## reviewed paper

#### Feeling Safe in Urban Estates: Learning from Riverwood, Sydney

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#### 1 ABSTRACT

Feeling safe is a necessity for quality of life. Conversely, feeling unsafe has a substantial impact on residents' quality of life. How does design impact on the perception of safety, and moreover, how can design reduce incidences of crime? Safety is influenced by many social, economic, and wellbeing factors that affect residents' experiences of their built environments. Neighbourhood and urban design – which are liable to be affected by the perceived quality of local spaces – are likely to be significant factors influencing broader residents' feelings of safety.

To these ends, this paper reviews recent literature on how design processes have influenced perceived and actual safety in public spaces. This paper focuses on different aspects of urban safety, including planning, management, and design in a mix-tenure neighbourhood. The paper selected Riverwood, a social housing renewal neighbourhood located in southwest Sydney, as the study area. Data collection methods used by the author for this paper include direct-observation and a cross-sectional survey of 62 households, aimed at shedding light on what are residents' preferences to improve safety perception in public spaces.

The paper finds that, for greater safety of neighbourhoods in urban estates, design approaches need to consider both physical and social-cultural factors; and that to achieve this, practical and realistic mechanisms are required to improve existing estates and to design future estates better. The findings of the study reveal that, addressing the concerns revolving around the trust-deficit in the community, will be the cornerstone to promote residents feeling of safety.

Keywords: Feeling of safety, urban estates, safety perceptions, Riverwood, Social housing renewal.

#### 2 INTRODUCTION

Cities are the places where people with various backgrounds mingle with each other, and it is also the place where we can witness a higher intensity and complexity of social life, culture creation, palpable economic development and also strides in science. Globalisation has brought, along with all its virtues, certain negative impacts on the society – which we cannot deny. The apprehensions about safety, the increase in crimes and an ever-increasing feeling of insecurity among the residents were the ultimate downsides of all the development sagas. Due to the constant growth of cities, provision of urban safety, thus become one of the most important pre-requisite to achieve a sustainable development of an urban system; which is reflected in the renewed interest towards urban safety in recent literature (Kudryavzev et al., 2011; Rastyapina and Korosteleva, 2016).

One of the prominent factors, which contribute towards achieving sustainable urban safety, is to experience a feeling of safety in residential areas (Chandola, 2001; Jesus et al., 2010; Whitley and Prince, 2005; Ziersch, 2005). Various studies and observations have indicated that, when citizens are asking for higher safety, they will refer not only to criminal behaviours of the fellow citizens but also to planning and design issues that make a sense of insecurity. Safety perception about a neighbourhood depends on various aspects, such as the location of the neighbourhood, the social, cultural and religious composition of the community which reside in it, the economic disparity among the neighbourhood, as well as the physical design. Therefore, incorporating the residents' idea into the adaptive planning, design and management strategies pertaining to the neighbourhood can lead to increased satisfaction among its residents. Thus, the policymakers at local levels should address urban safety by considering these novel ideas and local governments should make provisions to implement these in existing neighbourhoods and the planning of future establishments.

## 3 URBAN SAFETY: URBAN PLANNING, URBAN DESIGN AND URBAN MANAGEMENT

Urban planning, urban design and urban management are three crucial attributes for achieving urban safety (Abbott, 2013). Urban planning strategies for creating a safe city should consider factors such as typology of urban spaces, the function of the desired city, its density, its inhabitants and their day to day activities. Thus, urban planning contributes to the improvement of urban safety via managing the distribution of function and



activity, the layout of infra-structures, location, and characters of commercial sectors. These strategies play a role in urban safety as well as the quality and liveliness of the cities.

Structures and design of spaces highly affect the actual safety, as well as the perception of safety among its inhabitants. Some places are enjoyable and energetic and convey a sense of well-being, while certain others create anxiety and fear. The urban design addresses the structure of spaces, location of the buildings, the use of the building, layout of green areas and public spaces, street patterns, location of transit stops, and parking areas. Good designs result in a neighbourhood with higher vitality, whereas, bad urban designs may lead to empty spaces, uninteresting environments, fearfulness, unsociable behaviour and higher incidence of crimes.

Good management provides opportunities for neighbours to be familiar with each other and generate Neighborhood Watch programs. Neighbourhood Watch programs are intended to educate the people in these neighbourhoods regarding the security and safety aspects of the neighbourhood, and also it teaches them how to achieve this (Fennelly, L. and Perry, M., 2018). A good space management in the neighbourhood will send a clear message of care and safety, which reassures the residents and discourage the offenders. It also advocates community participation which is an effective solution to improve urban safety (Abbott, 2013). Moreover, managing a place in terms of safety includes maintenance, surveillance, regulation of its use, communication with users, and provision of suitable standards for vulnerable groups (Fennelly, L. and Perry, M., 2018; Fennelly, L. J. and Perry, M. A., 2018). Each of the above activity requires a complicated interaction between the various providers and the beneficiaries in the community. The owners and contracting authorities of a project have to engage these stakeholders in their decisions for considering their jobs and requirements. Similarly, As Carmona (2008) suggests: "in order to manage public space more efficiently, there has been a tendency to carve up the field into smaller units of responsibility, sometimes contracted out to a multitude of private contractors"

Thus, it is necessary to consider these safety strategies in various aspects of urban settlement, right from the initial phases of planning like decision-making, master plans, and urban renewal plans. The following figure shows a blueprint of the possible urban safety strategy that can be achieved by urban management, design and planning.

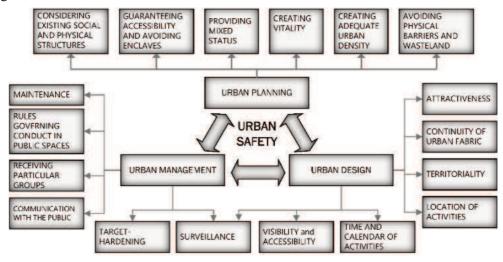


Fig. 1: possible urban safety strategies by urban management, design and planning

#### 4 SAFETY PERCEPTION

One of the prominent factors, which contributes to the sense of health and wellbeing, is to experience a feeling of security and safety in residential areas (Chandola, 2001; Jesus et al., 2010; Whitley and Prince, 2005; Ziersch, 2005). Safety perception can be influenced by environmental and design components, including poor lighting, presence of graffiti, absence of sightlines, other individuals and seating or recreational spaces. It also depends on various factors such as the age and gender, the social position, economic status, personal characteristics, health and political views of the members in the community (Koskela, 1997; Koskela and Pain, 2000; LINDGREN and NILSEN, 2012; Madge, 1997; Pain, 2001; Valentine, 1989). For instance, the above-mentioned factors cause variable perception about safety and security in the neighbourhood among the residents during situations like the re-location strategies in urban

renewal programmes by the government. Research conducted on U.S. tenant relocation plans constantly demonstrated that some residents from public housing, who moved out of their congested neighbourhoods with poverty, feel a higher sense of personal safety in their new settlements (Goetz and Chapple, 2010; Popkin et al., 2009). On the contrary, certain people who were relocated from public housing districts to new neighbourhoods, experienced a higher degree of insecurity in their new establishments (Brooks et al., 2005; Popkin et al., 2009). A meta-analysis conducted by Goetz and Chapple (2010) between 1995 and 2010 revealed that there is no statistical relationship between these individual perceptions and the actual benefits of the migration like mental or physical health. On the contrary, interviews with the participants of large-scale Scottish research among the tenants re-housed in a novel social rental neighbourhood showed less anxiety among the participants while getting out of their house in the new neighbourhood. These feelings of safety and security in their newer neighbourhoods can lead to better social behaviours among the residents (Forrest and Kearns, 2001).

# 5 URBAN SAFETY AND CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Crime prevention through environmental design (CPTED) is one of the branches of spatial practices that address interventions by focusing on the place-based approaches to reduce crime, and enhancing spatial cognition, as there is a relationship between a place and perception of being safe and secure at that particular place (Fennelly, L. and Perry, M., 2018). Brantingham and Brantingham (1981) mentioned that four dimensions should be considered for any approach towards crime prevention; which are locations, targets, offenders and the prevailing laws in that region. Similarly, Erdoğan (2010) asserted that place-based approaches to reduce crimes and fear of crimes are based on the theory that there is a relationship between spatial features of a particular place, which can support or encourage criminal activities. Thus, crime location is one of the most prominent dimensions of a crime, as crimes are not randomly dispersed in modern urbanised regions.

Particular areas are found in cities, which are identified by the public and administrations as 'hot spots' of crime which are not safe (Eck et al., 2005). In these scenarios, suitable designing and efficient application of the fabricated environments may result in the decline of fear and the occurrence of crime and thus improves the safety and quality of life among its residents (Crowe, 2000). Various studies have proved the efficacy of design options in the reduction of crime and emphasised the role of CPTED (Jacobs, 1961; Lynch, 1984; Stiles, 2009).

The CPTED theory has evolved over time and we can broadly categorise them into three generations (Fig. 2 and Table 1):

- First-generation: Physical Environmental design
- Second-generation: Social- Cultural design
- Third-generation: Sustainable Green Environmental design



Physical environmental design	Natural surveillance Natural access control Territorial Reinforcement	Image management Target hardening  Community culture Threshold capacity		
Social-cultural design	Social cohesion Connectivity			
Sustainable green environmental design	Energy crisis Natural energy	Recycling and minimizing waste		

Fig. 2: A dynamic integrated model for CPTED (Adapted from Cozens and Love (2015)), Table. 1: The principles of Crime Prevention Through (CPTED) (Adapted from Cozens and Love (2015)

Each generation is a guideline to create a mixed-use and walkable communities that have numerous benefits from a crime prevention point of view; which can be created by proper urban design, management and planning (see Fig. 2). The 1st generation of CPTED was a set of approaches to prevent crimes which are related to urban design. The 2nd generation of CPTED concentrates on the approaches for eliminating the root causes of criminal behaviours through sustainable and rich environments which are related to urban planning and management. Similarly, urban planning and management play a major role in the 3rd

generation of CPTED, which concentrates mainly on the security and consider it as a universal problem. The 3rd generation CPTED attempts in providing a guideline that can be applied in social, political, and geopolitical divisions (Fennelly, L. and Perry, M., 2018).

#### 6 METHODOLOGY

The research started with a review of literature and direct-observation (by using drawings, note-taking, photography, and mapping), followed by a field study. The data collection in the field was using household survey questionnaire (Table 2). The questionnaire sample included 62 adolescents, both genders and aged 18 or over.

Data collection methods	Target area or population	Purpose
Direct-observation	Social housing renewal projects	Finding criteria to measure safety in public spaces. Selecting a case study area
household	Residents	Residents' perception of safety
Survey		Residents' expectations for safe public spaces.
questionnaire		Residents' needs Residents' experience about safety
		What are the existing safety problems in the area?

Table 2: Stages of data collection.

A case-study approach was chosen to gain a detailed understanding of the context. Table 3 shows the criteria to determine Riverwood as a case study area.

Criterion	Reason
Social housing neighbourhoods	with To enable safety development to be investigated in different socio-economic
different socio-economic level	contexts.
Social housing renewal projects	To explore safety issues before and after renewal.
Medium to high-density estates	Potential for future urban model
Crime rate	Potential for safety improvement

Table 3: Case study selection criteria.

## 6.1 Case study area

The neighbourhood chosen as the study area is part of the Local Government Area (LGA) of Bankstown and state suburb of Riverwood (Fig. 3). Riverwood today is an established residential suburb with its commercial centre focused around the intersection of Belmore Road and the East Hills railway line. The suburb is located approximately 18 kilometres (km) south-west of the Sydney CBD and is situated within the municipalities of Canterbury and Hurstville.

The study area consists of two urban renewal projects undertaken by the NSW state government and has been held up as a model for the future; where one site has already been re-developed and the other one is under re-development. The former is the Washington Park Development which was renewed by Payce developer and the latter one is currently being redeveloped by the Communities Plus (Fig. 3). Riverwood is an integrated housing neighbourhood consisting of social housing, affordable housing and private housing. These dwellings comprise a range of housing types from single cottages to high rise residential apartments. The age of the housing stock ranges from buildings built in the mid-1950s through to relatively recent projects from the mid-2000s. The Riverwood estate is within a 1100m radius of Riverwood Station and the Riverwood shopping centre is located to the south (NSW Government, 2018). Figure 4 shows a pictorial overview of Riverwood study area.

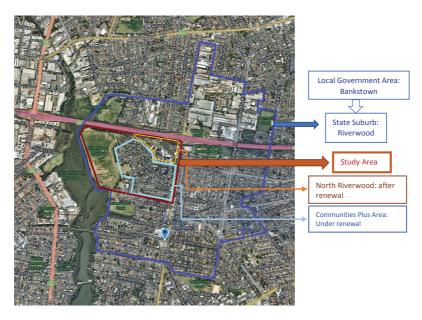


Fig. 3: Map of Riverwood study area (Nearmap, 2019)

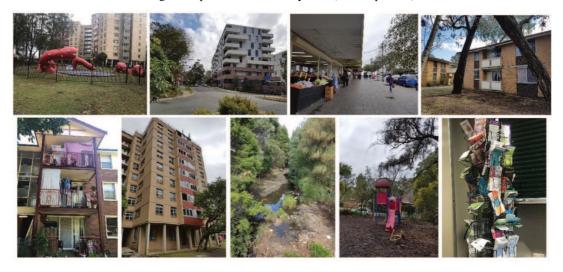


Fig. 4 Pictorial overview of Riverwood study area (Researcher, September 2018)

According to the Australian Bureau of Statistics (ABS) household and family projections, between 2006 to 2016, the Riverwood estate residents came from a diverse set of countries and had various racial backgrounds. Many of its residents born in China, Taiwan and Lebanon has declined, and those from other countries such as Australia, Philippine and Sudan showed a sharp increase. The population of listed races in Riverwood in 2006, 2011 and 2016 were 1620, 1484 and 2356 respectively. The largest number of people immigrating to Riverwood from 2006 to 2016 were from the south and southeast Asia and New Zealand. The immigrants from India grew at 833.3%, followed by those from Sudan at 683% and those from New Zealand at 104.1%.

Statistics relevant to the understanding of crimes at Riverwood were obtained from the NSW Bureau of Crime Statistics and Research (BOCSAR). The hotspot map depicts the density of incidents of non-domestic assault and domestic assault crimes in Riverwood estate (see Fig. 5: a and b). The five most common offences reported in the estate in 2006, 2011 and 2016 were theft, malicious damage to property, transport regulatory offences, assaults and the offence of 'Against Justice Procedure'. 'Theft' was the major crime in Riverwood in 2006 and 2011 and the second major crime after 'transport regulatory offences' in 2016. Four offences with the highest incidents were the same in 2006, 2011 and 2016 but with different varying incidence (see Fig. 5: c). Except for malicious damage to property, which was reduced from fifth to the sixth place in the most reported offence's list in 2016, the other four stated offences held their positions as the top crimes. Drug offence was placed in the fifth place in the list of the first five offences in 2016, which has linearly increased from 31 incidents in the year 2006 offences to 101 incidents in 2016.

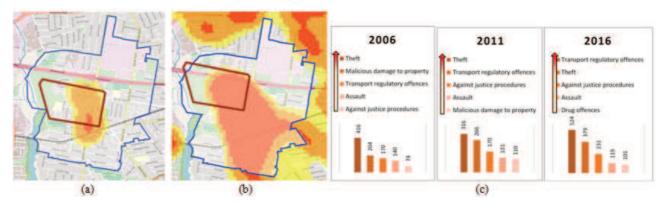


Fig. 5: (a) Incidents of Assault (Non-domestic assault) from April 2018 to March 2019 (NSW Bureau of Crime Statistics and Research, 2019), (b) Incidents of Assault (Domestic assault) from April 2018 to March 2019 (NSW Bureau of Crime Statistics and Research, 2019), (c) Five common offences on the estate in 2006, 2011 and 2016 (NSW Bureau of Crime Statistics and Research, 2019)

#### **6.2 Data Collection**

Household surveys were conducted in the study area using the questionnaire method. The residents were provided with a questionnaire having five closed questions (with 10-13 sub-questions) about the relationship between the quality of the neighbourhood and public spaces, and the perceptions of safety in public spaces. The scale or measures of public spaces quality and safety perception were selected based on the first and second generation of CPTED (See table 1).

The household surveys were conducted on random days between 10:00-17:00 from February 2019 to June 2019. The inclusion criteria to choose participants were their age (age should be more than 18 years) and their residential area (the participants should be from the study area).

#### **RESULTS**

## 7.1 The Perceived Safety of the Residents

The response by the participants about the perception of safety was categorized into three groups:-

- (1) Safe (includes Very Safe and Fairly Safe)
- (2) Unsafe (includes Very Unsafe and Fairly Unsafe)
- (3) No opinion (Neutral)

The public areas considered for the study included the immediate area around the individual house/ apartment, playgrounds, public gathering spaces, shopping areas, resting areas and community gardens.

Out of the 62 participants, 87.09% of the respondents said that the public spaces in these neighbourhoods were safe during the day time, whereas during the night time only 46.77% felt these areas are safe (either Very safe or Fairly safe). 6.45% among the respondents had no opinion about the safety of public spaces during daytime and 4.83% during nighttime safety. 54.83% of the participants were females. The gender variation regarding the perception of safety is shown in Table 4. Among night-time safety, 82.14% of the males felt the public spaces in the neighbourhood safe, whereas it was only 17.64 % for the females.

Participants	Daytime			Nighttime		
	Safe	Unsafe	No opinion	Safe	Unsafe	No opinion
Female (34)	28 (82.35%)	3 (8.82%)	3 (8.82%)	6 (17.64%)	26 (76.47%)	2 (5.88%)
Male (28)	26 (92.85%)	1 (3.57%)	1 (3.57%)	23 (82.14%)	4 (14.28%)	1 (3.57%)
Total (62)	54 (87.09%)	4 (6.45%)	4 (6.45%)	29 (46.77%)	30 (48.38%)	3 (4.83%)

Table 4: Gender-wise comparison of the perception of safety in public spaces during the daytime with that of nighttime.

Among the public spaces, the immediate surroundings near to each one's house or apartment was found to be the most unsafe area among the respondents (58.06%), followed by playgrounds (50%) and community gardens (35.48%). None of the respondents felt shopping areas to be unsafe. The opinion of the residents towards safety in various public spaces in the neighbourhood is depicted in Figure 6.

Fig. 6: Perceived Safety of specific locations inside the neighbourhood.

The next group of questions in the questionnaire were related to the general factors in the neighbourhood, which made the residents feel safe or unsafe. The factors considered for the study were:

- (1) Impact of criminal offences in the surrounding neighbourhoods
- (2) Impact of lack of activities in their neighbourhood, especially in the evenings.
- (3) Effect of trees and vegetations that might create blind spots or hiding places
- (4) Presence of high-density residential areas in the neighbourhood.
- (5) Presence of Wastelands in the neighbourhood
- (6) The effect of unattractive public spaces in the neighbourhood
- (7) The impact that can be caused by the presence of Police in the neighbourhood.
- (8) Winter weather.

Figure 7 clearly shows the residents reaction towards each of the above factors and their impact on their feelings of safety in the neighbourhood. 30% of the participants felt that criminal offences in the surrounding neighbourhoods negatively affect safety in their neighbourhood. The large majority of the participants indicated that the presence of police force in the neighbourhood would help in controlling the crimes. An interesting fact was that, for a small proportion among the participants (20%), feelings of unsafety tend to have seasonal variation, with winter weather increasing their fear and making them feel insecure.

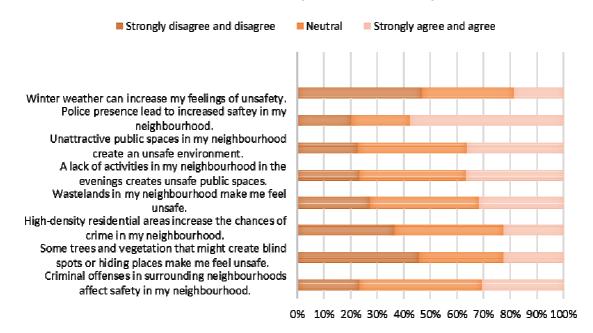


Fig. 7: Residents opinion regarding various factors and their effect on the perceived safety in the neighbourhood

Within the respondent group, drug abuse or dealing with drugs was the most important factor which made the participants feel unsafe in their neighbourhood (100%), followed by alcohol-related issues (90%), antisocial and nuisance behaviour (85%), robbery (85%), and Graffiti and vandalism (47%) (Fig. 8).

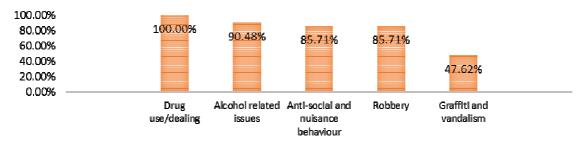


Fig. 8: Residents outlook on common offences in the estate which affect their feeling of safety in the neighbourhood

## 7.2 Residents' suggestions for improving safety conditions

This part of the survey was designed to understand the importance of physical, social and cultural factors for feeling safe in the neighbourhood according to residents' suggestions. The scale or measures of these questions were defined based on the first and second generation of CPTED principles. All the questions in the questionnaire were close-ended.

This part had 2 sections:

PART 1: Suggestions for improving the neighbourhood using the Physical Environmental Principles, and

PART 2: Suggestions for improving the neighbourhood utilising the Social-Cultural Principles.

Table 5 shows the suggestions by the residents for improving the safety perception in their neighbourhood by physical environmental factors.

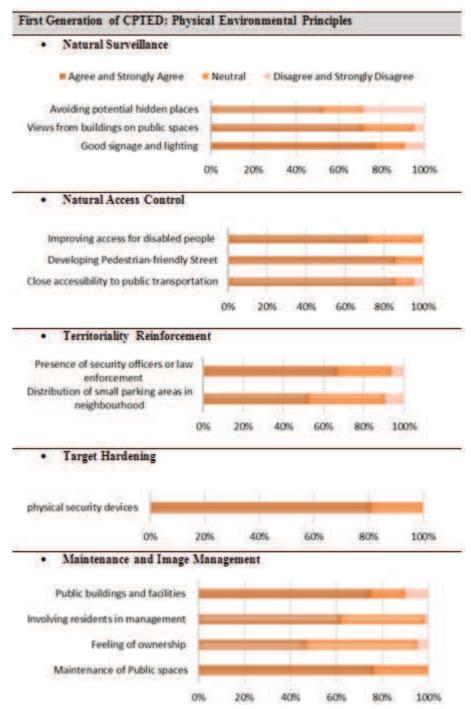


Table 5: Residents' suggestions for improving the perception of safety in their neighbourhood by modifying the Physical Environmental factors

A summary of the main social-cultural principle to improve safety, indicated by the respondents are presented in Table 6.

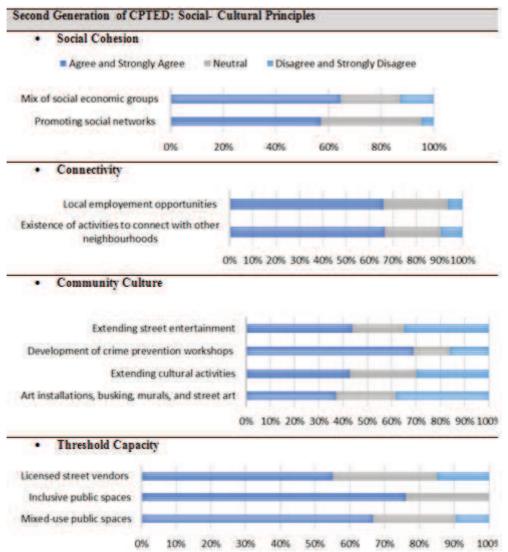


Table 6: Residents' suggestions for improving the perception of safety in their neighbourhood by modifying the Social Cultural

## 8 DISCUSSION OF THE RESULTS

Perception of safety is one of the most significant factors in livable public spaces, which is influenced by various social, cultural, and environmental factors. Residents' perception of safety is a subjective measurement and it is influenced by their preferences.

Safety feelings can impact people's quality of life as well as the social and economic wellbeing of a community (Cai and Wang, 2009, pp. 221–222; Klima et al., 2016; Michalos and Zumbo, 2000; Sugiyama et al., 2009). The social and economic wellbeing of a community is a vital element for the success of a city because these principles help build a sense of community among its residents (Cai and Wang, 2009; City of Sydney, 2018; Fennelly, L. and Perry, M., 2018)

According to the aspiration model proposed by Campbell et al. (1976), there is a relationship between residential preference, perception, and satisfaction. His model shows that residents assess their neighbourhood characteristics, and they compare their expectations to what they really have. Lang (2010) has opined that - "Fundamental to any understanding of human activities within the built environment and feelings about it is an understanding of the processes of perception". In his study, very often residents would declare feeling generally safe in public spaces located in their neighbourhood (87.09%) but still would point out that some public places during the night trigger unsafe feelings. The high rate of safety feeling among the residents can be due to the fact that, they sometimes adopt their preferences with their actual life situations.

By comparing the incident records and residents' perceived safety, it can be noted that there is a discrepancy between the types of commonly perceived crimes and that of actually recorded ones; which can be attributed to individual experiences. For example, if a particular person had a bad experience of drug abuse within themselves or in their family, then they tend to implicate drug abuse as the most important crime which makes them insecure. Jackson (2004) has pointed out that the gap between the perception of crime and the actual crime rate can be because of the different cultural meaning of crime prevalent in different communities. The perception of the public towards crime has an important effect in making policy decisions addressing crimes (Cohen, 2000). The results of this study are in accord with the recent studies, indicating that, policymakers should consider the perception of crime as well as actual criminal records when they make decisions related to law enforcement.

Overall, the residents' perception of safety is important to understand which factors are more effective in terms of providing a feeling of safety. They have different suggestions in terms of both physical and social principles, to improve the safety environment in the public spaces located within their neighbourhood. A possible explanation for this might be that, in a neighbourhood environment that is well planned, well designed and well managed; residents will feel comfortable and have a sense of belonging. This sense can be achieved not only by improving the physical environmental design but also by implementing a favourable social-cultural design. The recommendations for the estate of Riverwood is certainly to engage residents in the Neighbourhood Renewal Process in all the different stages - design, planning and management; in order to create a sustainable development.

### **CONCLUSION**

The present research reveals that the feeling of insecurity increased at night for the female residents in a significant amount, in comparison with day-time, but this pattern could not be observed with similar strength in males. To improve the feeling of safety in their neighbourhood using physical environmental principles, close accessibility to public transportation, developing pedestrian-friendly streets and installing physical security devices were the suggestions which were supported overwhelmingly by the residents; whereas the distribution of parking areas and the ownership of the residence could not gather much support. With regard to utilisation of socio-cultural principles in improving the feeling of safety, development of crime prevention workshops, inclusive public spaces and connectivity were the most supported ideas, but there were few takers for the suggestion of installing artworks to improve safety. The findings of the study reveal also brings out that, addressing the concerns revolving around the trust-deficit in the community, will be the cornerstone to promote residents feeling of safety.

To summarise, the paper finds that, for greater safety of neighbourhoods in urban estates, design approaches need to consider both physical and social-cultural factors; and to achieve this, practical and realistic mechanisms are required to improve existing estates and to design better estates in the future.

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