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# Inclusive, Safe and Resilient Public Spaces: Gateway to Sustainable Cities?

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## Abstract

The rapid urbanization process of cities is majorly coupled with extreme climate change, housing shortage and urban safety issues. These issues are raising new challenges to address the capability of urban resilience. Enhancing Urban Safety and Security is one of the major principles addressed by UN-Habitat in Sustainable Development Goal number 11. Making cities safe and sustainable means ensuring access to safe and affordable public spaces for all. This book chapter aims to highlight how do the city's public spaces are linked and affected by crime and fear of crime? How do crime and fear of crime interconnect to the built environment in cities while promoting positive urban transitions in terms of safe and sustainable cities? This book chapter explores answers to these questions through the parks and public spaces of the city as a case study. In other words, the book chapter deals with the issue of safety and security by (1) showing links between parks and public spaces, and crime and fear of crime, (2) highlighting how different attributes in the built environment can affect people's perception of safety, (3) understanding socio-technical perspectives i.e., how technological systems and equipment's (such as lighting sensors, security alarms, security electronic devices, closed-circuit television (CCTV), smartphones or other technological instruments) are influencing safety/security and sustainability, (4) demonstrating the issues and challenges found in Stockholm, Sweden, and, (5) providing recommendations on how these places can be planned and designed to become more sustainable.

**Keywords:** Public spaces, perceived safety, fear of crime, sustainable cities

## 1. Introduction

When the UN has adopted Agenda 2030 in 2015 for sustainable development, it committed itself and the member states to work on achieving a social, environmental, and economically sustainable world by the year 2030 [1]. According to Agenda, by 2030 everyone will have access to safe green areas and public places. Unfortunately, not all green areas and public places are perceived as safe. According to the Swedish National Council for Crime Prevention (Brå) due to the fear of being exposed to crime, people change their pattern of movement [2]. Almost a quarter of the population in Sweden takes a different route or a different mode of transport than desired due to the fear of crime [2]. According to the Swedish security survey [2], those areas that have exposure to crime generated a higher level of concern for

the respondents to be exposed to crime themselves. This worry left people with a limited choice in terms of when and where they move within the city [2]. It has been argued that sustainability as a whole cannot be achieved unless all of the residents feel safe [3].

The feeling of being unsafe can be problematic both at a personal level and at the level of society. Several empirical studies have sought that there is not always a connection between feeling unsafe and being actually in danger, conversely, it is quite possible to feel unsafe in an environment that looks completely safe. Safety is a concept that is based on subjective experiences, which means that it can be defined differently. According to UN-Habitat [4], security is defined as the statistical risk to be exposed to criminal acts in one place. If the risk is low, security is high. Whether you are in danger or not, it is the subjective feeling of insecurity that creates a problem in society because it affects human behavior and freedom [5] and makes it difficult to achieve social sustainability. Social sustainability is a concept that contains several factors where the safety aspect is included. Safety is one concept that can vary depending on the context in which the research is presented. Subjective safety reflects the perception of social safety and encompasses fear or anxieties caused by real or presumed fears [6]. Research that exists on safety is most often associated with crime preventative measures and it is therefore important to distinguish between crimes that have taken place and perceived fear of crimes. There is a willingness on the part of actors to work actively with issues of safety in urban planning, but most often there is little or no natural cooperation between them. More knowledge, clearer guidelines, and better coordination can help actors to work more on these issues together [7] to promote smooth urban transition and achieve resilience as a whole. Resilience is mostly defined as ecosystems and climate change. However, this is not the only dimension that is connected to resilience. The demand for safe and secure places continues to upsurge [4]. The challenge for providing such places in developing and third world countries is another serious issue to demonstrate that design can meet the needs of the residents around the world. In this book chapter, the term safety is used as it is explained by Iqbal [8] “the risk of being a victim of crime, the perception of risk of being a victim of crime, and the expression of fear/anxieties of crime”. The term “urban safety is considered to be the quality of the environment and is defined for a person or group in an urban area” [8].

This book chapter aims to highlight the connection between public spaces regarding crime and fear of crime by (1) showing links between parks and public spaces, and crime and fear of crime, (2) highlighting how different land uses and people’s activities in the built environment can affect people’s perception, (3) understanding socio-technical perspectives i.e., how technological systems and equipment’s (such as lighting sensors, security alarms, security electronic devices, closed-circuit television (CCTV), smartphones or other technological instruments) are influencing safety/security and sustainability, (4) demonstrating the issues and challenges found in Sweden, and, (5) providing recommendations on how these places can be planned and designed to become more sustainable. This book chapter presents a synthesis of earlier work on fear of crime, perceived safety and parks by the author [8–13]. The book chapter begins with a discussion of factors that influence fear of crime and perceived safety in parks and public spaces. Second, a review of the recent literature about perceived safety associated with the physical design perspective of the built environment. Third, how technological systems and equipment (such as lighting sensors, security alarms, security electronic devices, CCTV, smartphones or other technological instruments) are influencing safety/security and sustainability is outlined. Fourth, the issues and challenges found in Stockholm, Sweden will be demonstrated. The context of the empirical studies was the city of Stockholm, therefore,

the policy and design recommendations for being safe in the public space discussed in the last section are applicable to other major cities of Sweden or the cities similar to those as Stockholm.

## **2. Fear of crime and perceived safety in public spaces**

Public space is characterized as an open space that is accessible to people. In other words, public spaces are the places that provide opportunities for social interactions within the communities. Parks, public squares and streets are some examples of public spaces. To create an inclusive public space, it is important that the various groups of people feel safe and can freely participate in society. Due to its blurred nature of definition boundaries the terms public place and public space are used in this book chapter interchangeably (i.e., for discussion, see [14, 15]). Several studies have shown the positive impact of parks and public spaces on human health and well-being [16] while, others have shown that such places can be a reason for stress and anxiety [5, 17] and affect human life negatively. According to Iqbal and Wilhelmsson [11], not all parks and public spaces have equal amenity value and some may be valued as disamenities. For example, noise around parks, high beam lights from sports arenas, and traffic congestion around parks, street parking near parks, garbage, vandalism, and the gathering of undesirable groups (such as alcoholics, drug addicts, etc.) in public spaces affect individuals negatively [8]. Poor maintenance and criminogenic conditions of the park and public spaces are highlighted by several researchers [9, 11, 18]. A small number of studies have also shown that potential buyers may avoid buying properties located near parks and public spaces with high crime rates [10, 11, 19].

According to UN-Habitat [4] “crime is defined as an antisocial act that violates a law and for which a punishment can be imposed by the state or in the state’s name”. while fear of crime refers to the “fear of being a victim of a crime instead of the actual possibility of being a victim of crime” [20]. Fear of crime or feeling unsafe is a concept that is complex and based on subjective experiences attached to various other contexts such as age, gender, socioeconomic status and emotional responses to worry or anxiety [5]. According to Ceccato [21], safety is a concept that is shaped by an individual’s actions and interventions in everyday life. Safety is affected by many different factors. These factors can be more easily understood in their context if they support personal, social and physical attributes. For example, there are several strands of literature analyzing the personal and social attributes such as age, gender and socioeconomic status that affect the perceived safety of public spaces [22, 23].

According to Furedi [24] social and cultural processes guide people on how to respond to threats to their safety [24]. Several researchers highlighted the fear of crime in parks as the most important factor that keeps women out of public spaces [25, 26]. Fear of crime also encourages the separation of women from men in public space [12]. For instance, the creation of safe places for female social interactions and activities to accommodate their outdoor space needs [12, 27]. The international literature shows that some women are mainly fearful of sexual assault [25]. According to Hilinski et al. [28], young age women are targeted for sexual assault and rape [28] then old age women [29]. Following this, there are many places in the world, where the openness in public space is not open for all [12]. In those places, public space is considered as a place where men have more rights than women and where women are often left out because of the fear of harassment [30]. Marginalized groups tend to be more fearful in society because of their vulnerability and feel segregated. Exclusion and loneliness are some of the social attributes in society that enhance the fear of crime. Social integration is essential to reduce the fear of crime and



increasing perceived safety. A neighborhood is perceived as safe when it has a social network that includes both regular communication and offered help to all groups. According to Olsson [31], the socially defined space applies when there are social ties between the inhabitants and it is easy to understand and use the public space. It is important to the public space feels open and welcoming for people to make them stay. If the connection with space is missing and identities become unclear, the social control becomes more difficult which resulted in an unsafe place. A socially sustainable, cohesive and resilient public spaces can be achieved by promoting social inclusion and by empowering all groups of people.

### **3. Fear of crime and perceived safety: physical design perspective**

In this book chapter, physical design perspective refers to the design attributes of the physical environment of public spaces such as design layouts, mixed land use, street patterns, street furniture (garbage bins and seating arrangements), barriers (actual and symbolic), lighting, accessibility, landscape design and maintenance. Previous research about fear of crime and safety in the urban environment has dealt with situational crime prevention measures [32, 33] and how the physical environment should be designed safely [34–36]. Situational crime prevention measures are applied when a criminal is motivated to commit a crime and the design of the place makes it difficult to carry out the crime. Situational crime prevention methods deal with the physical, social, and psychological aspects of the place to counteract crimes [37]. The role of the physical environment in promoting safety highlighted by several researchers [34, 35]. Crime prevention through environmental design (CPTED) is a concept that explains the relationship between environmental features and crime occurrence through the principles of surveillance, territoriality, access control, target hardening, activity support, and image/maintenance. CPTED is a method that is about how proper development of physical environments can be designed to prevent crime and increase the sense of safety in the built environment. The importance of using CPTED principles is highlighted by many researchers as an inventory in public spaces such as parks [9, 38].

The best-known theory that explains environmental preferences from an architectural, interior and urban planning perspective and its impact on people is “Prospect-refuge theory”. This theory seeks to describe why certain environments feel secure and thereby meet basic human psychological needs. It is a strategic assessment of how different potential environments enable the ability to observe (prospect) without being seen themselves (refuge). By emphasizing subjective references such as experiences, behaviors and relationships more than architecture, Appleton [39] claims that people evaluate environments functionally and search for strategic opportunities that environments can provide. According to Dosen & Ostwald [40] the physical elements in the planning that creates a perception of spatial arrangements of different components affect human perception and thus the perception of safety. Components that provide the opportunity to move and explore in an environment and whether the effect of shadow and sun is taken into account affects the human perception and experience of safety [40].

In her seminal work, ‘The life and death of the great American cities’ Jane Jacobs [36] argue how the safety aspect is an important part of a livable urban environment. Jacobs [36] brings forward the idea of mixed land uses of buildings and people by analyzing the uses of different urban elements, such as sidewalks, neighborhood parks, and city neighborhoods. According to Jacobs [36], three requirements should be fulfilled to create perceived safety in the streets. First, a clear division of the public and private space is important. Second, businesses

along the street should have large windows facing towards the street. This can create more “eyes upon the streets” that can perceive what takes place in the street space and can help to intervene in potential crime events. The third and the last is to create a continuous flow of people passing by. This increases the number of eyes while encouraging people in the surrounding buildings to look out at the street and observe the events happening in street space. Jacobs believes that no one is interested to look out on an empty street, on the contrary, many people feel entertained when observing a living street [36]. To create the flow of people that makes the street space come alive, Jacobs mentions the importance of having a mixed type of activities that attract people at all hours of the day and provide guardianship. The concept of guardianship is mainly highlighted by Cohen and Felson [41] in routine activity theory. According to them, “in order to take place a crime event, the presence of a motivated offender, the presence of a suitable target, and the absence of a capable guardian is required” [41]. Capable guardians can be provided with the help of planning a mixed type of activities and mixed land use.

The role of mixed land use in the built environment is highlighted by various researchers, architects and urban planners. It has been argued that mixed land use activities lead to an active day for a longer period, which contributes to natural surveillance and leads to an increase in the feeling of safety [42]. In a study of parks and crime, Groff and McCord [43] found that mixed land use reduces crime. Larger parks that generate more activities have lower crime levels, which in turn are connected to greater numbers of people using these parks [43]. Contrary to this Iqbal and Ceccato [9] found that large parks can have safety issues due to the big area of the park. Parks can attract criminal activities and in turn have a high number of crimes in certain areas. For instance, cafes, restaurants and sports arenas in summers can also have an increasing number of crimes in parks, such as mishandling incidence, pickpocketing and vandalism [9]. When explaining the fear of crime in parks, overgrown trees and vegetation has an important role in association with fear of crime and disorder and affect perceived safety negatively. The major proposition is given to the idea that trees and vegetation can block the view and can create hiding places [44, 45]. Proper maintenance can help to avoid hiding places and in turn deter the incidents of crimes. Vegetation is also a physical element that is used to define demarcation or create symbolic barriers that question the accessibility of public places. Gehl [46] emphasized the need to eliminate such barriers (both physical and mental) to increase space accessibility (**Figure 1**).

Accessibility in public places has an important role from the physical design perspective. A public place should feel accessible and open to everyone. Accessibility can be seen from two perspectives. It could be either actual or symbolic barriers that prevent visitors from visiting or staying at a place. Within the physical aspect,



**Figure 1.**  
(a) Presence of dark tunnels often limits the prospects and provides refuge for a criminal. (b) Padlocks can increase fear of crime. (Source: Iqbal, A\*) \*All photographs were taken by the author.

accessibility can sometimes be associated with the lack of obstacles and barriers. The perceived accessibility is instead about whether the place is perceived as inclusive for all. It is also very important to understand the dilemma of “public spaces as a public good” — that nobody feels the responsibility of being in charge of publicly owned spaces [9, 43] however, at the same time everyone wants to get benefit from it. While explaining accessibility in the public urban space, Olsson [31] argued that an accessible and well-planned public space must be identified as open and attractive. In order to create attractiveness, the presence of other people is identified as the crucial element [31, 46, 47] and a prerequisite for a well-functioning city [31]. Urban events such as cultural events and sports were criticized by Olsson [31] as they are not sustainable solutions to create accessibility and attractiveness in the city.

Another important physical element that helps to feel safe in an urban environment is the use of street furniture such as the placement of garbage bins and seating arrangements in a public space. In order to investigate how people use the spaces and interact in public places such as squares and parks in New York, William Whyte [47] stated an essential prerequisite for attracting people to squares and parks in the presence of other people as well as access to the seating. Food sales, the presence of water, movable chairs and access to the sun were identified as other significant elements [47]. Public spaces that provide seating with a natural overview mainly allow for social interaction and automatically generates perceived safety. Saville & Cleveland [48] found that park furniture can create natural surveillance if placed adequately. The placement of park furniture can work as a source of creating eyes on the street on the other hand they are a major source of creating a social connection among park users. At the same time, they can be part of the noise and other problems in parks [48]. A park or public space with well-groomed trees and vegetation, good lighting, and cleanliness increase the perceived safety.

Perceived safety is also associated with the disorder in the surroundings. The disorder is mainly affected by physical attributes such as graffiti, poorly maintained landscapes, debris (garbage), vandalism, and poor lighting. According to Broken Windows Theory, physical and social deterioration can affect residents' perceived safety and may result in a higher fear of crime [23]. The relationship between perceived safety and disorder is recurring. An increase in disorder decreases people's perceived safety which in turn leads to place avoidance. On the other hand place avoidance leads to further disorder [49].

When emphasizing crime preventative measures, several researchers found street lighting as an important part of physical features that helps in feeling safe in public spaces [14, 50] However, there are mixed trend results in research that show both positive and negative effects of lighting. In a recent systematic literature study, Ceccato and Nalla [14] mentioned that 72 percent of studies (from their sample research papers) show that good lighting affects positively by reducing crime and/or fear of crime however, the impact on the safety of other security technologies, are inconclusive [51]. According to Rezvani and Sadra [5], lighting and visual accessibility of public places lead to strengthening the sense of feeling safe in the neighborhoods. Physical design affects perceived safety, but it is not just physical planning that administers how safe a public space can be. Sreetheran & van den Bosch [52] argues that physical attributes can be apparent like vandalism or sometimes even more prevailing factors such as lighting or maintenance of an area. Physical factors that indicate disorder in society generate fear and can be perceived as a warning sign of an unsafe place. It is important to keep in mind that the personal, social and physical attributes are interdependent to achieve perceived safety. Investigating negative aspects of light pollution on ecological systems and health, Chepesiuk [53] shows that lighting also has divergent effects on both flora



and fauna. It has also been highlighted that light pollution in cities shown a negative effect on people's sleeping habits [53].

#### **4. Fear of crime and perceived safety: a socio-technical perspective**

Our cities have developed a lot and access to modern technology such as smart-phones, laptops, the internet, etc. has most likely had an impact on how public places are used and how people interact with each other. Since this new era of smartphones and location-based services has started an increasing trend of debate is taking place between various actors in society on the role of socio-technical perspective to design cities that can help to reduce crimes. Cities are comprised of people, infrastructure, physical forms, services, ecosystems and communications. The interaction between society's complex infrastructures and human behavior has a great role in interconnecting all three forms of sustainability that are, social, physical and ecological. However, it is inappropriate to expect that the sustainability challenges that our cities are facing can be solved by only traditional disciplinary methods of research. Cities require a socio-technical approach rather than a purely technological one because societal functions are achieved by a combination of technology, infrastructure, production systems, policy and legislation, user practices and cultural meaning [54]. When it comes to explaining socio-technical perspectives about crime and fear of crime the most important element is how the use of technological systems and equipment (such as lighting sensors, security alarms, security electronic devices, CCTV, smartphones or other technological instruments) are influencing safety/security and sustainability. So what makes a public place inclusive, safe and resilient from the socio-technological perspective?

Video surveillance cameras are a common part of the modern world today. The implementation of CCTV cameras has been considered a supplemental tool for surveillance and a potential means of facilitating social control [55]. However, still there are some significant legal and social limitations associated with it [56]. Besides the subjective nature of feeling safe, some people feel that the presence of CCTV makes them feel more confident and safe while others feel it reduces their confidence [57]. To identify the crime prevention effects of CCTV and street lighting Welsh and Farrington [58] found that "CCTV and improved lighting were more effective in reducing property crimes than in reducing violent crimes, with CCTV being significantly more effective than street lighting in reducing property crime" [58]. More focus was given to parking lots and/or garages and little is known about the effectiveness of these crime prevention effects in other public spaces. One example of research on the effectiveness of urban video surveillance in public spaces was assessed by Socha & Kogut [56]. The authors found that the installation of smart surveillance and analysis system in public space supports the use of monitoring systems to prevent and reduce crime and improve safety in public space [56]. Similarly, McCormick and Holland [59] found that CCTV cameras can decrease criminal activities in urban parks. Contrary to this, Surette and Stephenson [60] investigated the relationship between safety and video surveillance camera. The results show that the surveillance cameras had an insignificant effect on the disorder in parks. Ratcliffe [61] identified installation of video surveillance cameras as a tool that increases the risk of facilitating the arrest of the offenders. However, the same study also demonstrated that in general cameras can serve to reduce criminal activity, some locations do not get any benefit from camera installations [61]. In another study, Welsh and Farrington [58] suggest that CCTV works better in well-defined conditions (especially in car parks) than in public places and has the greatest impact on car crime, without having any impact on violent crimes.



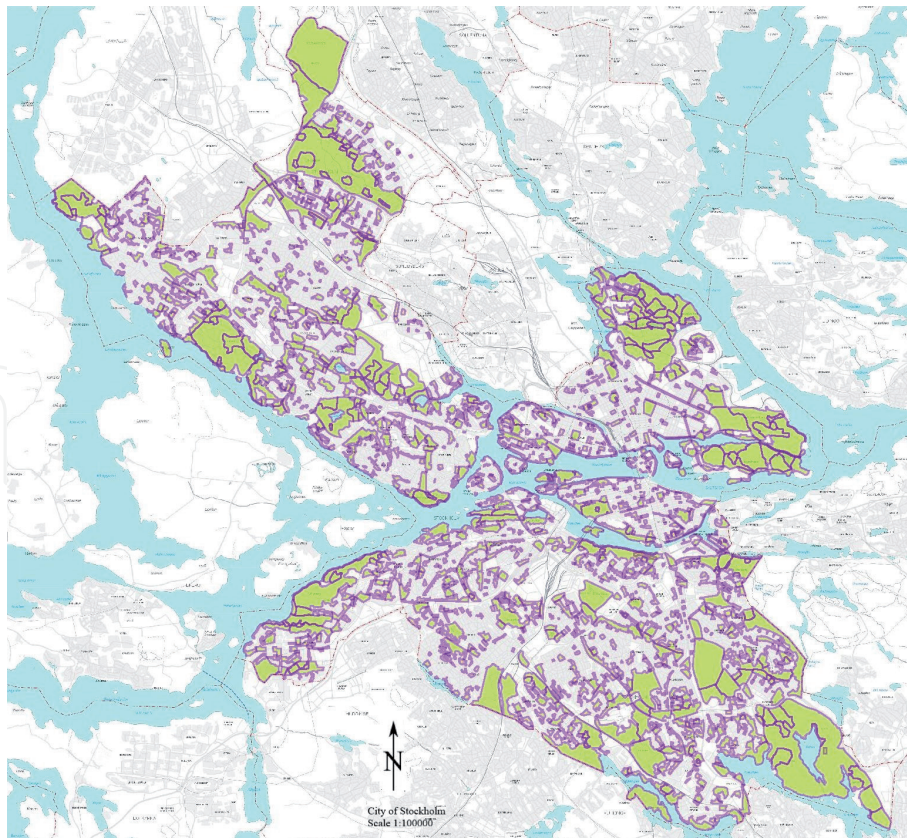
The age of new technology has also contributed to the development of methodological, and ethical challenges. For example, Ceccato [62] emphasized on what happens in public space is getting new expressions, for example, the role of guardians in surveillance has been redefined. “Eyes on the streets” by Jane Jacob [36] is complemented by “apps on streets” [62]. Ceccato explored the concept of surveillance and related terms by evaluating the nature of the data captured by users of an incident-reporting app. Results from this study suggest that the app is often used to report a crime, mostly in residential areas (as opposed to inner-city areas). Findings also indicate that data from a survey of app users can rarely represent the actual population of those using the tool, or the population residing and working in these areas [62]. While exploring spatial patterns of guardianship through civic technology platforms at the level of neighborhood units in England, Solymosi [63] found that it is possible to make use of civic tech data to explore people’s engagement in guardianship and map their guardianship capacity in physical space by using digital traces of behavior available online, however, there are limitations associated with crowdsourced data as they are characterized by bias sample self-selection as well as participation inequality [62] also highlighted technological, legal, institutional, ethical, and cultural—that limits the use of apps/smartphones for planning purposes. The author emphasized that the issues of data privacy, the responsibility of actions (e.g., intervening) and accountability should be addressed before data of this kind is used [62]. So what makes a public place inclusive, safe and resilient from the socio-technological perspective? Beginning from the installation of appropriate street lighting sensors, alarms to CCTV, using smart mobile phones to location-based services, and reporting crimes digitally to crowdsource data reporting various surveillance techniques can work in both ways as they increase the sense of security, and at the same time creates certain worries among people.

## **5. Fear of crime and perceived safety in Stockholm, Sweden**

Stockholm the capital of Sweden, is one of the green and also one of the safest cities in Europe and the world. Stockholm is chosen as the case study area for several reasons. First, Stockholm is built in between and around plenty of parks and natural green open spaces (**Figure 2** shows 1,046 parks and green spaces in Stockholm For more detail, see [64]). Second, little research has been done to know the relation between crimes in parks and public spaces in Stockholm [9–11].

According to the Swedish National Council for Crime Prevention [2], a total of 31 percent of the population (aged 16–84) state that they feel very unsafe or quite unsafe when outdoors alone at night or that they avoid going out alone at night due to the feeling of being unsafe in Stockholm. In particular, Women (42%), complained of feeling unsafe than men (20%). In 2020, 28 percent of the population (aged 16–84) state that they often have chosen another route or another mode of transport as a result of concern about being a victim of crime, while 15 percent have avoided doing an activity often as a result of this concern. Lastly, 10 percent state that their quality of life is affected as a result of being concerned about being a victim of crime in Stockholm [2].

At a macro scale, field survey observations in a pilot study in 2011 were conducted by the author at twenty-five parks in Stockholm [13]. The main aim behind the fieldwork was to understand the nature of parks and to categorize them as either ‘amenities’ or ‘disamenities’ according to the attributes that exist in the park. During the study, the author investigated activities/functions, aesthetical features, location and management (crime, the safety and security situation) as the main categories. All parks were inspected at two different periods of the year (winter



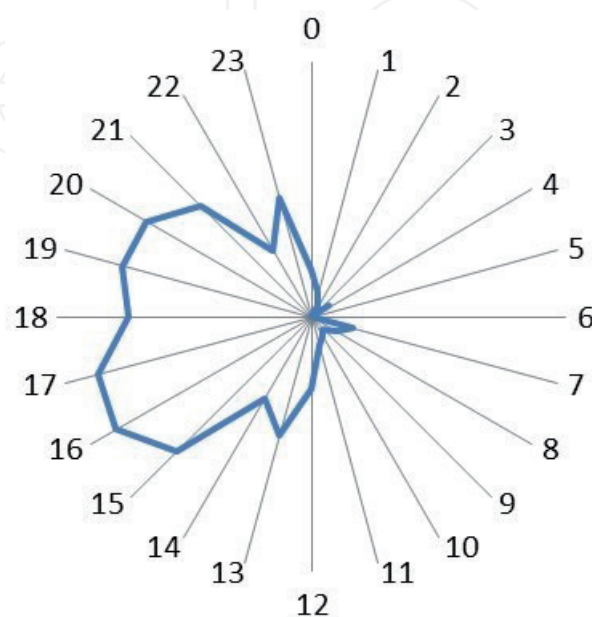
**Figure 2.**  
*Public green areas in Stockholm. Source: [2].*

and the summer of 2011. See [10]). The result of the study shows that Stockholm's central areas are targeted by different types of crimes, with some parks becoming crime attractors [13, 18]. By investigating the incidence of crime in parks, we found that more serious crimes including violence, drugs, assault and graffiti occurred within Hilly Park and Inner City Parks in Stockholm, however, not all parks have high crimes [10]. Some parks, especially parks with Play Grounds, Parks with Squares and Neighborhood Parks had comparatively low crime rates. Several reasons can justify these trends. For instance, no one can deny the existence of students, coaches and parents—who work as capable guardians and have an important role in perceived safety in such public spaces [10]. These findings are in line with the routine activity theory [41] where such guardians assume personal responsibility to react at such places. However, there have been studies that highlight the fact that capable guardians are not always present [65]. Findings also suggest that easy access to a neat, well-managed, and relatively safe Neighborhood Park is valued more in Stockholm. In addition to this park's location plays a crucial role. The crime and safety situation of a park is directly linked to the management and design of park, without taking into account park location in the city. For instance, parks located at or near the city center are valued positively as compared with parks located in the city's periphery [10].

At a micro-scale, Iqbal and Ceccato [9] studied the nature of a park with high crime rates in Stockholm—"Tantolunden". Tantolunden is located in the southern part of central Stockholm, Sweden. Tantolunden was nominated as one of the most dangerous parks, with the topmost violent reported crimes in Stockholm [66]. Regarding the effectiveness of CPTED in parks and public spaces, a detailed inventory was developed based on CPTED principles [9]. Sweden like its other neighboring Scandinavian countries was quite late to adopt such an initiative that incorporates the CPTED principle [67]. New sustainable housing was built by using CPTED principles in design and planning [67]. Stockholm police with the National

housing board in Stockholm launched the most famous strategical document BoTryggt05 in 2005 that was about the inclusion of CPTED measures in housing construction guidelines. In 2017 Stockholm has adopted a strategy for “Greener Stockholm” that provides guidelines for planning, implementation and management of the city’s parks and nature areas in Stockholm. The main agenda is to highlight the importance of a safe and equal urban environment to promote perceived safety and social cohesion among all groups of people in Stockholm. Well-designed and illuminated squares, streets, sidewalks, parks and playgrounds were highlighted as important measures for the increased experience of safety in the document. However, still, these principles are not being used as the standards in Sweden. For instance, while implying these guidelines, Stockholm park plan documents for individual districts in Stockholm mainly show concern about missing lights and overgrown bushes and trees. No more information at a deeper level has been provided (for details see park plan of each specific area [68]). Recently, BoTryggt 2030 has been launched — that claimed as a tool for building safer cities that covers not only housing but also neighborhoods, public space, commercial places and more to respond to today’s holistic approach in urban planning [69]. To understand authorities’ point of view on the use of CPTED principles and collaborative planning in this large nature area park, a questionnaire was sent by e-mail to the park manager and a crime prevention coordinator working in Stockholm municipality. Findings from the questionnaire suggest that safety guidelines that are used in Stockholm are not categorized under the CPTED umbrella yet. These results are in line with the previous findings that CPTED has not been used in its full capacity as it is used in other parts of the world [66]. A policy recommendation on incorporating CPTED principles could be derived from these results.

A great deal of CPTED is mainly about increasing natural surveillance, protecting targets, access control and creating environments that encourage activities that can help to limit crimes. CPTED also helps to focus on criminal activity patterns. If compared to the other similar Hilly Parks in Stockholm such as Vitabergsparken, Kronobergsparken and Vanadislunden, Tantolunden still stays at the topmost reported crimes [70]. According to police statistics [70], vandalism is still the topmost reported crime in Tantolunden between 2017 and 2019 following narcotics and theft that happens mostly in the afternoon and evenings (see **Figure 3**).



**Figure 3.** Reported crimes per crime hour in Tantolunden Park (2017–2020). (Source: [70]).



The authors found that parks that have large nature areas may have in-between spaces that transform into desolate spaces and, as a consequence, have the potential to attract litter and graffiti that may affect inhabitants negatively [10]. These desolate spaces are also perceived as obstacles to access to other parts of the city. Some of these large-area nature parks are not easy to maintain, and they adopt an atmosphere of disorder and affect negatively [9]. These results are in line with the previous findings of the cyclic relationship between perceived safety and disorder [23, 49]. It has been suggested that a well-maintained park with a sense of belonging among residents and park users can create a positive image [8].

Results from the interview showed how residents feel about the safety conditions of this large area nature park [9]. A total of four interviews were conducted with park users (two males and two females aged 18–40 years). All of the interviewees showed concern for the presence of the so-called “illegitimate” park users [18] such as homeless individuals, alcoholics/drug users). All of them pointed out that public toilets in the park are frequently being used by illegitimate users [9]. This study also concludes that crime in parks must be considered in perspective with crimes in the neighboring areas because any park with high crime rates is usually associated with high crime rates in the surrounding area [11].

Regarding the socio-technical perspective, neither CCTV cameras nor security guards were found in this large nature area park at the time of field inspection (for instance., see details [9]). This can be associated with the Swedish government policies that require authorization to install CCTV cameras. That also put a limitation on the general use of CCTV cameras in parks and other public spaces. Several researchers found that implementation of technical systems and tools such as CCTV cameras can affect criminal activities in urban parks [59], however, it has been also suggested that “none of these measures could reduce all crimes but each may work for a specific offense category and cumulatively lead to an overall crime reduction” [71].

## **6. Conclusions and recommendation**

Fear of crime has been regarded as a significant social problem in urban areas. As Rezvani and Sadra [5] stated, “the presence of fear of crime in urban environment shows troubles of communities in the modern age” [5]. The ability to be in a park or public space without being fearful is regarded as an individual right and important for the quality of life in a city. The previous discussion shows being safe in a city is such a broad concept that it is not just associated with the actual crimes, many dimensions of the perceived safety that are linked to the built environment should be considered in planning and designing such places to reduce the fear of crime and increase safety. But then which policy or design solutions can create a sense of safety? Which physical attributes discourage crimes in public spaces? Based on the previous discussion, this section provides some of the general policy and design recommendations for being safe in the public space that should be applicable to other major cities of Sweden or cities similar to those as Stockholm.

This book chapter has mainly focused on safety and the influencing physical factors however, other social conditions and factors also play a role in the origin of the crime, and sometimes it is a combination of several factors [52]. Findings suggest that no one can deny the importance of the physical design layout of the parks and public spaces that have an impact on perceived safety. Small area parks and public open spaces with playgrounds are more “preferred” than large nature area parks. Working with the large nature area park’s design can help to remove unused in-between spaces, to reduce criminal activities in parks and public spaces.



This can be done by splitting park areas into two or more parts according to the design and its requirement. Introducing new activities also encourages mixed land use or mixed activities/functions that can create the flow of people at different hours of the day. This can also help in providing activity support in terms of new guardianship with more eyes on the streets [36]. In contrast, other environmental characteristics in parks, such as maintenance and management of trees and bushes, access control, installation of CCTV cameras can help to create a positive image of the park. Perception of safety also differs according to the time of the day and the presence of more street lights can contribute to the feeling of being safe in a public space.

A way forward, for the implementation of safety and security guidelines in public spaces in Stockholm, is the creation of programs that highlights the implementation of CPTED principles guidelines in public space. Such practices should be encouraged as good practices designed with people not for people and should be showcase as successful and appropriate approaches. Another important issue is to think about the implementation of CPTED's appropriateness to ensure safety on a global scale for instance, in other continents. What CPTED can do to create safer cities must also be complemented by other social sustainability measures. CPTED provides tools and good conditions for reducing crime, however, the active participation of community members in the process can help to implement safe public spaces in Stockholm and to maintain them in the longer term. This way public space can work to empower people and a prospect to create social capital.

Creating safe and sustainable cities requires inclusive and collaborative planning between different actors both at the national and the local level [54]. We can create long-term safe and sustainable cities with the help of strategic planning by including social sustainability besides the economic one [72]. For achieving socially sustainable cities and thus also safe cities, the role at the municipal level is extremely important. As per discussion in the previous section, there are many legal and social restrictions associated with such socio-technological systems that put limitations to their use (such as the need for approval to install CCTV cameras in public places). To improve the image of the park or public space an interface between all stakeholders can create a sense of attachment. Following this, it is also important to understand that new solutions demand new forms of policy formation and collaboration. For instance, about the use of technological systems and equipment. It has long been suggested that risks are attached to human activities and managing and controlling these risks has been built on the experience of generation [73]. Similarly, using these technological systems in creating safe cities is not free from risks, for example, techno trash, pollution, malware, and hacking and privacy issues. It is high time to think of other solutions for producing circular and resilient places.

Public spaces have played an important role in building resilience in the cities. Can we promote a positive urban transition where we design our public spaces in a way that supports better resilience and thus creating sustainable cities? In quest of finding an answer to the above question, this book chapter suggests that despite their intangible and immaterial nature overall, parks and public spaces affect positively and investing in the safety of public spaces does not only affects the quality of a place but also increases the quality of life as a whole because safety is an important indicator of overall social health [5] and quality of life [2]. However, the outcomes of this investment depend on the types of public space and the types of crime that are committed at or near the place. It is important to remember that if these physical designs and improvements will be implemented in public spaces, it does not mean that the crimes will disappear completely. Continuous work with all stakeholders involved and getting to the depth of what causes these crimes is equally important.

These findings are important for different groups of people: individual citizens who use such public places in their daily life, police and other safety experts who work with these issues in the city, researchers and practitioners who are involved in the process of creating the safe, sustainable and resilient cities.

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