were stated as the factors affecting residents' sense of safety in Kusunlar TOKI mass housing estate. For example, in the interviews, when asked about the reason why they felt not safe at all in their housing estate, a woman responded:

"In the area where there is social housing when it's evening, a drunkard comes, other people come, you don't know. There are a lot of people from a wide variety of places. There are also *some other people* [emphasis added], there are people who use drugs, there are also prostitutes, excuse me, there are people who rent houses and use this place. Some use drugs. That's why we call it unsafe. For example, he uses drugs and gets on the bus. We saw it this year too. We got him off the bus. You get on that bus smartly and get off crazy. We are happy inside the house, but we feel it when we go out. When we go out, we get scared of those kinds of people." (Subject 11, age 40, occupied floor level 6)

The fact that the environment is physically disordered (3.05%, n=9) was often associated with these people who have disruptive social behaviors. It is expressed as:

“A: This place wasn't this dirty until 5 years ago. Our building is good, but I cannot say it is completely safe.

B: What do you mean by dirty?

A: People... nasty, unreliable. They fight, they swear, they make trouble. As they are dirty themselves, they also pollute the environment, harm them and throw their garbage away. They're breaking the order.” (Subject 26, age 49, occupied floor level 7)

As Wilson and Kelling (1982) state, mentioned disorders in the neighborhood (presence of drug dealers, prostitutes, garbage, sounds) had a negative effect on the sense of safety of women. Interviews also support the view that the sensory experience of the public space is affected by the factors such as noises, sounds, other people, and activities (Rapoport, 1990; Whyte, 1980). Shouting and swearing people were some of the indicators that make people feel unsafe in their living environment. In support of this statement, another woman also added:

“A: How do you feel walking in open spaces and streets?

B: There is a madman, there is a thief... We are afraid. He travels here every day. We leave immediately by looking at the ground without looking into his eyes. Or he curses and shouts.

A: Well, is there anything that prevents you from walking at night, is lighting enough?

B: People. Otherwise, there is lighting, it is good. We used to sit outside. Now you can't go out.” (Subject 5, age 35, occupied floor level 7)

The second most mentioned point contributing to women's sense of safety was social surveillance with a ratio of 10.85% (n=32). This result supports Jacobs's (1961) and

Newman's (1972) argument that surveillance affects people's sense of safety and the "eyes on the street" increase their sense of safety. In this context, the presence of other people in places such as shopping areas, market place, headmen's offices, and bus stops creates a sense of safety against the possibility of a possible crime. In addition, the presence of a gendarme in that area appears as a factor that increases the sense of safety of women. Most women stated that the arrival of the gendarmerie in the region, the presence of the gendarmerie in the market place and the construction of a police station increased safety. The surveillance of security guards or cameras also has a significant effect on the sense of safety in the area.

"When we first came, there were a lot of naughty young people around the bazaar. They installed cameras around the market, they put the gendarmerie, and the gendarmerie walk around the streets. It became safer. The gendarmerie is around here 24 hours a day. Now the police station is under construction, and it will be a little more safer. But there are ... , there are those who sell weed." (Subject 26, age 49, occupied floor level 7)

The factor mentioned affecting the sense of safety of women in the third place is familiarity with 9.49 percent (n=28). A sense of safety is related to familiarity and social relations (Greene, 2003). Some women mentioned their relationships with other neighbors. As Jacobs (1961) states, the main function of city streets and sidewalks is to keep the city safe and to encourage its use for a variety of activities, it is observed that meeting with neighbors and sitting in front of the door on the street was a way of socializing for women. In particular, women gather outside at certain times, even though she is going to cook, she picks up her vegetables and picks them up while she's sitting outside. Familiarity was parallel with social interaction, and it reduced levels of fear in the near environment as several researchers argue (Skogan & Maxfield, 1981; Taylor et al. 1984). A woman mentions the importance of familiarity in these statements:



“I know people in our building and the next building. Therefore, this is the safest place. Our building has good neighborly relations, so we feel safer near our building. However, we would not know about other buildings. Some of them are good and some of them bad. It was very good when we first came. We would make our tea and coffee at night and sit until 2 am. We used to do something outside in the gazebo.” (Subject 21, age 45, occupied floor level 4)

Another one mention the change in the neighborhood and decrease in the familiar people:

“Better the devil you know. After 5 years, they gave it to unfamiliar people. That old order has been broken. *There are people from different ethnic groups* [emphasis added]. Nasty people! They give the houses to *the people from different ethnic groups* [emphasis added], they let them rent. Our building is in disarray. Those tall buildings were beautiful before. ... nasty people were not in our buildings. They were around, but not in our buildings. Now the house owners either sold it to unstable people or rented it out. They do not care if the tenant is good or bad. Too crowded, so unsafe. For example, they fight, argue, and disturb. We collect signatures for the removal of tenants from the building and give them to the site manager.” (Subject 31, age 55, occupied floor level 9)

Overall, these findings supported Ginsberg and Churchman’s (1984) as they indicate that higher density is a disadvantage for high-rises because of the existence of large numbers of unfamiliar people that makes the neighborhood less safe.

Moreover, familiarity, surveillance and escape route notions are in a nested state and parallel since the lack of surveillance and the presence of escape routes support the

coming of more unfamiliar people to certain parts. It is said that it affects the number of people who rent daily and enter the neighborhood for different purposes:

“It stays in the back. The person entering and leaving is a little different. Unknown people come and go. Prostitutes come in and out, and for other confidential business... Without entering the neighborhood, they can enter the lower road and exit immediately. If something happens, they can run away immediately. Nobody sees it, it's out of sight.” (Subject 41, age 32, occupied floor level 11)

On contrary, the other issue mentioned with at least a percentage of 1.02 was about religious factors, which are not included in the scope of this study. Quite a few participants (n=3) stated that they see the mosque as a safe place and this is entirely due to their personal religious beliefs.

Other notable issues mentioned were, respectively, physical proximity (8.14%, n=24), design of physical outdoor environment (7.46%, n=22), supervision of children (7.12%, n=21), and physical barriers (6.44%, n=19).

Women interpreted proximity in three meanings: proximity to home, proximity to other people, and proximity to the city. The most prominent point in terms of physical proximity was that people perceived their home/living areas as safer because it was closer to their home, so they often gave the highest score here, while rating the region. As Zahnow et al. (2021) state perceived risk in the home territory increases due to the close proximity to the people who are associated with a crime, resulting decrease in sense of safety. The physical proximity of the buildings and so being close to others, and unfamiliar people were one of the reasons that make women feel unsafe:

“A: Do you think the physical environment has an impact on your feeling of safety?

B: The buildings are fine. High-rise, open front. It is good to have an open space. For example, the buildings below are considered stuck, bottom-to-bottom. You go out to the balcony and look at the window of the building opposite. They ask, what are you looking at? The other person can also interfere with you.

A: Well, are there any nooks and crannies in the buildings that bother you?

B: No, there are no such places. It's nice to have the buildings spaced out, that's our only advantage.” (Subject 43 , age 71, occupied floor level 9)

As mentioned in the interviews, the design of a physical outdoor environment (7.46%, n=22) has an important role in the use of open public spaces and sense of safety. Many researchers suggest that greeneries and landscape elements encourage people positively (Huang, 2006; Coley et al, 1997), and open spaces are significant in reducing perceptions of crowdedness in high-density environments (Rapoport, 1975). Women mention the lack of well-designed green spaces to socialize, and playgrounds for children. The urban design, in terms of land-uses, streets, street elements, and landscaping affect the user’s sense of safety:

“Depending on the location, the physical environment also affects sense of safety. If it were nicer, if there were more places, it would be safer for us to go. If only the parks were beautifully designed. For example, they wrapped the tarpaulins up, it does not look very nice, look at those benches, and they nailed two wooden as a gazebo. It can be more appealing to the eye or create a space for young people to use. There should be walking paths, you cannot walk on the streets, and there are cars in the side streets.” (Subject 12, age 40, occupied floor level 9)

Considering women with children (n=42), supervision of children (7.12%, n=21) was a significant factor that decreases their sense of safety. Similar to the argument

of Valentine (1990), women's sense of safety was affected negatively considering their children vulnerable and incompetent. Some women stated that they do not find this neighborhood safe for their children because they think that the social environment will affect their children badly or that something will happen to them.

“A: I don't send the child to the market alone. 5 years old can't go anyway, I don't send the older ones either. I don't send them to the parks near the house either. How can I follow the child, and watch over them from home? Some allow them, their mother is watching from afar, but I cannot.

B: You are sitting on a high floor, not within sight. Well, if you could see the park from your home, if you lived on the lower floors and you could watch the children from the balcony, would you send them to the park alone?

A: Impossible. You know, if I go to talk on the phone at that moment, what if something happens to the child. No, these are not such safe places. You cannot leave them alone. Even to the parks between the blocks, I would not send the child alone. Even a man cannot go there alone.” (Subject 18, age 42, occupied floor level 10)

Moreover, it is found that physical barriers were important features that shape the sense of safety. The areas that have physical barriers such as gates, walls, and fences with controlled entrance, which also provides a defensible space, had a higher level of sense of safety. As mentioned before, see Table 5, the mean score of sense of safety of the 14-story gated community area, which is known as Liderkent, was the safest place mentioned ( $M=4.33$ , 33.33%). This place had not been rated below 3 points and had been rated highly. In the interviews, all participants commented on the physical barriers that surround the living environment. This result sympathizes with the study of Lehrer and March (2019) that reveals that in high-rise housing estates the idea of creating defensible spaces has led to an increase in the physical barriers such as the installation of cameras, and security guards. In addition, the result

supports the view of Blakely and Snyder (1997) who state that physical barriers reduce the sense of safety in outdoor open spaces, which are outside of the barriers while increasing the sense of safety in the semi-private areas of the gated community. A woman made a point about the importance of “defensible space” with surveillance, and controlled entrances as follows:

“Schools are safe; I don't think there will be a problem in schools since they are surrounded by walls and wires. There is a camera around it at some point. A wall surrounds Liderkent, there are security cameras inside and they are followed. It is safe since it is a closed-site, gated community. The administration has its own camera system. There is only one entrance and exit door to the site; it is controlled when entering and exiting from the inside. There are even cameras in the elevator.” (Subject 26, age 49, occupied floor level 7)

Furthermore, the relationship between the factors affecting the sense of safety and the height of the occupied floor level was emphasized. The frequency of the factors mentioned by the residents who live on the high floor and the frequency of the factors mentioned by the residents who live on the low floor can be seen in Table 10. Women living in high-rises generally emphasized socio-environmental and physical factors more while talking about the factors affecting their sense of safety.

Decrease in social surveillance (high-rise 65.63%), decrease in familiarity/increase in anonymity (high-rise 53.57%), and decrease in social interaction (high-rise 60.00%) are some of the socio-environmental disadvantages of high-rise buildings, meanwhile, an increase in view distance and physical proximity (high-rise 62.50%), decrease in the supervision of children (high-rise 57.14%), and the lack of design of semi-private spaces (high-rise 62.50%) are some of the physical environmental disadvantages of high-rise buildings. These attributes of high-rise buildings are more frequently highlighted by the women who live on above 7 floors.



## **CHAPTER 5**

### **CONCLUSION**

The increase in high-rise buildings (Yuen et al., 2006) and the mass housing in developing countries (Urban, 2012) are constituting an extremely critical part of the future city by posing different concerns. Little is known about the factors affecting the sense of safety and use of public open spaces in high-rise mass housing estates. This thesis aims to contribute to the design of safer mass housing environments in Turkey in two ways.

First, it provides a theoretical framework to understand how high-rise housing estates might affect the sense of safety and use of readily accessible public open spaces. To provide it, a comprehensive theoretical framework is presented. Factors affecting a sense of safety are categorized into three: socio-demographic factors, socio-environmental, and physical environmental factors. Later, public spaces and the parameters which define a well-designed public space are discussed with the theories affecting the use of public space.

Second, it questioned to what extent women's sense of safety is affected, in which places, and how and why it changed by focusing on the low-income mass housing area of TOKI, in Turkey. In this way, a study has been advanced specifically on women and the low-income group which both are seen as disadvantaged groups. The relations between the levels of sense of safety and the age of women and also the supervision of children are examined. The effect of increased occupy level due to the high-rises is discussed. While questioning the notion of the sense of safety, its effect on the use of public open space is also questioned. The thesis contributes to a quantitative evaluation of the relations.

## **5.1 Discussion of the Study Findings**

Sociodemographic factors of the age of women and the age of children of women were analyzed, in the literature review, it is found that they are related to the sense of safety, and it is important to understand their perceptions while evaluating the results in the context of high-rise environments. High-rise buildings may give some advantages and disadvantages to different age groups in terms of proximity, familiarity, supervision of children, and so on. Moreover, a physical factor of occupied floor level was analyzed considering the sense of safety which is the direct attribute of high-rise buildings.

### **5.1.1 Effect of Age of Women on Sense of Safety**

Findings show a proportional relationship between the age and the sense of safety of women (where  $0 < r$ ). The increase in the age of women resulted in an increase in the level of sense of safety. In literature, some studies show that the safety perceptions of elderly people do not go parallel with the younger people, supporting the result of this study. However, the results of this study do not support the view of some researchers (Brå, 2014; Mehta, 2014) claiming that older people usually tend to perceive areas and situations as less safe compared to younger ones, in other words, as the age increases, sense of safety decreases. On contrary, some (Bloobaum & Hunecke, 2005; Braungart et al., 1980; Clarke, 1984) claim that there is no linear correlation between age and crime fear, but the results showed that there is a correlation between the age of women and their level of sense of safety, although the relationship is weak.

### **5.1.2 Effect of Age of Children of Women on Sense of Safety**

There was a difference between the sense of safety of women who have children in the age group 0-12 or above 12 ( $t=0.000000037$ ,  $p<.05$ ). As Valentine (1990) stated



that women's anxiety and fears are parallel with their children while using public spaces since children are seen as vulnerable and incompetent. As the age of children decreased, women's sense of safety decreased as well. The results also sympathize with the argument of Gifford (2007) that high-rises located in crime-prone neighborhoods affect parents' sense of safety and parents living in such environments tend to keep their children indoors more. Women also stated in the interviews that it is not possible to leave children outside the park or bazaar alone because of safety concerns.

Additionally, amongst the participants, it is observed that as the age of the women increases, the age of their children also increases. This may be due to the fact that women's having children at younger ages is linked to their sense of safety since children are under their supervision. It may also explain why the sense of safety increases as women's age increases.

### **5.1.3 Effect of Floor Level That Residents Occupy on Sense of Safety**

It was assumed that the occupied floor of the residents affects women's sense of safety. The findings of the study revealed that there is a very weak negative correlation between the occupied floor level and the sense of safety of women ( $r = -0.18$ ). The ones who live above 7 floors feel less safe than the ones who live between 0-8 floors ( $t = 0.000084$ ,  $p < .05$ ). It also has an effect on the relationship between the environment and individuals, especially mothers.

As Gillis (1977) mentions from the top floors of a high-rise building, supervision of children who are playing outside is more difficult in highly dense environments. Cook and Morgan (1982) strengthen this argument by mentioning the vulnerable disadvantaged groups perceive living in a high-rise flat as hazardous and stressful.

In high-rise buildings, physical proximity becomes a problem enabling spaces for children's play at a certain amount of distance, so height increases the anxieties of families, especially mothers', and their concerns about the safety of their children

(Conway & Adams, 1977). Additionally, the question asked in the survey, “Do you think the floor level you occupied is a reason that affects your sense of safety when using the public space?” The results show that it affects the level of sense of safety at a moderate level ( $M= 3.33$ ,  $SD=1.11$ ).

## **5.2 Main Findings of Research**

The findings revealed that the overall sense of safety of women in the low-income high-rise housing estate of Kusunlar TOKI is severely low ( $M= 2.33$ ,  $SD=1.17$ ). In fact, one of the most affecting factors of the use of open public spaces was pointed out as safety concerns ( $M=4.24$ ,  $SD=1.05$ ) which contributes to the findings of Kearns et al. (2012) and Lehrer and March (2019) in high-rise estates.

This study contributed to the existing literature by showing that variables such as the age of women (Brå, 2014; Hale, 1996; Mehta, 2014), age of women’s children (Churchman, 1984; Conway & Adams, 1977), and occupied floor level (Cook & Morgan, 1982) had an impact on the sense of safety in high-rise mass housing estate.

While, a proportional correlation exists for both two variables; the age of women, the age of children, and the sense of safety, on contrary, the occupied level of women was indirectly proportional. It shall be noted that weak associations were observed, but this may be due to the small sample size ( $n=45$ ), so it cannot be claimed that there is no relationship between them.

Moreover, many socio-environmental factors including social quality of the environment (26.44%), social surveillance (10.85%), familiarity (9.49%), belonging (4.07%), and social interaction (3.39%), were mentioned in open-ended questions of the interviews as a factor affecting the sense of safety of women. Besides, physical proximity (8.14%), design of outdoor environment (7.46%), supervision of children (7.12%), physical barriers (6.44%), lack of opportunities (4.07%), prospect and refuge (3.39%), physical quality (3.05%), design of semi-private areas (2.71%),

escape route (1.36%), urban form and land-use (1.02%), and others (1.02%) were the physical environmental factors mentioned.

Survey results also show that the presence of drug dealers/burglars ( $M=4.60$ ,  $SD=0.65$ ), a decrease in familiar people ( $M=4.44$ ,  $SD=0.81$ ), absence of people ( $M=3.33$ ,  $SD=1.35$ ), and decrease in social interaction ( $M=2.60$ ,  $SD=1.37$ ) cause increase in levels of the sense of safety. As physical environmental factors, high density of people ( $M=3.58$ ,  $SD=1.31$ ), lack of a well-designed environment ( $M=2.96$ ,  $SD=1.00$ ), and lack of lighting at night ( $M=2.76$ ,  $SD=1.43$ ) also decrease the sense of safety. Occupied floor level ( $M=3.33$ ,  $SD=1.11$ ) and building form ( $M=2.71$ ,  $SD=1.01$ ) have an impact on the sense of safety. The results show that socio-environmental factors are dominant over physical environmental factors depending on the perceptions of women. Nevertheless, some of the mentioned socio-environmental factors, such as familiarity and social interaction, come as a consequence of the notion of the high-rise.

Results showed that the most significant factor affecting women's sense of safety in the area is the social quality of the physical environment. Heterogeneity of people, presence of people who are associated with a crime such as drug dealing, burglary, presence of a different group of race and ethnicity and people who behave disruptively by swearing and damaging the environment, all affect the sense of safety of women negatively. In line with the finding of Zahnow et al. (2021), living close to the people who are associated with a crime increased women's perceived crime risk and undermined their sense of safety while using open public spaces.

In this sense, this study sympathizes with many studies (LaGrange et al., 1992; Nasar & Jones, 1997; Osgood et al., 1996; Sampson & Raudenbush, 2004; Seymour et al., 2010) that reveal the negative effect of disorder in the neighborhood which is categorized as "disorderly physical surrounding" and "disruptive social behavior". Additionally, findings indicate that the claim of Foster et al (2014) on the sense of safety and the use of public spaces, based on Wilson and Kelling's theory (1982), is also valid in Kusunlar TOKI since the increase in disorder in the built environment

caused a decrease in the use of public spaces. Similarly, this study contributes to Ross and Mirowsky's (1999) statement, which is that residents withdraw themselves from public spaces because of the disorder that compromises perceived neighborhood safety. It is a crime-prone neighborhood, drug dealers, burglars and prostitutes exist, and then it is told that a woman was stabbed before, these are some examples mentioned as reasons for the reduced level of safety. Moreover, results support Rountree and Land's (1996) argument underlining the heterogeneity of the neighborhood in terms of race and age composition with the link between local conditions and decreased sense of safety which is caused by high levels of fear since the presence of different ethnic groups and also "young naughty boys" have often been mentioned as a reason for disrupting the order.

Familiarity is another important factor that shapes the sense of safety of women ( $M=4.44$ ,  $SD=0.81$ ). Findings indicate that the familiar neighbor criterion is one of the factors most related to the sense of safety depending on trust as Greene (2003) and Rollwagen (2014) claimed there is a positive relationship between the familiar neighbors and the sense of safety. High-rise mass housing estates have a disadvantage in familiarity due to the high-density people limiting social interaction. As a result, people who are unfamiliar make the area perceived as less safe, but it also revealed that residents who live closer together feel more connected to their neighbors, in line with the findings of Glaeser and Sacerdote (2000), it was observed that women generally made friends with people from the same building or the next building, so they found their near-home environment safer than the other places. As Ginsberg and Churchman (1984) categorized the main characteristics of a high-rise which are height and the number of people, the study suggests that a high density of people has an impact on the sense of safety ( $M=3.58$ ,  $SD=1.31$ ). In the high-density housing estate, women stated that they feel unsafe due to the lack of private areas and the proximity of unfamiliar people.

As it is discussed with gender roles that are assigned to women, supervision of children is one of the issues, considering their sense of safety and the use of open

public spaces, that has a significant role, especially in high-rise mass housing estates (Dunnett et. al., 2002; Lestan et al., 2014)

In line with the claims of Conway & Adams (1977), Gillis (1977) and Wallace (1952), women suggested that supervision of children who are playing outside is very difficult in highly dense environments and from the top floors of a high-rise building. This situation results in increased safety concerns affecting the use of open public spaces for children, supporting the studies of Kearns et al. (2012), that show parents who raise young children in high-rise apartments are more likely than other parents to leave their children at home due to safety concerns and the difficulty of supervision.

Contributing to Severcan's (2019) study, findings of this study also support that the way of TOKI's property-led redevelopment contributes to the growth of social problems in the neighborhood. Locating the residents of squatters in the mass housing estates is not enough by itself; the design of the physical environment needs to be considered to minimize social problems, especially in high-density high-rise housing estates.

It is beneficial to point out the following points:

1. High-rise residential areas should not be evaluated in a uniform typology. The study area in this research is a residential area with only residences, but there are also high-rise buildings on the scale of a single building, where residences and offices are intertwined, as well as commercial areas. In addition, there are site designs that appeal to higher income groups and provide all kinds of social facilities and landscaping. The sense of safety of women living in these areas will not be the same in this study area and the influencing factors will also change.
2. While women living in this area consider the presence of security cameras and the constant presence of police in the area as safe, the constant presence of police will not be perceived in the same way from the ones who do not live under these conditions.

The effects of these factors on the sense of safety should be investigated on different high-rise building typologies in further studies.

### **5.3 Limitations and Further Studies**

In the scope of this thesis, factors affecting the sense of safety of women and their use of open public spaces were studied, considering the demographic, socio-environmental, and physical environmental factors. While examining the correlations between demographic properties such as the age of women, the age of children, and physical environmental factors of occupied floor level, very weak or weak relations were found.

Cohen (1988) emphasizes that although the issue of deciding how large the effect size should be is one of the most difficult issues for researchers to decide, it is also one of the least thought of. In contrast, the effect size is difficult to estimate accurately, at least in research in the social sciences, due to insufficient information for the following reasons. These reasons are:

- a. Theories in the field of social sciences rarely give clues about the estimation of the effect size,
- b. The knowledge required for statistical power analysis is often insufficient in the research being conducted.

In order to overcome the difficulties arising from these shortcomings, Sawyer and Ball (1981) suggest that the effect size be estimated by making a preliminary study on a subset to be obtained from the population before the study, in order to make an accurate estimation of effect size for the researchers. Therefore, this thesis study does not represent the women population living in the entire area, which is one of the limitations of the study.

One of the important issues in the design phase of the research is to know what the required sample size should be in order to obtain the determined power level

(MacCallum et al., 1996). As the number of observations related to the researched subjects increase, the reliability of the data obtained from the sample will also increase. As a result of this increased reliability, the researcher can correctly reject the null hypothesis that is highly likely to be false. In this case, the increase in sample size affects the statistical power positively. Ideally, a researcher can reach the optimum sample size for his/her study by using alpha, effect size, and desired power level (Cashen & Geiger, 2004). While the probability of obtaining meaningful results in studies increases with large sample numbers, this probability decreases with smaller sample numbers. Because a larger sample allows for clearer estimates of target population parameters (Balkin & Sheperis, 2011).

As the sample size increases, the statistical power increases because the standard error will decrease. In studies with small sample sizes, although the effect size is actually large, the researcher may fail to reject the null hypothesis and fail to identify significant differences that exist. Conversely, in studies with large sample sizes, actually insignificant effects may be falsely found to be significant because the sample size is too large. Therefore, the optimum sample size should be studied (Mazen et al., 1987).

Due to the above-mentioned reasons, the small number of the sample group is seen as a limitation in this study. Some additional methods may need to be proposed to find correlations more profoundly in future studies.

Additionally, it has been revealed that the form of the building affects the sense of safety, but it is not known which form causes what. It is not known what participants mean when considering the form of the building.

Relationships between the sense of safety and the affecting factors could have been analyzed in a more detailed way, in other words, some factors could be quantified numerically. For example, a decrease or increase in familiarity could have been determined by the number of familiar people.

## **5.4 Contribution to Urban Design**

Since similar high-rise mass housing estates are still being constructed all over Turkey, the results of this study could guide urban planners and designers in their efforts to build more attractive and safer communities which are socially sustainable. Inclusivity of disadvantaged groups of children, women, and the elderly needs to be emphasized in high-rise housing estates and their near public spaces. An inclusive design approach is also essential for the coexistence of segments of different ethnic and racial groups. High-quality and well-designed open spaces with social amenities need to be provided by designers, and more emphasis needs to be put by planners on the issues of slum transformation projects and the planning of new rural development zones.

Many studies in the literature discuss the ways of designing safer neighborhoods considering disadvantaged groups such as children (Hillier, 2004; Nasar et al., 2015; Severcan, 2018). Importantly, designers need to consider ways to increase women's sense of safety in such environments with high densities. Decreasing the building height, improving the quality of open spaces, providing more opportunities such as greeneries, playgrounds, and shopping facilities, increasing the surveillance, and creating more defensible spaces are some of the strategies that may increase the sense of safety in the neighborhood based on the data obtained from women.

Here are some alternative strategies to reconsider on different scales that may affect the sense of safety while designing new environments. (see table 11.)



**Table 11.** Strategies to Build Safer Environment in Different Scales

SCALES	STRATEGIES
<b>DISTRICT</b>	<ul style="list-style-type: none"> <li>• Easy access to the city center with the transportation system</li> <li>• Pre-planned implementation of infrastructure facilities</li> <li>• Providing adequate social facilities (both for considering natural surveillance and different groups of women and children)</li> </ul>
<b>NEIGHBORHOOD</b>	<ul style="list-style-type: none"> <li>• Redesigning internal street system (cul-de-sacs etc., parks)</li> <li>• Controlling access by providing physical and perceived barriers to entrances and access ways (fences, hedges other landscaping features show boundaries with pathways and gardens)</li> <li>• Creating safe routes to walk (school or bazaar)</li> <li>• Using design elements to create a sense of belonging and ownership to ensure maintenance (public art, gardens)</li> <li>• Organize neighborhood residents in a block watch program to provide surveillance</li> </ul>
<b>BUILDING SCALE</b>	<ul style="list-style-type: none"> <li>• Creating semi-private areas within and near the building, especially with the building form</li> <li>• Creating courtyards or common spaces to socialize within the buildings</li> <li>• Specific placement of front doors, bay windows and balconies from main living rooms</li> <li>• The choice of high quality of materials</li> </ul>

Living in high-rise housing estates for women comes with some consequences of a decrease in physical proximity and familiarity, in return a decrease in the use of public spaces considering the supervision of their children. Especially when designing buildings higher than 7 floors, sense of safety for disadvantaged groups should be considered. Designing enclosed areas by different forms of buildings, for example with the design of courtyards, semiprivate areas by considering the site building adjustment, an encountering area can be created to socialize. While increasing safety, it will also increase familiarity.

Suburban development areas, as in the case of Kusunlar TOKI, needs to be designed in a self-sufficient way in order to sustain sustainability. Necessary social facilities should be provided to prevent them from feeling excluded. Mercantile areas where women can do their shopping when necessary, hairdressers where they can do their care, playgrounds, sports facilities, or streets where they can safely leave their children have a significant effect on their sense of safety. Open spaces and the activities provided in the neighborhood are women's greatest socializing platforms. It has been observed that they prefer to be in areas close to home and it is easier to access these areas for them. In large areas, it is beneficial to create well-designed, illuminated green spaces with adequate seating between each block. The existence of mix-used designed spaces also enhances natural surveillance.

Living in low buildings may make women feel safer, especially as it reduces the density of people and facilitates the supervision of children. Furthermore, high-rise estates with higher densities may support an increase in criminal activity such as drug dealing. Thus, designing defensible spaces with controlled entrances and mix-used areas providing natural surveillance may decrease these activities; in this case, reliable shopkeepers have also an important role in these mix-used areas since the role of the shopkeepers draws attention in the examples where safe routes are created so that children can go to school alone. So, if necessary, projects in cooperation with shopkeepers should be developed.

All in all, it is necessary to improve the design of high-rise mass housing of TOKI developments, and urban designers should be involved in this process considering the sense of safety notion. A design approach should be developed according to the characteristics of the site and the sociodemographic qualities of the people who will live on that site, and the uniform design approach should be abandoned to design more sustainable neighborhoods.

## REFERENCES

- Altman, I. (1977). Privacy Regulation: Culturally Universal or Culturally Specific?. *J. Soc. Issues*, 33, 66–84.
- Appleton, J. (1975). *The experience of landscape*. London: Wiley.
- Appleyard, D. (1981). *Livable streets*. Berkeley: University of California Press.
- Arasteh, S. (2020). Feeling Safe in Urban Estates: Learning from Riverwood, Sydney.
- Arendt, H. (1958). *The human condition, chicago*. IL. University of Chicago Press.
- Archea, J., (1977). The place of architectural factors in behavioral theories of privacy. *J. Soc. Issues* 33, 116–138.
- Austin, D. M., Woolever, C., & Baba, Y. (1994). Crime and safety-related concerns in a small community. *American Journal of Criminal Justice*, 19, 79–97.
- Austin, D.M., Furr, L.A., & Spine, M. (2002). The effects of neighborhood conditions on perceptions of safety. *Journal of Criminal Justice*, 30(5), 417-427. [https://doi.org/10.1016/S0047-2352\(02\)00148-4](https://doi.org/10.1016/S0047-2352(02)00148-4).
- Australian Bureau of Statistics. (2010). *Australian Social Trends: September (cat. no. 4102.0)*. Canberra, Australia.
- Baba, Y., & Austin, D. M. (1989). Neighborhood environmental satisfaction, victimization, and social participation as determinants of perceived neighborhood safety. *Environment and Behavior*, 21, 763– 780.
- Balkin, R. S. , & Sheperis, K. J. (2011). Evaluating and Reporting Statistical Power in Counseling Research. *Journal of Counseling and Development: JCD; Summer 2011* 89: 268-272.
- Beedle L.S., Mir M. A., & Armstrong PJ. (2007). *The skyscraper and the city: design, technology, and innovation, books 1*. Lewiston, NY: The Edwin Mellen Press.
- Beedle L.S., Mir M. A., & Armstrong PJ. (2007). *The skyscraper and the city: design, technology, and innovation, books 2*. Lewiston, NY: The Edwin Mellen Press.

- Bell, P. Fisher, J., Baum, A., & Green T. (1990). *Environmental psychology*. London: Holt, Rinehart and Winston.
- Bennett, G.G., McNeill, L.H., Wolin, K.Y., Duncan, D.T., Puleo, E., & Emmons, K.M. (2007). Safe to Walk? Neighborhood Safety and Physical Activity Among Public Housing Residents, *PLoS Medicine*, Vol. 4, No. 10, 1599-1607.
- Björklid, P. (1982). *Children's outdoor environment. studies in education and psychology*, 11. Stockholm Institute of Education, Dept. of Educational Research.
- Blakely, E., & Snyder, M. (1997). *Fortress america: gated communities in the united states*. Washington, DC: The Brookings Institution Press.
- Bloobaum, A., & Hunecke, M. (2005). Perceived Danger in Public Space: The Impacts of Physical Features and Personal Factors. *Environment and Behavior*, 37(4), 465 – 486.
- Bondi, L., & Rose, D. (2003). Constructing gender, constructing the urban: A review of Anglo-American feminist urban geography. *Gender, Place & Culture*, 10, 229–245.
- Borooah, V., & Carcach, C.A. (1997). Crime and fear. *British Journal Criminology*, 37(4), 635-657.
- Braungart, M.M., Braungart, R.G., & Hoyer, W.J. (1980). Age, sex, and social factors in fear of crime. *Sociological Focus*, 13, 55–66.
- Brå (2014). The Swedish Crime Survey. *Concerning exposure to crime, insecurity and confidence*, English summary of Brå report.
- Brenner, S. A. (1998). *The domestication of desire: women, wealth, and modernity in java*. Princeton Univ. Press
- Brown, B., Perkins, D. D., & Brown, G. (2003). Place attachment in a revitalizing neighborhood: individual and block levels of analysis. *Journal of Environmental Psychology*, 23, 259–271.
- Burton, L.M., Price-Spratlen, T. (1999) Through the Eyes of Children: An Ethnographic Perspective on Neighborhoods and Child Development. *Cultural Process in Child Development: The Minnesota Symposia on Child Psychology*, Volume 29. Ed. A.S. Marten, Psychology Press. New York: 77–96.

- Byrne, J., & Wolch, J. (2009). Nature, Race, and Parks: Past Research and Future Directions for Geographic Research. *Progress in Human Geography*, 33(6), 743-765.
- Carr, S., Francis, M., Rivlin, L. G., & Stone, A. M. (1992). *Public space*. New York: Cambridge University Press.
- Cashen, L. H. ve Geiger S. W. (2004). Statistical Power and the Testing of Null Hypothesis: A Review of Contemporary Management Research and Recommendations for Future Studies. *Organizational Research Methods* 7(2): 151-167.
- Challinger, D. (2008). *From the ground up: Security for tall buildings*. ASIS Foundation.
- Clark, C., & Uzzell, D. (2006). The socio-environmental affordances of adolescents' environments. In C. Spencer, & M. Blades (Eds.), *Children and their environments: Learning, using and designing spaces*. New York, NY: Cambridge University Press.
- Clarke, A.H. (1984). Perceptions of crime and fear of victimisation among elderly people. *Ageing and society*, 4(3), 327-342.
- Clarke, R. V., & Lester, D. (1989). *Suicide: Closing the exits*. New York: Springer-Verlag
- Clemente, F., & Kleiman, M.B. (1976). Fear of crime and age. *Gerontologist*, 16(3), 207-210.
- Cohen, J. (1970). Approximate power and sample size determination for common one-sample and twosample hypothesis tests. *Educational and Psychological Measurement*, 30, 811-831.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.), Hillsdale, NJ: Lawrence Erlbaum
- Coley, R. L. Sullivan, W. C., & Kuo, F. E. (1997). Where does community grow? The social context created by nature in urban public housing. *Environment and Behavior*, 29, 468-494. <https://doi.org/10.1177/001391659702900402>.
- Conway, J., & Adams, B. (1977). The social effects of living off the ground\*. *Habitat International*, 2(5-6), 595-614. [https://doi.org/10.10160197-3975\(77\)90032-7](https://doi.org/10.10160197-3975(77)90032-7).

- Cook, D. A., & Morgan, H. G. (1982). Families in high rise flats, *British Medical Journal*, 284(6319), 846.
- Cooper Marcus, C., & Hogue, L. (1976). Design guidelines for high-rise housing. *Journal of Architectural Research*, 5, 34-49.
- Cooper Marcus, C., & Sarkissian, W. (1986). *Hosing as if people mattered: site design guidelines for low rise, medium density family housing*. University of California Press, Berkeley.
- Covington, J., & Taylor, R. B. (1991). Fear of crime in urban residential neighborhoods: Implications of between and within neighborhood sources for current models. *Sociological Quarterly*, 32, 231–249.
- Crenshaw, E., & John, C. S. (1989). The Organisationally Dependent Community: A Comparative Study of Neighbourhood Attachment. *Urban Affairs*, 24, 608-619.
- CTBUH. (n.d.). *CTBUH Height Criteria for Measuring and Defining Tall Buildings*. Retrieved April 15, (2022)., from [https://ctbuh.net/uploads/CTBUH\\_HeightCriteria.pdf](https://ctbuh.net/uploads/CTBUH_HeightCriteria.pdf)
- Cunningham, F. (2009). *Public spaces and subversion, in rites of way: the politics and poetics of public space*, M. Kingwell and P. Turmel (Eds.), Waterloo, Ontario: Wilfrid University Press, 85-100.
- Cuthbert, A. R. (2006). Gender. In *The Form of Cities: Political Economy and Urban Design*. 127–149.
- Çınar, E. (2012). *Fiziksel Mekan ve Güvenlik Algısı: İstanbul Boğaziçi Öngörünüm Alanı*. (Doctoral thesis) Graduate School of Natural and Applied Sciences, Dokuz Eylül University.
- Dornsbuch, D. (1977). Gelb, Pat. High rise visual impact. In D. Conway (Eds.), *Human response to tall buildings*. Stroudsburg: Dowden, Hutchinson & Ross. 101-111.
- Doxiadis, C. A. (1974). The great urban crimes we permit by law. *Ekistics*, 37(219), 85–88. <http://www.jstor.org/stable/43618262>.
- Dovey, K. (1998). Safety and danger in urban design. In *conference safer communities: Strategic directions in urban planning*. Melbourne: Australian Institute of Criminology & Victorian Community Council Against Violence. 1-8.

- Downs, A. (1981). *Neighbours and urban development*. The Brookmgs Institution, Washington. De.
- Dunnett, N., Swanwick, C., & Woolley, H. (2002). Improving Urban Parks, Play Areas and Green Spaces. *Department for Transport, Local Government and the Regions*, (ISBN 1 85112 576 0), 217.  
<https://doi.org/papers3://publication/uuid/A85EC5F0-75BD-4B3E-9D99-59967F595C4C>.
- Ed, T. C. A. J., Laughlin, J. W. E., & Harmon, R. L. E. (1981). *Fire protection handbook*. Quincy, MA, National Fire Protection Association.
- Ekblad, S., & Werne, F. (1990). Housing and Health in Beijing: Implications of High-rise Housing on Children and the Aged, *The Journal of Sociology & Social Welfare: Vol17: Iss.1*, Article 4.
- Evans, G., Wells, N. M., & Moch, A. (2003). Housing and mental health: a review of the evidence and a methodological and conceptual critique. *Journal of Social Issues*, 59(3), 475–500.
- Ferguson, K.M., & Mindel, C.H. (2007). Modeling fear of crime in Dallas neighborhoods: A test of social capital theory. *Journal of Research in Crime and Delinquency*, 53, 322–349.
- Ferraro, K. F. (1995). *Fear of Crime: Interpreting Victimization Risk*. New York:State University of New York Press. 4.
- Fisher, B., & Nasar, J.L. (1992). Prospect, refuge and fear of crime on the college campus: Looking claser at building design. *Environment and Behavior*, 24, 35-65.
- Foster, S., Giles-Corti, B., & Knuiman, M. (2014). Does fear of crime discourage walkers? A social-ecological exploration of fear as a deterrent to walking. *Environment and Behavior*. 46, 698–717.  
<https://doi.org/10.1177/0013916512465176>.
- Frenkel, A. (2004). Spatial Distribution of High-Rise Buildings within Urban Areas: The Case of the Tel Aviv Metropolitan Region. *European Regional Science Association, ERSA conference papers*.
- Froughisaeid. (2018). *Students' perception of safety in the physical environment of a university campus: A case study on Middle East Technical University*. (Master thesis). Graduate School of Natural and Applied Sciences, METU

- Fujiwara, T., Michikawa, T., & Suzuki, K. (2014). Impact of High-Rise Living on Children's Development and Health Review of Literature. *Yamanashi Med. Journal*, 29(1), 1-9.
- Garafalo, J. (1981). The Fear of Crime: Causes and Consequences. *The Journal of Criminal Law and Criminology*, 72(1981), 839 - 857.
- Gehl, J. (1987). *Life between buildings*. New York: Van Nostrand-Reinhold.
- Gerçek, D., & Güven, İ. (2021). Perceived Safety and Contributing Factors in Urban Neighborhoods. *Mühendislik Bilimleri ve Tasarım Dergisi*, 9. 554-560. <https://doi.org/10.21923/jesd.675141>.
- Gibson, J.J. (1979). *The ecological approach to visual perception*. Houghton Mifflin.
- Gibson, C. L., Zhao, J., Lovrich, N. P., & Gaffney, M. J. (2002). Social integration, individual perceptions of collective efficacy, and fear of crime in three cities. *Justice Quarterly*, 19, 537–564.
- Giddens, A. (1984). *The constitution of society: outline of the theory of structuration*. Berkeley: University of California Press.
- Gifford, R. (2007). The consequences of living in high-rise buildings. *Archit. Sci. Rev.* 50, 2–17. <https://doi.org/10.3763/asre.2007.5002>.
- Gillis, A. R. (1977). *High-Rise Housing and Psychological Strain*. *Journal of Health and Social Behavior*, 18(4), 418. <https://doi.org/10.2307/2955349>.
- Ginsberg, Y., & Churchman, A. (1984). Housing Satisfaction and Intention to Move: Their Explanatory Variables. *Socio-Economic Planning Sciences*, 18(6), 425-431.
- Ginsberg, Y., & Churchman, A. (1985). The Pattern and Meaning of Neighbor Relations in High-Rise Housing in Israel. *Human Ecology*, 13(4), 467–484. <http://www.jstor.org/stable/4602792>.
- Glaeser, E.L., & Sacerdote, B. (2000). The Social Consequences of Housing. *J. Hous. Econ*, 9, 1–23.
- Gokce, D., & Chen, F. (2018). Sense of place in the changing process of house form: Case studies from Ankara, Turkey. *Environment and Planning B: Urban Analytics and City Science*, 45(4), 772–796. <https://doi.org/10.1177/0265813516686970>.



- Gottdiener, M. (2010). *The new urban sociology (4 ed.)*. New York: Westview Press.
- Gottmann, J. (1966). Why the Skyscraper?. *Geographical Review*, 56(2), 190–212. <https://doi.org/10.2307/212878>.
- Green, G., Gilbertson, J. M., & Grimsley, M. F. J. (2002). Fear of crime and health in residential tower blocks. *European Journal of Public Health*, 12, 10-15. <https://doi.org/10.1093/eurpub/12.1.10>.
- Greene, M. (2003). *Urban safety in residential areas: spatial variables in crime and feeling of security*. World Bank Urban Research Symposium, Washington D.C., 203-219.
- Gregoletto, D., & Reis, A. (2012). High-rise buildings in the perception of the users of the urban space. *Cadernos do PROARQ*.
- Grey, A. L., Winkel, G., Bonsteel, D., & Parker, R. (1970). *People and downtown*. Seattle: College of Architecture and Urban Planning, University of Washington.
- Gülcan, E. (2020). *Social Housing as a Alution for Housing Need of Low-Income: Evaluation of Housing Implementations of Housing Development Administration (TOKI) for Lower-Middle Income Groups*. (Master Thesis). Graduate School of Social Sciences, Middle East Technical University.
- Hafferty, C. (2020). What factors are linked to people feeling safe in their local are?. *Future Generations Indicator* 25.
- Haber, G.M. (1977). The Impact of Tall Buildings in Users and Neighbors. *Human Response to Tall Buildings*. D. Conway (Eds.) Stroudsburg, PA: Dowden, Hutchinson & Ross, Inc. 45-57.
- Hadavi, S., Kaplan, R., & Hunter, M. (2015). Environmental affordances: A practical approach for design of nearby outdoor settings in urban residential areas. *Landscape and Urban Planning, Volume 134*, 19-32, ISSN 0169-2046, <https://doi.org/10.1016/j.landurbplan.2014.10.001>.
- Hale, C., Pack, P., & Salked, J. (1994). The structural determinants of fear of crime: an analysis using census and crime survey data from england and wales. *International Review of Victimology*, 3, 211-233.
- Hale, C. (1996). Fear of crime: A review of the literature. *International Review of Victimology*, 4, 79-150.

- Haughton, G., & Hunter, C. (1994). *Sustainable cities*. London: Kingsley.
- Hayden, D. (1980). What Would a Non-Sexist City Be Like Speculations on Housing. *Urban Design and Human Work. Women and the American City*, 5(3), 170-187. <https://doi.org/10.1021/bi0017172>.
- Hayden, D. (1984). *Redesigning the american dream*. New York: W. Norton.
- Hayes, A. (2022, July 8). *What is a two-tailed test?* Investopedia. Retrieved August, 2022, from <https://www.investopedia.com/terms/t/two-tailed-test.asp#citation-1>.
- Heilbrun, M. (2000). *Inventing the skyline: the architecture of cass gilbert*. New York: Columbia University Press.
- Hidalgo, M. C., & Hernandez, B. (2001). Place attachment: conceptual and empirical questions. *Journal of Environmental Psychology*, 21, 273-281.
- Hillier, B. (2004). Can Streets Be Made Safe?, *Urban Design International* 9(1), 31-45.
- Hillier, B., & Hanson, J. (1984). *The social logic of space*. Cambridge: Press syndicate of the University of Cambridge.
- Hinkle, J. C., (2014). Emotional Fear of Crime vs. Perceived Safety and Risk: Implications for Measuring “Fear” and Testing the Broken Windows Thesis. *Am J Crim Just*, 2015 (40), 147-168.
- Huang, S.C. (2006). A study of outdoor interactional spaces in high-rise housing. *Landscape and Urban Planning*, 78, 93-204. <https://doi.org/10.1016/j.landurbplan.2005.07.008>.
- Human Rights and Equal Opportunity Commission. (1991). Racist Violence: Report of the National Inquiry into Racist Violence in Australia. *Canberra: Australian Government Publishing Service*.
- İnceiç, N. (2006). *Safe urban public space and gender issue: Assessment of safe public space for women in case of Ankara city*. (Master Thesis). Graduate School of Natural and Applied Sciences, Gazi University.
- Jacobs, J. (1961). *The death and life of great american cities*. New York: Random House.

- Jamieson S. Likert scales: how to (ab)use them. *Med Educ.* 2004;38(12). 1217-1218.
- Jarvis, H., Kantor, P., & Cloke, J. (2009). *Cities and gender*. Routledge.
- Jeffery, C. R. (1971). Crime prevention through environmental design. *Beverly Hills, California: Sage Publications*.
- Jiang, B., Mak, C. N. S., Zhong, H., Larsen, L., & Webster, C. J. (2018). From Broken Windows to Perceived Routine Activities: Examining Impacts of Environmental Interventions on Perceived Safety of Urban Alleys. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2018.02450>.
- Kanan, J.W., & Pruitt, M. (2002). Modeling fear of crime and perceived victimization risk: The significance of neighborhood integration. *Sociological Inquiry*, 72(4), 527-548.
- Keane, C. (1998). Evaluating the influence of fear of crime as an environmental mobility restrictor on women's routine activities. *Environment and Behavior*, 30, 60– 74.
- Kearns, A., Whitley, E., & Bond, L. (2012). 'Living the High Life'? Residential, Social and Psychosocial Outcomes for High-Rise Occupants in a Deprived Context. *Housing Studies*. 27. 97-126.  
<https://doi.org/10.1080/02673037.2012.632080>.
- Kumove, L. (1966). *A Preliminary Study of the Social Implications of High Density Living Conditions*. Toronto, ON: Social Planning Council of Metropolitan Toronto.
- LaGrange, R. L., Feraro, K. F., & Supancic, M. (1992). Perceived Risk and Fear of Crime Role of Social and Physical Incivilities. *Journal of Research in Crime and Delinquency*, 29(3), 311–334  
<https://doi.org/10.11770022427892029003004>.
- Lang, J. (1987). *Creating architectural theory: the role of the behavioral sciences in environmental design*. New York: Van Nostrand Reinhold.
- Lee, B.A., Oropesa, R.S., Konan, J.W. (1994) Neighborhood Context and Residential Mobility. *Demography* 31. 249–70.
- Lehrer, U., & March, L. (2019). Vertical urbanism: high-rise buildings and public space. *Yhdyskuntasuunnittelu-lehti*, 57,37-42.  
<https://doi.org/10.33357/ys.88628>.

- Lestan, K. A., Eržen, I., & Golobič, M. (2014). The role of open space in urban neighbourhoods for health-related lifestyle. *International Journal of Environmental Research and Public Health*, 11(6), 6547–6570. <https://doi.org/10.3390/ijerph110606547>.
- Lester, D. (1994). Suicide by jumping in Singapore as a function of highrise apartment availability. *Perceptual and Motor Skills*, 79, 74
- Likert R. (1932). A technique for the measurement of attitudes. *Arch Psychology*, 22(140), 55.
- Liska, A.E., Lawrence, J.J., & Sanchirico, A. (1982). Fear of crime as a social fact. *Social Forces*, 760-770.
- Liska, A.E., Andrew, S., & Reed, M.D. (1988). Fear of Crime and Constrained Behavior: Specifying and Estimating a Reciprocal Effects Model. *Social Force*, 66, 827–37.
- Low, S. (2000). *On the plaza: the politics of public space and culture*. Austin: University of Texas Press.
- Low, S. (2004). *Behind the gates: life, security, and the pursuit of happiness in fortress America*. New York, NY: Routledge.
- Lowry, S. (1990) Families and flats. *British Medical Journal*, 300(6719), 245–247.
- Lynch, K. (1991). *City sense and city design: writings and projects of kevin lynch*. Cambridge, Mass.: MIT Press.
- Lynch, K. (1992) *The openness of open space*. T. Banerjee, M. Southworth, (Eds.) in *City Sense and City Design*. The MIT Press, Cambridge, Massachusetts, London; 396-412.
- Maccallum, R. C., Browne, M., & Sugawara, H. M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modeling. *Psychological Methods* 1(2): 130-149.
- Madanipour, A. (1996). *Design of urban space*. New York: Wiley.
- Madanipour, A. (2003). *Public and private spaces of the city*. London and New York: Routledge.
- Mazen, A. M., Graf, L., A., Kellog, K. E., & Hemmasi, M. (1987). Statistical Power in Contemporary Management Research. *The Academy of Management Journal* 30(2): 369-380.

- McDowell, L. (1983). Towards an understanding of the gender division of urban space. *Environment & Planning D: Society & Space*, 1(1), 59–72.  
<https://doi.org/10.1068/d010059>
- McLeod, S. A. (2019). *What a p-value tells you about statistical significance*. Simply Psychology. Retrieved from, <https://www.simplypsychology.org/p-value.html>.
- Mehta, V. (2014). Evaluating Public Space. *Journal of Urban Design*, Vol. 19 (1), 53-88.
- Memlük, O. (2012). *Inclusivity of Public Space. Changing Inclusivity of an Urban Park, Gençlik Parkı, Ankara*. (Master thesis). Graduate School of Natural and Applied Sciences, Middle East Technical University.
- Michelson, W. (1977). *Environmental choice, human behavior and residential satisfaction*. Oxford University Press, New York.
- Murray, C., Motoyama, T., Rouse, W.V., & Rubenstein, H. (1980). *Link between crime and the built environment- The current state of knowledge*. United State Department of Justice. Washington, DC: U. S. Government Printing Office.
- Musterd, S., & Van Kempen, R. (2005). Large Housing Estates in European Cities: Opinions of Residents on Recent Developments (Utrecht: Urban & Regional Research Centre).
- Nasar, J.L, Holloman, C., & Abdulkarim, D. (2015). Street Characteristics to Encourage Children to Walk. *Transportation Research Part A: Policy and Practice* 72, 62–70.
- Nasar, J. L., & Jones, K. M. (1997). Landscapes of fear and stress. *Environment and Behavior*, 29(3), 291-323.
- Newman, O. (1972). *Defensible space: Crime prevention through urban design*. New York, NY: Macmillan.
- Newman, O. (1975). Reactions to the “defensible space” study and some further findings. *International Journal of Mental Health*, 4(3), 48-70.
- Newman, O., & Franck, K. A. (1982). The effect of building size on personal crime and fear of crime. *Population and Environment*, 5, 203-220.

- Newman, O., Rutgers University., & United States. (1996). *Creating defensible space*. Washington, D.C: U.S. Dept. of Housing and Urban Development, Office of Policy Development and Research.
- Ng, C.F. (2017). Living and Working in Tall Buildings: Satisfaction and Perceived Benefits and Concerns of Occupants. *Front. Built Environ.* 3, 70. <https://doi.org/10.3389/fbuil.2017.00070>.
- Nguyen, L., van den Berg, P., Kemperman, A., & Mohammadi, M. (2020). Where do People Interact in High-rise Apartment Buildings? Exploring the Influence of Personal and Neighborhood Characteristics. *International journal of environmental research and public health*, 17(13), 4619. <https://doi.org/10.3390/ijerph17134619>.
- Novakovic, N., & Djukic, A. (2015). Urban form and public safety: How public open space shapes social behaviour in public housing neighbourhoods.
- Oc, T., & Tiesdell, S. (1999) The fortress, the panoptic, the regulatory and the animated: Planning and urban design approaches to safer city centers, *Landscape Research*, 24(3). 265–286. <https://doi.org/10.1080/01426399908706563>.
- Oldfield, P., Trabucco, D., & Wood, A. Eds. (2014). *Roadmap on the Future Research Needs of Tall Buildings*. Chicago, IL: Council on Tall Buildings and Urban Habitat. Available at: [www.ctbuh.org/roadmap](http://www.ctbuh.org/roadmap).
- Osgood, D. W., Wilson, J. K., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *Am. Sociol. Rev.* 61, 635–655. <https://doi.org/10.2307/2096397>.
- Pain, R. (2000). Place, social relations and the fear of crime: A review. *Progress in Human Geography*, 24(3), 365–387. <https://doi.org/10.1191/030913200701540474>.
- Parkinson, J. (2009). *Holistic democracy and physical public space*. in *Rites of way: The politics and poetics of public space*, Kingwell, M. and Turmel, P. (Eds.), Waterloo, Ontario: Wilfrid University Press, 71-84.
- Perry, C. A. (1998). The Neighborhood Unit. In Neighborhood and Community Planning: A Study of Parks, Playgrounds and Other Outdoor Recreation Facilities. *Regional Survey of New York and Its Environs*, vol. VII. [1929] New York: Committee on Regional Plan of New York and Its Environs.

- Price, C. (2007). Dissociation reduction in body therapy during sexual abuse recovery. *Complementary Therapies in Clinical Practice*, 13(2), 116–128. <https://doi.org/10.1016/j.ctcp.2006.08.004>.
- Ramsay, M. (1989). Downtown drinkers: The perceptions and fears of the public in a city centre. *Crime prevention unit, paper 19*. London: Home office.
- Rapoport, A. (1975). Toward a Redefinition of Density. *Environment and Behavior*, 7(2), 133–158. <https://doi.org/10.1177/001391657500700202>.
- Rapoport, A. (1990). *History and precedent in environmental design*. New York: Plenum Press.
- Ratnayake, R. (2014). Fear of Crime in Urban Settings: Influence of Environmental Features, Presence of People and Social Variables. *Bhumi: The Planning Research Journal*, 3, 30-43. <https://doi.org/10.4038/bhumi.v3i2.17>.
- Ratnayake, R. (2017). Sense of safety in public spaces: university student safety experiences in an australian regional city. *Rural Society*, 26(1), 69–84.
- Relph, E. (1976). *Place and placelessness*. London: Pion.
- Rollwagen, H. (2014). The Relationship Between Dwelling Type and Fear of Crime. *Environment and Behavior*, 48(2), 365–387. <https://doi.org/10.1177/0013916514540459>.
- Rossi, J. S. (1990). Statistical power of psychological research: What have we gained in 20 years? *Journal of Consulting and Clinical Psychology*, 58, 646–656.
- Ross, C. E., & Mirowsky, J. (1999). Disorder and decay: The concept and measurement of perceived neighborhood disorder. *Urban Affairs Review*, 34(3), 412–432. <https://doi.org/10.1177/107808749903400304>.
- Rountree, P., & Land, K. (1996). Burglary victimization, perceptions of risk, and routine activities: a multilevel analysis across Seattle neighborhoods and census tracts. *Journal of Research in Crime and Delinquency*, 33, 147– 180.
- Ruchelman, L. (1988). The Urban Ecology of Tall Buildings. Beedle, L. (Eds)., *Second century of the skyscraper*. New York: Van Nostrand Reinhold. 79-85.
- Rujibhong, S., Koorutanapisan, P., Tangkawanich, P., Prayunrat, T., Bootprasertwicha, J., & Limpisathian, T. (2015). The Impact of High-rise Housing Environment on Safety Concerns of Student and Young

- Professional Residents: A Case of Kluaynamthai Community, Bangkok, Thailand. *ENHR* 2015.
- Safaralipour, A. (2019). *Association Between High-rises and Urban public Spaces Surrounding Them Case Study: Istanbul Sapphire Building*. (Master thesis). Graduate School of Natural and Applied Sciences, Istanbul Technical University.
- Sampson, R. J., & Raudenbush, S. W. (2004). Seeing disorder: Neighborhood stigma and the social construction of “broken windows”. *Soc. Psychol. Q.* 67, 319–342. <https://doi.org/10.1177/019027250406700401>.
- San Jose State University. "6: Introduction to Null Hypothesis Significance Testing." Retrieved August, 2022, from <https://www.sjsu.edu/faculty/gerstman/StatPrimer/hyp-test.pdf>.
- Sarı, T., & Dülgeroğlu, Y. (2019). İstanbul'da Yüksek Konut İmgesinin Gelişimi: Politikalar ve Mimari-İz (m) ler. *Megaron*, 14. 133-144.
- Savran, S. (2014). TOKİ Yoksul Grubu Konutlarının Yeterli Konut Bağlamında Değerlendirilmesi: Ankara Kusunlar Örneği. (Master Thesis). Graduate School of Natural and Applied Sciences, Gazi University.
- Sawyer, A. G., & Ball, D. A. (1981). Statistical Power and Effect Size in Marketing Research. *Journal of Marketing Research XVIII*: 275-290.
- Schroeder, H.W., & L.M. Anderson. (1984). Perception of Personal Safety in Urban Recreation Sites. *Journal of Leisure Research*, Vol. 16(2), 178-194.
- Seamon, D. (1980). Body-subject, Time-space Routines, and Place-ballets. Buttimer, A. and Seamon, D. (Eds.), In *The Human Experience of Space and Place*. New York: St. Martin's Press. 148–165.
- Sennett, R. (1991). *The conscience of the eye - the design and social life of cities*. London: Faber and Faber.
- .Severcan, Y.C. (2018). Changing Places, Changing Childhoods: Regeneration and Children's Use of Place in Istanbul. *Urban Studies* 55(10), 2179–96.
- Severcan, Y. C. (2019). Residential relocation and children's satisfaction with mass housing. *METU Journal of the Faculty of Architecture*, 36(1), 61-84.
- Seymour, M., Wolch, J., Reynolds, K. D., & Bradbury, H. (2010). Resident perceptions of urban alleys and urban alley greening. *Appl. Geogr*, 30, 380–393. <https://doi.org/10.1016/j.apgeog.2009.11.002>.



- Siegel, S. (1957). Nonparametric statistics. *The American Statistician*, 11, 13–19.
- Silbaugh, K. B. (2007). Women's Place: urban planning, housing design, and workfamily balance. *Fordham Law Review*, 76(3), 1797–1852
- Skogan, W. G., & Maxfield, M. G. (1981). *Coping with crime: Individual and neighborhood differences*. Beverly Hills, CA: Sage.
- Skogan W. (1986). *Fear of crime and neighborhood change*. A. J. Reiss ve M. Tonry (Eds.), *Communities and crime*. Chicago: University of Chicago Press. 203-229.
- Smith, N., & Low, S. (Eds.). (2006). *The politics of public space*. New York: Routledge.
- Smith, M., Whitelegg, J., & Williams, N. (1998). *Greening the Built Environment*. London: Earthscan
- Spencer Coursen. (2014). Safety vs. Security: Understanding the Difference May Soon Save Lives. Retrieved April 18, 2022, from <https://safetymakesimple.wordpress.com>.
- Stamps, A., & Smith, S. (2002). Environmental Enclosure in Urban Settings. *Environment and Behavior*, 34, 781-794.  
<https://doi.org/10.1177/001391602237246>.
- Stewart, W.F.R. (1970). *Children in flats: A family study*. National Society for the Prevention of Cruelty to Children (NSPCC).
- Sundeen, R.A., & Mathieu, J.T. (1976). The Fear of Crime and Its Consequences Among the Elderly in Three Urban Communities. *The Gerontologist*, 16, 211-219.
- Talen, E. (1996). Sense of Community and Neighbourhood Form: An Assessment of the Social Doctrine of New Urbanism. *Urban Studies*, 36, 1361-1379.
- Taylor, R. B. (1996). Neighborhood Responses to Disorder and Local Attachments: The Systemic Model of Attachment, Social Disorganization, and Neighborhood Use Value. *Sociological Forum*, 11, 41–74.
- Taylor, R. B., Gottfredson, S. D., & Brower, S. (1984). Block crime and fear: Defensible space, local ties, and territorial functioning. *Journal of Research in Crime and Delinquency*, 21, 303–331.

- Tezel, E. (2011). Exploring parental concerns about children's interactions in gated communities: A case study in Istanbul. *Children's Geographies* 9(3-4): 425–437.
- The Economist*, 2006. "The Skyscraper Boom: Better than Flying," Vol. 379, No. 8480, June 3-9, 65-67.
- Thomas, M. (1991). The Demise of Public Space. In Town Planning Responses to City Change. Nadin, V. and Doak, J. (Eds). Avebury: Aldershot. 209–224.
- Thompson, S. (2018). Exploring the Nature of Third Places and Local Social Ties in High-Density Areas: The Case of a Large Mixed-Use Complex. *Urban Policy Res.*, 36, 1–15.
- TOKI. (2019). TOKI Kurumsal Tanıtım Dokümanı. Ankara: TOKI.
- Turkish Regulation Concerning Fire Protection of Buildings, BYKHY (2020).
- Uittenbogaard, C., Ahlskog, T., & Grönlund, B. (2018). *Trygghet i samhället*. Stiftelsen Tryggare Sverige. Stockholm: Jure Förlag AB.
- Ulutaş Okan, Ö. (2018). *Yüksek Binaların Kent İmajı Üzerindeki Etkisinin Marka Değeri Bağlamında Değerlendirilmesi Örnek: Bursa, Nilüfer*. (Master thesis). Graduate School of Natural and Applied Sciences, Uludağ University.
- Urban, F. (2012). *Tower and slab: histories of global mass housing*. Routledge, New York.
- Wallace, A.F.C. (1952). *Housing and social structure: A preliminary survey with particular reference to multi-story, low rent public housing projects*. Philadelphia: Philadelphia Housing Authority.
- Warr, M. (1990). Dangerous Situations: Social Context and Fear of Victimization. *Social Forces*, 68(3), 891-907.
- Weisman, L. (1994). *Discrimination by design: A feminist critique of the man-made environment*. University of Illinois Press.
- Whitzman, C. (2007). Stuck at the front door: Gender, fear of crime and the challenge of creating safer space. *Environment and Planning A*, 39(11), 2715–2732. <https://doi.org/10.1068/a38449>.
- Whyte, W. H. (1980). *The social life of small urban spaces*. Washington, DC: The Conservation Foundation.

- Williams, K., Burton, E., & Jenks, M. (Eds.) (2000). *Achieving Sustainable Urban Form*. London : E & FN Spon.
- Willis, C. (1995). *Form follows finance: skyscrapers and skylines in new york and chicago*. New York: Princeton Architectural Press.
- Wilson, J. Q., & Kelling, G. L. (1982). Broken windows. *Critical issues in policing: Contemporary readings*. 395-407.
- Wolf, J. P., Freisthler, B., Kepple, N. J., & Chavez, R. (2017). The places parents go: understanding the breadth, scope, and experiences of activity spaces for parents. *GeoJournal*, 82(2), 355–368.  
<https://doi.org/10.1007/s10708-015-9690-y>.
- Valentine, G. (1990). Women's Fear and the Design of Public Space. *Built Environment*, 16(4), 288–303.
- Velasquez, A.J., Douglas, J.A., Guo, F., & Robinette, J.W. (2021). What predicts how safe people feel in their neighborhoods and does it depend on functional status?. *SSM Population Health*, 16(100927), 2-8.  
<https://doi.org/10.1016/j.ssmph.2021.100927>.
- Yancey, W. L. (1971). Architecture, interaction, and social control:The case of a large-scale public housing Project. *Environmental & Behavior*, 3, 3-21.
- Ye, Y., Wang, Z. Dong, N., & Zhou,X. (2020). Tall Buildings' Lower Public Spaces: Impact on Health and Behavior. *CTBUH Journal 2020 Issue I*.
- Yeung, Y. (1977). High Rise, High Density Housing: Myths and Reality. *Habitat International*, 2(5/6), 587-594.
- Yılmaz, S., Mumcu, S., & Çiğdem, A. (2017). Determining The Affordances Provided by Urban Open Spaces to Different Age Groups. *Gazi University Journal of Science Part B: Art, Humanities, Design and Planning*, 5. 1-12.
- Yolal Bekmezci, B. (2019). *Kentsel/Kamusal Arayüzler Üzerine Bir Değerlendirme: Dumlupınar Bulvarı Alan Çalışması*. (Master Thesis). Graduate School of Natural and Applied Sciences, Gazi University.
- Yorulmaz, E. (2017). Suç Korkusunun Kamusal Alan Üzerindeki Etkisi: İTÜ Taşkışla Örneği Üzerinden İncelenmesi. Graduate School of Natural and Applied Sciences, İstanbul Technical University.
- Yuen, B. (2005). Romancing the high-rise in Singapore. *Cities*, 22(1), 3-13.

- Yuen, B., Teo, H.P., & Ooi, G. L. (1999). *Singapore Housing: An Annotated Bibliography*. National University of Singapore.
- Yuen, B., Yeh, A., Appold, S. J., Earl, G., Ting, J., & Kwee, L. K. (2006). High-rise Living in Singapore Public Housing. *Urban Studies*, 43(3), 583–600. <http://www.jstor.org/stable/43198351>.
- Zahnow, R., & Corcoran, J. (2021). Living near violence and feeling safe: what is the role of active guardianship in the home territory?. *Journal of Quantitative Criminology* 38 (1) 105-126. <https://doi.org/10.1007/s10940-020-09486-2>
- Zou, Y., & Meng, F. (2020). Chinese tourists' sense of safety: perceptions of expected and experienced destination safety. *Current Issues in Tourism*, 23(15). 1886-1899. <https://doi.org/10.1080/13683500.2019.1681382>.

## APPENDICES

### A. In-depth Interview and Survey Questions

#### PART I- Personal Characteristics

- What is your age?
- How long have you been living here?
- On which floor, do you occupy?
- Do you have children? If any, how old are they?

#### PART II- General Sense of Safety and Use of Public Spaces

- How do you feel in your neighborhood while using open public spaces? In which space do you feel safer/ or do not feel safer in your neighborhood? Would you please select and rate from 1 to 5 where; 1: I feel not safe at all (least safe), 2: I feel not safe, 3: I feel neither unsafe nor safe, 4: I feel safe, 5: I feel very safe (most safe)
- First talk about the places which you feel safe, (you gave 4-5 points) What do you think about the safety in these areas, and which factors do you think contribute the most to the feeling safe ?
- Second talk about the places which you do not feel safe, (you gave 1,2,3 points) What do you think about the safety in these areas, and which factors do you think contribute the most to the feeling unsafe ?

#### PART III- Feeling Safe/Unsafe In the Neighborhood

For below rate from 1 to 5; where 1: Not at all, 2: A little, 3: Partially, 4: Mostly, 5: Completely

1. To what extent do you think the **absence of people** is a reason that affects your sense of safety when using the public space?

2. To what extent do you think **the decrease in the number of people with that you are familiar** is a reason that affects your sense of safety when using the public space?
3. To what extent do you think **the decrease in social interaction in the neighborhood** is a reason that affects your sense of safety when using the public space?
4. To what extent do you think the **high density of people in the neighborhood** is a reason that affects your sense of safety when using the public space?
5. To what extent do you think the **presence of drug dealers/burglars (if any)** is a reason that affects your sense of safety when using the public space?
6. To what extent do you think the **presence of physical disorder/trash/graffiti** is a reason that affects your sense of safety when using the public space?
7. To what extent do you think **lack of lighting at night** is a reason that affects your sense of safety when using the public space?
8. To what extent do you think the **lack of well-designed greenery/playgrounds for children** is a reason that affects your sense of safety when using the public space?
9. To what extent do you think **building form** is a reason that affects your sense of safety when using the public space?
10. To what extent do you think the **floor level you occupied** is a reason that affects your sense of safety when using the public space?

#### **PART IV- Use of Public Open Spaces In the Neighborhood**

11. To what extent do you think safety concerns in the neighborhood affect the use of open spaces?

12. To what extent do you think the number of trusted people in the neighborhood who can help or protect children affects the use of outdoor open spaces?
13. To what extent do you think care taken by neighbors to protect environmental quality affects the use of outdoor open spaces?
14. To what extent do you think proximity to home affects the use of outdoor open spaces?
15. To what extent do you think the lack of opportunities (greenery activities/facilities) affects the use of outdoor open spaces?

**PART V- General Sense of Safety**

- Considering you and future generations that will live here, what score would you give the entire region in general in terms of the sense of safety?  
  
where; 1: I feel not safe at all (least safe), 2: I feel not safe, 3: I feel neither unsafe nor safe, 4: I feel safe, 5: I feel very safe (most safe)