Crime in High-Rise Buildings: Planning for Vertical Community Safety

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Report to the Criminology Research Advisory Council
Grant: CRG 29/11-12

June 2013

This is a project supported by a grant from the Criminology Research Grants.

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1.2 Research Objectives

The aim of this research is to inform housing and planning policy development by exploring the variation in types and volumes of crime in a range of existing high-density communities. By analysing actual rates and types of crime, building management styles and perceptions of fear of crime, the research will reveal how policing and high-rise building management styles can coalesce to create safer vertical communities.

1.3 Methodology

The methodological approach was multi-method, comprising quantitative analysis, in depth interviews, a systematic observational instrument and resident surveys.

1.4 Results

The research was partitioned into three separate studies, each differentiated by the corresponding data sources and methodological approach. Qualitative analyses of police recorded crime incidents (Study 1) showed a high degree of concentration of crimes in a small proportion of high-rise buildings. This pattern was observed regardless of crime type or time of year. Building characteristics were examined and it was found that residential tenure appeared to have a relationship with the amount of crime recorded at the building level. Buildings with long-term residents recorded the lowest levels of crime, on average. Buildings with short-term tenancies (holiday apartments, hotels) had the next highest, and buildings with mixed tenure (both long and short term tenancies) recording the highest levels of crime.

The second study took a subsample of high-rise buildings and used an observational protocol to make ratings about place management, guardianship, and

physical security. The most notable finding was that unlike findings internationally, place management and active guardianship did not appear to be positively correlated. That is, theory would suggest that locations with high levels of active guardianship should also have high levels of place management, but we did not observe this at the buildings in our sample. Strong positive correlations between place management and territoriality, image and physical security were observed.

The third study involved interviewing residents, police officers, and building managers with a focus on the relationship between perceptions of safety and high-rise living. The findings indicated that the tenure and design aspects of the buildings had a significant influence upon perceived safety and security. Buildings of mixed tenures (short term or holiday letting and longer term residential) were most vocal in discussing the challenges of security and safety. Importantly, design and building management alone are not the sole panacea and individuals also had to take responsibility for considering their safety and security within high density environments.

1.5 Research and Policy Implications

The research reported in this project makes a substantial contribution to the criminological literature. In the criminological literature, place management and guardianship (two core concepts in routine activity theory) are rarely measured concurrently in the same locations. The results of this research suggest the relationship appears to be less than straightforward, with some buildings displaying a relationship consistent with theoretical expectation, whereas in others there was none. This observation, if generalisable, may require scholars to rethink the relationship between these two important and central constructs of routine activity theory. In addition, the strata title literature rarely makes reference to crime, favouring a focus on governance, an ostensibly obvious omission. The criminological literature has considerable empirical evidence attesting to the critical role that place managers play in limiting crime levels, suggesting potential cross-fertilisation of knowledge would be worthwhile.

The research findings have direct policy implications for future urban planning and property development agenda. The research demonstrated that the style of internal management styles in high-rise residences in tourist and other similar residences influences the volume of crime and disorder. The Body Corporate and Community Management Act 1997 (BCCM) provides the legislative guidelines for the legal ownership of strata and community title schemes, as well as operational and management governance. However, the emphasis within the Act is for these schemes to self-govern regardless of the capacity and capabilities of individuals within these schemes to govern and operationalise buildings and finances. The Building Codes of Australia (BCA) also provide nationally consistent standards for structural and building safety, health, amenity and sustainability. These regulations contain technical provisions for the design and construction of buildings. However, developers and architects ultimately create buildings that are commercially viable. In many instances, the regulations and legislation fail to acknowledge the social and human factors involved in high density residential

environments.

The research has larger national implications than the Gold Coast alone as many Australian State and Local governments adopt a compact city planning approach (Costley, 2006; Gillen, 2006). Increases in community density, through infill and high-rise developments, require policies that detail best practice in internal management and its interaction with policing for safer environments.

The research findings can also help inform crime prevention practice in two ways: (i) to guide Body Corporates in how best to implement supervisory practices for on-site building management in order to improve internal security and ensure safer residences; and (ii) the development of policing policies around risky facilities, like high-rise residences, and how policing approaches can best interact with internal high-rise management styles to lower crime.

2 Background

2.1 Introduction

Governments at varying levels have forecast significant changes in population levels and distribution over the coming decades. Australia's population is estimated to rise from 22.4 million in August 2010 to 35.5 million people by 2056 (Australian Bureau of Statistics, 2008). Local and state governments have implemented changes to planning legislation and regulations with a shift towards high density housing, or vertical communities, in order to ease the strain of maintaining a sprawling infrastructure base (Healy et al., 2006; Newman and Kenworthy, 1989). The changing social environment, including shifting demographics and housing tenure patterns, will ensure that over the next 20 years a larger portion of Australians will be living in high density residential developments. However, little consideration has been given to how these policies might impact on levels of crime and perceptions or fear of crime within these vertical communities.

There is considerable empirical evidence that the aggregate influences of transport networks, land use, population and their interconnections contribute a great deal to explaining the crime potential at certain places and times. In theoretical terms, crime pattern theory (Brantingham and Brantingham, 2008) and routine activity theory (Felson, 2008) posit a relationship between human movement, routine non-criminal activities and the production of crime rates. One important principle of crime prevention is that crime is highly concentrated in particular places and among particular people, suggesting that focusing resources on these concentrations is likely to yield the greatest preventive benefits.

In summary, current town planning and housing policies suggest that in the very near future housing density will be much higher than current levels and to date little attention has been paid to how levels of crime and fear of crime may be impacted. In order to establish evidence-based housing and planning policies this project explored the influence of physical building characteristics and management practices on the volume and mix of crimes occurring in existing high-rise apartment buildings. This research is motivated by a desire for state and local governments in Australia to avoid repeating the housing policy mistakes experienced by other countries.

2.2 Aims and Objectives of the Current Research

The aim of this project was to inform housing and planning policy development and policing practice by exploring the variation in types and volumes of crime in a range of existing high-density communities with a view to revealing the correlates of effective place management. This research represents the first attempt to examine the causal nature of crime within vertical communities, specifically examining the inter-relationships of types and rates of crime, physical building characteristics and building management styles and the implications of this for crime prevention policies and policing practice. This paucity means the findings reported here have significant implications for housing and town planning policies.

Specifically the following research questions will be explored:

1. What is the degree of concentration of crime within high-rise residential buildings in Surfers Paradise? Are there any differences observed for types of crime (interpersonal vs. property)?

2. Are there certain buildings that host a disproportionate volume of crime for different crime types? If so, what distinguishes these buildings from others that do not?

3. What is the relationship between building management style and the volume and nature of crime? Does physical security play a role in the observed differences between buildings?

4. Does management style and security measures influence the perception of safety and incidences of crime within high-rise buildings?

2.3 Study Region

This research was conducted in a single study region, the Gold Coast suburb of Surfers Paradise. It has a number of characteristics which make it an ideal focal area for this type of research. First, it has one of the highest population densities in Australia at 3,279 persons per km^2 (Sydney's average population density is 2,248 persons per km^2, the highest of any major city in Australia.). Over 70 percent of Surfers Paradise population live in buildings considered high density by ABS (Sydney's average is 20.7%). The percentage of the population living in detached houses is 11.6 (the Sydney average is 58.9%).

The second characteristic is that Surfers Paradise is a premier tourist destination, attracting more than 4.3 million international and domestic overnight visitors annually (Tourism and Events Queensland, 2012). The combination of residential and tourist population in a commercial area provides a unique and fascinating dynamic. Areas comprising transient populations are typically associated with higher crime rates, possibly as there is no stake in the community and no perceived value in establishing connections. Tourists, in addition to being transient, often have access to cash and other high value personal items, making them attractive targets for criminal opportunities. Moreover, tourists may

be "holiday mode" and not as vigilant with personal safety and security as they would be in their everyday lifestyle.

These two factors, high density living and the transient nature of local populations, mean that Surfers Paradise is a highly appropriate location to explore the relationships between high density living, place management, guardianship and the volume and distribution of crime. The analysis focused on buildings with at least three storeys, in order to avoid information privacy concerns. Figure 2.1 displays the suburb of Surfers Paradise with all property parcels included in the analysis shaded green.

2.4 Structure of the Report

The remainder of the report is structured as follows: in Chapter 3 we review the previous criminological and housing research describing empirical studies of building design, crime prevention and housing management with theoretical explanations drawn from environmental criminology that can be employed to explain observed concentrations of crime. This literature is used to inform the subsequent research, which is then described across three studies. The first (Chapter 4) uses police recorded crime data to conduct exploratory and descriptive analysis on the volume and distribution of crimes in high-rise buildings in the study region. The second (Chapter 5) contains observations of different high-rise buildings to obtain systematic measures of place management and guardianship. The final study (Chapter 6) describes interviews with a range of professionals (police officers, crime prevention officers and building managers) and residents relating to perceptions of safety, incidences of crime and social connectedness or cohesion of those living in vertical communities. In Chapter 7 the results are summarised before outlining the policy significance of the findings. We conclude by highlighting a number of potential avenues for further investigation.

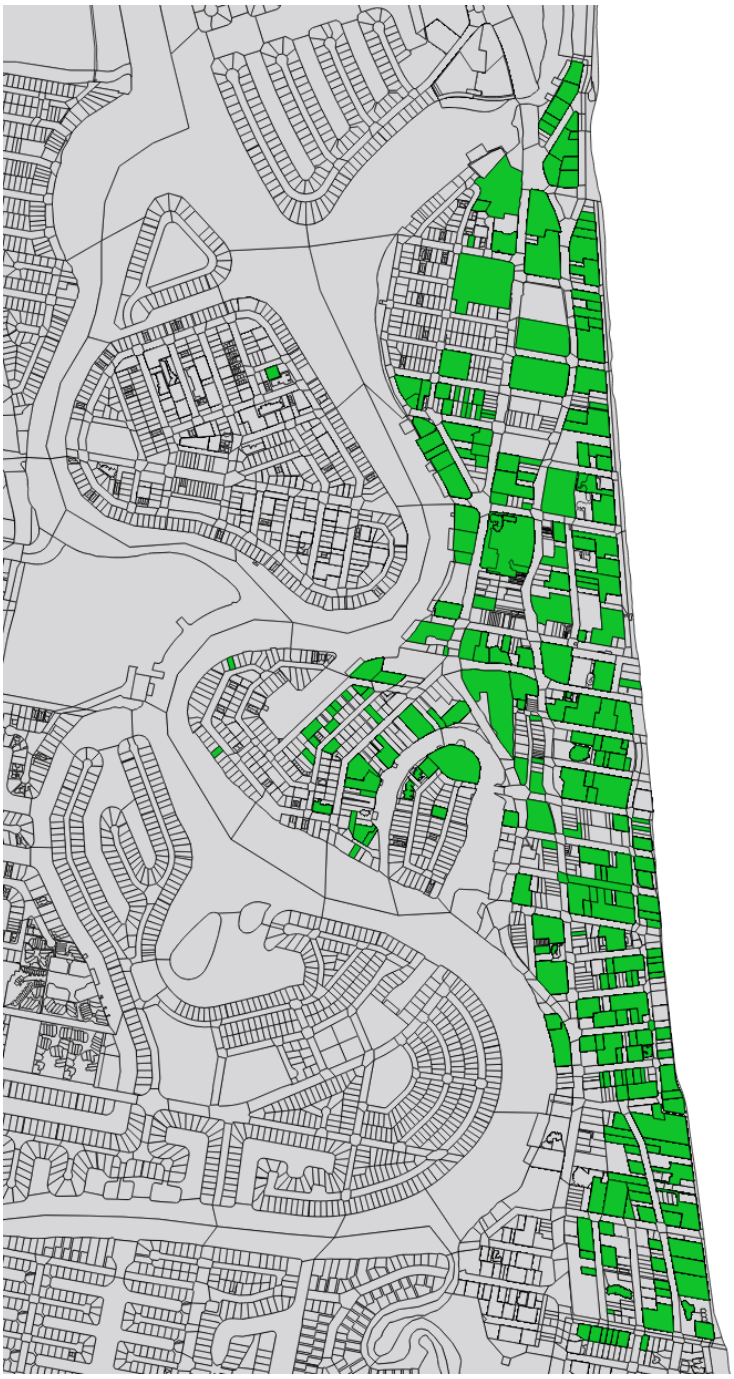

Figure 2.1: Study Region. All Properties Greater than 3 Storeys Shaded Green

3 Literature

3.1 Environmental Criminology & Situational Crime Prevention

Environmental criminology differs from other schools of criminological thought by focusing on the opportunistic nature of crimes. Traditional criminological approaches have tended to focus on the offender and the major factors that promote or retard pro-social development (Farrington, 2003). In contrast, environmental criminology focuses on crimes as events arising from person-situation interactions and seeks to understand what factors contribute to the occurrence of these events and what environmental factors cause crime to be more likely or frequent (Wortley and Mazerolle, 2008). Put simply, environmental criminology seeks to understand the immediate setting in which crime occurs and what can be changed about that environment to prevent crime.

There are three core propositions of environmental criminology. First, the immediate environment plays a major role in criminal behaviour, following the perspective that behaviour arises from an interaction between person and situation (Wortley and Mazerolle, 2008). This idea implies that crime is the result of motivation *and* opportunity. Historically, environmental criminology studies have assumed criminal motivation is the result of a range of distal forces (and thus, have not attempted to explain nor control it), but more recent research suggests it is possible to induce criminal motivation through situational factors (e.g. peer pressure) (Wortley, 1998, 2008). Once motivation is present (either induced by the immediate environment or pre-existing), crime events become possible if criminal opportunities are present.

The second proposition is that crime is not evenly distributed in time or location, nor is it randomly distributed. Rather, it clusters in particular locations and may peak at certain times (Brantingham and Brantingham, 2008; Felson, 2008). This is an extension of the first proposition, that criminal behaviour is influenced by the surrounding environment. If environments influence opportunities for crime, and by extension the occurrence of crime, it follows that crime will occur more frequently in environments that provide a greater number of opportunities. Similarly, crime will occur more frequently at certain times of the day, week, month and year corresponding with the opportunity structure and supply.

The third premise relates to Situational Crime Prevention (Clarke, 1983, 1997, 2008). Understanding what makes an environment conducive to criminal behaviour and identifying the patterns of crime and criminal opportunities is important in developing effective crime prevention methods. If police and crime prevention practitioners know where crimes cluster, then prevention strategies can

be targeted to that particular area to have the largest, and most cost-effective, impact. Similarly if the features of an environment conducive to crime can be identified, then they can be manipulated to reduce crime. Situational Crime Prevention is the application of environmental criminology principles, and revolves around changing the environmental features of a place so that the person-situation interaction no longer provides opportunities for crime to occur (Clarke, 1983, 1997, 2008).

A common argument against Situational Crime Prevention and place-based interventions is displacement. Crime displacement refers to when the location, time, crime, target, offender or method changes as a result of a situational crime intervention (Guerette and Bowers, 2009). For example, if an intervention improves door security of houses in a high burglary area, offenders may change their method of entry to windows (method) or target nearby housing estates without improved security (spatial). Underpinning the displacement criticism is the implication that situational interventions induce a change in the distribution of crime but not the level.

Not all displacement is negative. Displacement can be benign in a number of ways such as offence displacement, where a less serious crime such as burglary replaces a more serious crime like armed robbery, or crime is displaced and spread across a greater number of victims, or when crime is directed away from more vulnerable populations such as children (Barr and Pease, 1990; Guerette and Bowers, 2009). Diffusion of benefits occurs when when the reduction impact of an intervention is observed in areas not directly targeted by the intervention. For example an intervention targeting assaults at bars might also cause a reduction in robberies and muggings in the surrounding area (Guerette and Bowers, 2009).

In a review of 102 situational crime prevention studies, Guerette and Bowers (2009) found that displacement occurred in 26 percent of studies, while diffusion of benefits was found in 27 percent. It was also found that on average, when displacement did occur, the benefits of the intervention still outweighed the cost of displacement, i.e. there was still a net reduction in the presence of displacement.

There are three main theoretical approaches – the rational choice perspective, crime pattern theory and routine activity approach – that provide the foundation for environmental criminology and situational crime prevention. These will be outlined in turn.

3.2 The Rational Choice Perspective

The rational choice perspective posits that crime is a result of potential offenders weighing up the risks, potential rewards, and the effort involved in offending (Cornish and Clarke, 2008). If the risks and effort are relatively low, while the potential rewards are high, then offending is more likely to occur. The core concepts of the rational choice perspective are:

- criminal behaviour is purposive. Offenders commit crimes to fulfil some need or goal. These may not always be understood by others, but for the offender, there is some benefit or need met by offending (Cornish and

Clarke, 2008). These benefits can include fulfilling a need for excitement, sexual gratification or achieving a sense of control, in addition to the typical monetary gain (Cornish and Clarke, 2008).

- criminal behaviour is rational. Potential offenders attempt to select the best method of achieving their goals available to them (Cornish and Clarke, 2008). This does not mean perfect rationality. Given the inherent illegality of criminal behaviour, opportunities for offending are rarely going to be ideal. The risks and rewards cannot always be objectively quantified prior to offending, which when combined with the additional constraints of time frame, skill level and possible intoxication of the offender, leads to an uncertain situation in which decisions are not always going to be perfect (Cornish and Clarke, 2008). This results in satisficing, making decisions on information that is just satisfactory and sufficient, but not ideal (Cornish and Clarke, 2008).

- criminal decision making is crime specific. Different crimes types are carried out to satisfy different needs, and offenders' motives influence this decision making process. Even ostensibly similar crime types can be the product of very different opportunity structures. A prime example is different types of car theft, which can include temporary transport, theft for sale or theft for components/parts. Each of these will likely have some different decision making processes relating to a number of aspects of crime commission such as target selection and gaining access (Clarke and Harris, 1992).

- criminal decision making is a process. Crime commission can be partitioned into decisions and actions related to different stages of the crime event: planning, doing it, and completion. Even impulsive crimes involve some degree of preparation or at least some pre-existing conditions for their successful completion. Using burglary as an example, an offender can make the necessary preparations (selecting the tools required, identifying a target area), a target must then be selected which relies on identifying signs so as to estimate the risks and rewards of each potential target. Once a target is selected, the offender must approach the target while remaining inconspicuous, identify possible methods of entry and select one, identify and steal valuable items, leave the premise and (if necessary) load stolen items into a vehicle and finally leave the area. Viewing crimes as a process offers prevention opportunities beyond the narrow time window of the crime event itself.

The rational choice perspective suggests a crime will occur when a motivated offender comes across an opportunity to fulfil their needs in which the rewards outweigh the risks, and the offender has the skills and means necessary to commit the crime. As evidenced by the overall premise and the core concepts, the rational choice perspective is predominantly based around understanding the steps involved in criminal behaviour for the purpose of identifying effective preventative strategies.

The rational choice perspective assumes an offender's perspective in the decision making process of evaluating opportunities for crime and suggests that the features of a good opportunity are low effort, low risk and high reward (Cornish and Clarke, 2008). Situational crime prevention aims to reverse this – increasing the risk and effort and reducing the reward so criminal opportunities become less viable.

The rational choice perspective is not without criticism, including claims that offenders' decision making rarely exhibits rationality, some crimes are inherently irrational and that it represents a mundane approach, focusing on common crimes such as robbery, rather than high impact crimes such as homicide (Cornish and Clarke, 2008). The first criticism regarding offenders' rationality fails to take into account a number of factors. Criminals' decision-making is often made under considerable time pressures or the influence of alcohol or illicit drugs, situations that are far from ideal for objective decision making. Cornish and Clarke (2008) argue that rational behaviour does not necessarily mean complete rationality, merely that the best possible decision is being made based on the circumstances and information available.

The argument that some crimes are inherently irrational fails to account for the multitude of possible motivations for criminal behaviour. While financial gain is a common motivation for much criminal behaviour, it is often not applicable to violent crimes or sexual crimes. For interpersonal crimes other desires, such as sexual gratification, a sense of power and control, revenge or even to impress peers, are likely to be present (Cornish and Clarke, 2008). By understanding the motivating factor behind a crime, and the situational background of the offender, seemingly irrational crimes can appear rational (Cornish and Clarke, 2008).

The criticism that the rational choice perspective focuses on the common crimes and not high impact crimes fails to grasp one of the fundamental points of the rational choice perspective: it was never designed as a theory of criminal decision making and behaviour, it was designed to inform strategies of crime prevention and policy (Cornish and Clarke, 2008). In this light, the decision to focus on frequent crimes rather than rarer, high impact crimes is a pragmatic choice in order to have a greater impact on reducing crime. In spite of this, as Cornish and Clarke (2008) noted, the rational choice perspective has in fact been applied to high impact crimes such as rape and murder, and recently organised crime (Bullock et al., 2010).

3.3 Routine Activity Approach

The routine activity approach seeks to understand the causes of criminal events by looking at the crime event and its core elements: the offender, the victim or target, and the place or location of the crime event (Felson, 2008). The approach is based on the premise that the risk of victimisation for people and property is determined by routine, non-criminal patterns of activity.

In its original form, the routine activity approach argued that in order for a crime to occur, three situational factors were required to converge in time and space: a motivated offender, a suitable target/victim, and the absence of

a capable guardian (Cohen and Felson, 1979). A motivated offender is any individual with the skills and desire to commit an offence while a suitable target could be a valuable, easily accessed object or a distracted, vulnerable person, depending on the type of crime. A guardian is any person who merely by their presence discourages crimes from occurring (Felson and Clarke, 1998).

This initial version of routine activities has since been extended with the concept of guardians now split into three types referred to as controllers, one each for the offender, target/victim, and the place (Felson, 1995, 2008; Tillyer and Eck, 2010). This extension of routine activities is often represented by a double triangle, one inside the other (Felson, 2008; Tillyer and Eck, 2010). The innermost triangle represents the necessary components for a crime, a motivated offender, a suitable target or victim, and a place in which the crime can occur (Felson, 2008; Tillyer and Eck, 2010). The outer triangle is comprised of the three controllers whose presence (or absence/ineffectiveness) deters (or facilitates) crime. The victim or target is still supervised by a guardian, while a handler supervises the offender, and a manager controls the place (Felson, 2008; Tillyer and Eck, 2010). In order for a crime to occur, the offender must be free of handlers and identify a target not protected by guardians in a place that is not controlled by managers (Felson, 2008).

At its core, the concept of the guardian is quite clear, referring to anyone whose presence deters offenders. Some examples of this include pedestrians who can act as guardians for other pedestrians or for nearby properties as well as homeowners who, when they are present, can act not only as guardians of their own home and belongings, but also as guardians for neighbouring properties (Felson, 1995; Felson and Clarke, 1998; Sampson et al., 2009). The concept becomes more complex when one starts to consider that some inanimate objects can also be considered guardians, such as security cameras or security lights, since by their presence, they can deter offenders. This also relates to some preventative strategies that are suggested by the routine activity approach, in particular when dealing with property crimes such as occupancy indicators. For example, internal lights set to a timer make it appear as though a dwelling is occupied.

As guardianship can come from such a wide range of sources, and as such, can be manipulated more readily than other controllers, it is not surprising that a number of studies have examined the effectiveness of guardianship in preventing crime. Overall guardianship shows evidence of having a significant impact on the occurrence of crime (Hollis-Peel et al., 2011). In their review, Hollis-Peel et al. (2011) identified 11 studies that measured some form of guardianship and found that guardianship was found to influence crime in eight. However, it was found that less formal forms of guardianship, such as nearby individuals who unintentionally act as guardians, have been neglected in the research, with most studies focusing on organised patrols or security, place managers and actively monitored CCTV cameras (Hollis-Peel et al., 2011). One criticism Hollis-Peel et al. (2011) identified was a lack of observational and experimental measures of guardianship.

A recently developed measure of guardianship for residential houses, known as Guardianship In Action, uses observational data to assess not only the potential for guardianship as influenced by the physical environment, but also the

actual levels of guardianship demonstrated by residents (Hollis-Peel et al., 2011; Reynald, 2009). Reynald's (2009) measure utilises a four-tier model of guardianship consisting of, from lowest to highest level: invisible, available, capable, and intervening. Invisible means no guardians were available/identifiable. Available, as it suggests, means that guardians are present and available, but not capable of monitoring the area or intervening (Reynald, 2009). A capable guardian is one who is available and has the capacity to supervise the area, but does not intervene, while intervening guardianship involves individuals who are available and capable of supervision, but will also intervene and actively deter inappropriate behaviour (Reynald, 2009). In addition to this, Guardianship In Action also assesses and identifies factors related to Newman's ideas of territoriality and image as a secondary means of determining guardianship, based on the premises of defensible space theory (Reynald, 2009). Using these measures, and crime statistics for the area, Reynald (2009) found that guardianship and crime levels were inversely related, that is, as guardianship increased, crime levels demonstrated a significant decrease.

Handlers have been explored the least in the literature and have never been described as clearly as guardians or place managers (Tillyer and Eck, 2010). The most readily available examples of handlers are parents, principals and other school staff, as well as adult strangers in public locations (Felson, 1995; Tillyer and Eck, 2010). These examples predominantly only apply to younger offenders, possibly up to young adults, and become less effective as the offender becomes older (Tillyer and Eck, 2010). However, as the handler is based on social bonds to the offender, some potential handlers for adult offenders could include siblings, partners, friends or work colleagues, as well as a boss or supervisor (Sampson et al., 2009). Anyone that has a social bond with the offender can have some level of influence as a handler, though obviously if the social bond is stronger, the level of influence the handler has over the offender will be greater (Felson, 1995).

Place managers are individuals who have a responsibility for controlling and monitoring places, and through their management techniques and practices, can prevent or discourage crime from occurring at that location (Felson, 1995; Sampson et al., 2009; Tillyer and Eck, 2010). Some examples of common place managers are the homeowner, building or facility manager, receptionist, security staff and bus or taxi drivers (Felson, 1995). As with handlers and guardians, there are also different levels of responsibility for place managers. The owner of a place will obviously have the highest level of responsibility for preventing crimes occurring, while employees will have varying levels of responsibility depending on their role (Felson, 1995).

A number of studies have highlighted the importance of the place manager in preventing crime (Clarke and Bichler-Robertson, 1998; Eck et al., 2007, 2010; Homel and Clark, 1994; Madensen and Eck, 2008). Research on place management usually focuses on violent crime in bars and pubs as place managers in these facilities are usually highly visible and available and management strategies are often quite hands-on, although studies of place management in apartments do exist in the literature (Clarke and Bichler-Robertson, 1998; Eck et al., 2010).

Through interviews and observations Madensen and Eck (2008) identified six

categories of management decisions for bars that influenced the type of patrons attracted to the bar and how the bar was used, which in turn influence the risk of violent crimes occurring: bar theme, property characteristics, bar location, entertainment and activities, marketing, and security and staff training (Madensen and Eck, 2008). Of these, the type of activities, security and staff training and marketing strategies have demonstrated the most influence on risk of crime (Homel and Clark, 1994; Madensen and Eck, 2008).

In terms of activities, it has been found that bars that encourage dancing, competitive activities such as pool or darts, or provide poor entertainment have a higher risk of violent behaviour occurring (Homel and Clark, 1994; Madensen and Eck, 2008).

The risk of violent crime has been found to increase when there is a low ratio of staff to customers, the staff are poorly trained or aggressive, or when the staff are mostly male (Homel and Clark, 1994; Madensen and Eck, 2008). These staff factors were particularly significant when dealing with intoxicated customers, though intoxication itself is more related to verbal and non-physical aggression than physical violence (Homel and Clark, 1994).

Marketing strategies were found to influence violence predominantly through the type of customers that they targeted (Madensen and Eck, 2008). For instance, a large number of managers report using a strategy of charging higher prices for drinks in order to attract older customers and decrease instances of heavy intoxication.

The remaining decision categories (theme, location and property characteristics) influence the risk of crime by influencing the categories discussed above. The theme of the bar often influences the location and property characteristics through the physical and environmental requirements, such as a stage for live music venues or a dance floor for clubs (Madensen and Eck, 2008). Additionally, noise restrictions influence the location of loud clubs, while the target audience can influence the type of neighbourhood that a bar will be located in. For example, a pool hall that offers cheap beer will likely reside near a university or college, rather than in a wealthier neighbourhood (Madensen and Eck, 2008). In turn, the property characteristics (e.g. large open space for dancing) and location will influence the activities offered, and the marketing strategies used (Madensen and Eck, 2008).

Studies of place management in apartment complexes are less common than in bars as the managers are often located off-site and interactions with tenants can often be done over the phone, making it difficult to observe management practices (Eck et al., 2010). Despite this, studies by Clarke and Bichler-Robertson (1998) and Eck et al. (2010)[1] have both suggested place management plays an important role in crime prevention in apartment complexes.

Clarke and Bichler-Robertson (1998) conducted two case studies, one of a landlord who acquired apartment complexes in Santa Barbara, and the other of a landlord who owned apartment complexes in San Diego. These landlords purchased rental properties in lower class neighbourhoods and spent as little

[1]The Eck et al. (2010) study is discussed in detail in Section 3.6 due to its relevance to the current project which focuses on residential buildings.

as possible on maintenance and management (Clarke and Bichler-Robertson, 1998). Due to the lack of management of these properties, they often attracted individuals engaged in criminal activities such as drug dealers and prostitutes, who were unlikely to complain about living conditions. Analysis of police calls for service in Santa Barbara discovered that a large number of calls were coming from a small number of properties, all owned by one individual. Further analysis showed that yearly arrest rates had increased at nearly all of these properties after being purchased by this individual. These increases were often substantially higher than any increases observed in neighbouring control properties, suggesting that the changes were not due to neighbourhood-wide increases in crime (Clarke and Bichler-Robertson, 1998).

A similar situation was identified in San Diego but, after mounting pressure, the landlord agreed to work with a property management company which took over responsibility for the apartments (Clarke and Bichler-Robertson, 1998). The new property management company introduced a wide range of strategies to improve the properties including visiting tenants, substantial cleaning up of the grounds and any graffiti, screening applicants, restricting access and hiring resident managers for the larger apartment complexes. In the year following these changes, arrests at these apartments were reduced from 52 down to 6, while in the year following this, arrests were still low, at just 12 (Clarke and Bichler-Robertson, 1998). Unfortunately, since all the changes were implemented at the same time, it is impossible to determine which strategies were most effective and most responsible for the reductions observed. Despite this limitation, the findings support the importance of place management in the occurrence of crime.

3.4 Crime Pattern Theory

Crime pattern theory is a broad approach which incorporates the ideas of routine activities and the rational choice perspective in understanding the patterns and locations of offences (Eck and Weisburd, 1995). At its core is the idea that offenders, like everyone else, have routine activities such as work, shopping, recreational activities and time spent at home (Brantingham and Brantingham, 2008; Eck and Weisburd, 1995). Each of these locations is deemed an activity *node* and repeated travel to these locations will result in a routine *path* that is commonly followed, though alternative routes may be used or explored during heavy traffic or road works (Brantingham and Brantingham, 2008). The set of an individual's frequent nodes and paths form their *activity space* in which they frequently move. A related concept is an *awareness space* which is the subset of the activity space conditioned by the individual's location in space and time[2] (Brantingham and Brantingham, 2008). Crime pattern theory argues that it is within these awareness spaces that offenders identify opportunities to commit crime, so while there may be numerous opportunities for crime, it is only the opportunities which fall within offender awareness spaces that will have a higher risk of victimisation (Brantingham and Brantingham, 2008; Eck and Weisburd, 1995). Crimes most

[2]An offender may be aware of an easy criminal opportunity within their activity space, but cannot exploit it if it is located outside their awareness space.

commonly occur in the awareness space surrounding potential offenders activity nodes, and rely on the overlap between an offender's activity space and a victim's activity space (Brantingham and Brantingham, 2008; Kinney et al., 2008).

Some areas are more or less crime prone than others for various reasons. For example, hot spots, small areas with a disproportionate amount of crime (Sherman et al., 1989), can be labelled as crime attractors, crime generators, crime detractors or crime neutral areas (Brantingham and Brantingham, 2008; Kinney et al., 2008). Crime attractors are areas that become known to local and outside offenders as having characteristics that create ample opportunities for criminal behaviour (Brantingham and Brantingham, 2008; Kinney et al., 2008). As a result, motivated offenders will often travel to these areas with the intention of committing offences; bar and nightclub districts, unsecured car parks and large shopping centres are examples of crime attractors. Crime generators are places that do not specifically attract people intending to commit crimes, rather they generate a situation in which there is a large number of potential victims or targets that provide criminal opportunities that a potential offender may take advantage of (Brantingham and Brantingham, 2008; Kinney et al., 2008). Any location that attracts a large number of people can be classed as a crime generator, so similar to crime attractors, this could include shopping centres or nightlife districts as well as sporting events and other activity nodes.

Where crime attractors and crime generators are the result of an abundance of offenders and targets respectively, crime enablers are locations without place management (Brantingham and Brantingham, 2008). Examples include derelict housing and vacant car parks.

3.5 Defensible Space and CPTED

Defensible space and CPTED are two research literatures that were conceived independently but over time have merged. Both emphasise the importance of reducing opportunities for crime at the design stage of new buildings, spaces or environments.

Jacobs (1961) put forward a number of suggestions regarding physical design and how it could prevent crime, including the idea that buildings should be oriented inwards toward the street for better surveillance (Cozens et al., 2001b; Taylor et al., 1984). However, it was not until Newman introduced defensible space theory that these ideas became popular, particularly as a policy and guideline for the construction of safe housing (Reynald and Elffers, 2009; Taylor et al., 1984).

Defensible space is a result of Newman's observations of two housing complexes on opposite sides of the street, one a newly constructed high-rise complex emphasising community interaction, and the other an older, and slightly smaller row housing complex. While both complexes had similar population demographics, the older, smaller complex had few problems with crime and consistently high levels of occupancy. The new complex however, had high levels of property crime and violence, never passed 60 percent occupancy and was demolished after 10 years (Newman, 1996). Given the similar populations, this prompted Newman

to ask what physical design features allowed crime to thrive in one and not the other. Newman concluded that the communal areas of the new complex, such as the lobby, stairwells and corridors, did not provide any sense of ownership or control. This made it impossible to enforce norms for acceptable behaviour and to differentiate intruders from other residents, in other words, they lacked defensible space (Newman, 1996).

Newman tested his theory in New York by comparing the Brownsville social housing project and the Van Dyke project. These were again considered similar in social structure, but Van Dyke was a fourteen story high-rise, while Brownsville was a six story mid-rise. Van Dyke was found to have almost double the crime rate of Brownsville (Cozens, 2008, 51.4 and 28.2 crimes per 1000 population respectively). Newman claimed this supported his theory, arguing that the differing environmental designs of the two building were the principle reason explaining the different crime rates (Cozens, 2008).

The primary idea behind defensible space theory is that the physical design of residential environments can be manipulated to be less vulnerable to crime by providing residents with greater opportunity to control and defend their space if necessary (Reynald and Elffers, 2009). Three main concepts underpin defensible space theory: *territoriality*, *natural surveillance* and *image and milieu* (Newman, 1996). Territoriality is based on the premise of clearly defining areas as either public, semi-public, semi-private, and private spaces through the use of literal and figurative barriers (Reynald and Elffers, 2009). A literal barrier is any form of physical object that obstructs entry, such as fences, gates and locks, while a figurative barrier conveys that the area is private through signage, or through the use of gardens and other signs of maintenance and ownership. This differentiation between what is private or public space results in an increased sense of ownership and responsibility over an individual's area, which in turn causes greater enforcement of norms and accepted forms of behaviour (Newman, 1996).

In order to enforce the norms of an area, residents/owners need to be able to observe and survey the area. This idea suggests that the physical design of residences should allow for easy, natural surveillance of the property and surrounding public spaces by residents (Reynald and Elffers, 2009). In order to maximise these opportunities, Newman supported Jacobs (1961) suggestion that houses should face the street and therefore each other, and that windows and doors should also face out across the street (Newman, 1996). In addition to this, the view from buildings should be as unobstructed as possible. However, this leads to the need to strike a balance between territoriality and natural surveillance. If physical barriers such as fences are too high, or symbolic barriers such as gardens are too dense, then natural surveillance becomes limited (Cozens et al., 2001a). If natural surveillance is maximised, and good line of sight is established between properties, there is a greater likelihood that any potential offenders will be caught in the act, or crimes may be prevented from occurring (Reynald and Elffers, 2009).

Image and milieu refers to the overall appearance of the area and influences people's perception of vulnerability. An area with a positive image will appear well maintained and cared for, suggesting to potential offenders that residents

control the area and are more likely to be vigilant and intervene if suspicious behaviour is observed, increasing the risk of offending (Reynald and Elffers, 2009). An area with a negative image would signify the converse to offenders, that residents have little control or stake in the area and surveillance is likely less frequent (Reynald and Elffers, 2009).

These ideas became highly influential politically due to rising crime levels and a lack of success of traditional theories of crime in providing effective crime prevention strategies. In contrast, defensible space provided a relatively straightforward strategy for reducing crime by designing safe structures and neighbourhoods. Indeed, a number of initiatives based on defensible space, such as Crime Prevention Through Environmental Design (CPTED), have resulted in decreases in crime, though due to these being large scale re-designs, it is unclear exactly what processes cause these reductions (Reynald and Elffers, 2009).

Defensible space theory has had a number of critics over the years, addressing issues such as a lack of scientific methodology in identifying concepts, vague, contradictory definitions, and disregard for the wider psychosocial factors influencing defensible space (Reynald and Elffers, 2009). Newman attempted to address these issues, identifying factors such as the percentage of families receiving welfare and the percentage of one parent households that were correlated with crime rates (Newman, 1996). However, these factors still do not identify psychosocial processes that may influence territoriality and whether or not defensible space is actually defended.

The definitions provided by Newman allow for a variety of interpretations of what defensible space is and how the components are conceptualised, which has led to a wide range of studies with conflicting results that all claim to have measured defensible space (Eck and Weisburd, 1995; Reynald and Elffers, 2009). Some examples include Taylor et al. (1984) who found some support for defensible space, but neglected to measure any features relating to image, while Booth (1981) found no support for defensible space theory but conceptualised territoriality and image into one construct, accessibility (Reynald and Elffers, 2009). The cumulative effect of these criticisms has been to weaken the causal claims about the influence of housing design on crime, placing much more emphasis on social factors and other features (Taylor et al., 1984).

There has been relatively little Australian research on the relationship between crime and housing design. Matka (1997) and Weatherburn et al. (1999) measured associations between police recorded crime and socio-demographic and housing statistics at the suburb level in Sydney. They found the amount of crime explained by volume and type of public housing was greatly reduced in magnitude after controlling for socio-demographic status. This led Weatherburn et al. (1999) to find more evidence in favour of an "allocation" hypothesis (crime is high in public housing because it is disproportionally allocated to crime-prone individuals) compared to the prevailing "design" hypothesis (crime is high in public housing due to poor design).

A number of methodological issues in these studies need to be acknowledged, notwithstanding the extant criticisms of defensible space. First, the operationalisation of housing type is really a measure of housing stock. Matka (1997) categorise buildings as either high-rise, walk-up, non-detached or detached buildings.

No attempt is made to measure design features at the building level. Newman's work required extensive observational methods to measure key constructs such as territoriality, at the building level. Extending on this point, the unit of analysis is the suburb, not buildings so the results can only reflect the average impact of different housing stock at the (aggregate) suburb level. There is likely to be variation at the building level (high-rise buildings with different levels of crime) that has not been captured in this analysis.

Crime Prevention through Environmental Design (CPTED) developed from Newman's defensible space theory and as such, the core ideas of territoriality, natural surveillance and image are present (Cozens, 2008; Cozens et al., 2005). These ideas comprise three of the six broad preventative strategies incorporated in CPTED as territorial reinforcement[3], natural surveillance and image maintenance (Cozens, 2008; Cozens et al., 2005). The remaining three preventative strategies are access control, activity support, and target hardening (Cozens, 2008; Cozens et al., 2005).

Natural surveillance refers to the presence of opportunities for residents or other users of a space to observe an area, or for potential offenders to perceive that they are or can be observed (Cozens, 2008; Cozens et al., 2005). This can take several forms such as informal surveillance which includes unobstructed sightlines between houses and streets, formal surveillance such as police or neighbourhood watch patrols, or mechanical surveillance such as the presence of CCTV cameras or adequate street lighting (Cozens, 2008; Cozens et al., 2005).

Image maintenance relates to maintaining positive perceptions of the physical environment to assist in the prevention of crime (Cozens, 2008; Cozens et al., 2005). This strategy is similar to aspects of territoriality in that it conveys the extent of monitoring and maintenance of an area (Cozens, 2008; Cozens et al., 2005). A more positive image suggests to potential offenders that the area is closely monitored and any inappropriate behaviour will likely attract a response.

Access control seeks to prevent or restrict potential offenders access to likely targets (Cozens, 2008; Cozens et al., 2005). This technique includes a number of methods and can be applied to a range of crime types. Some examples include security personnel at building entrances, alley gates to prevent access to the rear of houses, and changes to traffic flow such as road closures or one way streets (Cozens et al., 2005).

Activity support relates to the usage of spaces and how these activities are located in an area (Cozens, 2008; Cozens et al., 2005). For example, unsafe activities such as withdrawing money from an ATM should be located in safe locations that afford surveillance opportunities and a large number of potential observers or bystanders (Cozens, 2008). Alternatively, safe activities attract more people, potentially discouraging some crimes from occurring and making the area as a whole safer (Cozens, 2008; Cozens et al., 2005). Some other forms of crime, such as pickpocketing, could however become more common as a result of the greater concentration of potential targets (Cozens, 2008; Cozens et al., 2005).

[3]Territorial reinforcement is indistinguishable from (the defensible space construct) territoriality (Cozens, 2008; Cozens et al., 2005).

Target hardening seeks to increase the effort required for an offender to commit a crime through techniques such as improved locks or security systems, or barriers such as gates and walls/fences (Cozens, 2008; Cozens et al., 2005). Target hardening does run the risk of hindering surveillance however, so prevention measures need to strike a balance between improved security while maintaining adequate levels of visibility (Cozens, 2008; Cozens et al., 2005).

There are clear similarities between situational crime prevention and CPTED principles, with several of the preventative measures of CPTED fitting into the categories of increasing effort and increasing risks to the offender. Indeed, target hardening is a technique shared by both, and the goals of the two strategies are virtually identical, reducing crime and fear of crime through the design/ modification of the physical environment.

The concept of guardianship from routine activity theory is closely related to that of defensible space and CPTED since the level of guardianship provided by residents is determined by opportunities provided by the physical environment. In particular, the level of effective guardianship that residents provide is heavily influenced by opportunities for natural surveillance that are facilitated by the built environment. Similarly, the concept of place management is also intimately linked to the defensible space and CPTED concepts of image/maintenance, territoriality, access control and target hardening. With the designated responsibility for the management and maintenance of places, place managers have control over the image of places as well as the level of accessibility and security available at places. The failure of place managers to exercise these powers in the control of crime at places often results in the fostering of *risky facilities*.

3.6 Risky Facilities

Risky facilities is a relatively new concept of crime distribution/concentration that follows the environmental criminology focus on place in the occurrence of crime. The term was first used in the literature by Eck et al. (2007) to describe the uneven distribution of offences across facilities of the same type. One surprising finding is that even within a set of homogenous locations (hotels, train stations, licensed venues) only a small number of locations often account for a disproportionately large number of crimes.

While Eck et al. (2007) were the first to use the term risky facilities, the idea that crime is not evenly distributed across facilities of the same type is certainly not new. The earliest study identified by Eck et al. (2007) that provided data demonstrating risky facilities was a study in 1982 by Hope which showed that approximately 33 percent of a random sample of schools in London accounted for 75 percent of recorded burglaries. This is commonly referred to as the 80–20 rule[4], where 80 percent of outcomes are caused by only 20 percent of a population. This type of distribution is found throughout nature (Newman, 2005). For example, a small percentage of the land in Australia contains the majority of the population, or a small number of people in an office will drink the majority of the

[4]The 80–20 rule is more formally known by various names: power law, Zipf's law, pareto distribution (Newman, 2005).

coffee. This pattern has been evidenced widely in criminology, demonstrated in schools, banks, bars and clubs, bus stop shelters, various types of small businesses, construction sites, convenience stores, petrol stations, hotels and motels and a few other facility types (Eck et al., 2007). It is also worth noting that this pattern holds when looking at specific crime types or aggregates of multiple crime types, as well as when sub-dividing facility types, such as chain hotels or independent, privately owned hotels (Eck et al., 2007).

The concentration at the facility can be visually depicted through a J curve, a bar chart showing the frequencies of crime across all facilities in descending order (Eck et al., 2007). If risky facilities are present the majority of outcomes will be located at the left hand side of the graph and then rapidly drop off to zero at the other.

The risky facilities concept has been heavily influenced by the routine activity approach, and places a great deal of emphasis on the role of place managers in particular and how their practices influence the differences observed between facilities (Homel and Clark, 1994; Madensen and Eck, 2008). It follows then that risky facilities has clear implications for prevention strategies and techniques. Through identifying the locations responsible for the greatest proportion of crimes, resources can be allocated effectively to realise maximum prevention benefit while focusing on relatively few locations (Eck et al., 2007; Eck and Eck, 2012; Madensen and Eck, 2008; Wilcox and Eck, 2011). In addition to this, identifying locations that account for the most and least crime, researchers are able to identify some of the key factors influencing this and what management practices are the most effective at preventing crime. This information can be used to reduce crime at other locations, as well as informing best practice.

A recent study of particular relevance to the current project examined the effects of place management and environmental influences on violence in bars and apartments (Eck et al., 2010). On-site observational surveys and apartment manager surveys were conducted at a sample of apartment complexes in Cincinnati. The results demonstrated clear evidence that place management practices play an important role in the presence of violent crimes in apartment complexes. However, the effectiveness of these practices was sometimes helped or hindered by broader neighbourhood characteristics.

In terms of location, it was found that apartment complexes located on a corner block or close to bus or public transport stops had higher incidence of violent offences (Eck et al., 2010). The authors postulated that this may be due to the increased accessibility and traffic associated with an additional street facing and more people congregating at public transport stops (Eck et al., 2010). In addition to this, it was found that the presence of people loitering was also associated with a higher rate of violent crimes, suggesting that management supervision and monitoring is important in minimising violent behaviour (Eck et al., 2010). Resident finances were also found to be an important factor, with the number of residents failing to pay rent, or paying with Section 8 vouchers (housing assistance vouchers) demonstrating a positive association with the occurrence of violent crime (Eck et al., 2010).

As mentioned above, neighbourhood characteristics were found to moderate the effects of some management practices. The influence of level of traffic flow on

violent crime was moderated by the level of concentrated disadvantage. The risk of violent crimes occurring was greater when the apartment was located on a high traffic street only in areas that also had high concentrated disadvantage, whereas this was not the case in areas with lower concentrated disadvantage (Eck et al., 2010).

Similarly, maintenance of physical incivilities such as graffiti/vandalism or property damage were found to have different levels of effectiveness based on the overall level of crime and disadvantage in the neighbourhood. In areas with low disadvantage and less overall crime the presence of these types of property offences tended to place apartment complexes at greater risk of violent crime (Eck et al., 2010). A possible explanation for this is in an area with little crime and less disadvantage a building with physical incivilities present will stand out compared to surrounding buildings. By not fixing these problems, the manager signals to potential offenders that this building is not well supervised or monitored, and that it may be an easier target than other properties in the area.

The study's findings of different risk factors and the influence of management practices is consistent with the risky facilities concept that a certain facility type is not inherently crime prone, rather the features of each facility and the differences between these is what influences the presence or absence of crime.

Finally there were a number of important place-based prevention implications identified by the authors that fit with risky facilities concept. First, place-based crime policies should target the worst locations rather than a more general policy for all locations, which has the advantage of being more cost effective (Eck et al., 2010). Second, neighbourhood-wide policies need to also include strategies for specific places following the finding that neighbourhood variables usually interact with the specific features of the property to influence crime, rather than having a direct influence (Eck et al., 2010). Third, place-based strategies need to take into account contextual factors related to the wider neighbourhood for the same reason, what might be a good preventative strategy at a bar in one neighbourhood, may facilitate crime when implemented at a bar in a different neighbourhood (Eck et al., 2010). Fourth, place managers play an integral role in controlling and preventing crime and they should be held accountable for ongoing problems with crime at their property (Eck et al., 2010). Contextual and environmentally designed place-based interventions are only going to work if the place manager is willing to implement them fully, which may be a costly endeavour, so holding the manager accountable can provide incentives to assist with this (Eck et al., 2010). An alternative to specific place-based strategies that may be more effective is to provide place managers with a maximum allowable amount of crime (Eck et al., 2010). To enforce this, regulating bodies could provide rewards for staying below a certain level of crime, or alternatively introduce penalties or sanctions to premises that exceed these maximum levels (Eck and Eck, 2012; Eck et al., 2010). This approach allows managers to come up with creative strategies within their budget that are tailored specifically to their premise in order to stay below this threshold level (Eck et al., 2010).

3.7 Strata Title Housing

Increasing pressure on governments to facilitate population growth and contain urban sprawl has seen many jurisdictions adopting higher density urban forms (Burton, 2000; Randolph, 2006; Thomas and Cousins, 1996). A consequence of higher population density, particularly in areas with strong transport and employment nodes, will likely result in substantial changes to the character of many Australian suburbs. Based on medium Australian population growth forecasts over the next 20 years there will be a need for an additional 2.9 million dwellings but a shortfall in housing supply close to 640,200 dwellings (National Housing Supply Council, 2011). Therefore, more dwellings are required to house our growing population, however not enough are being built or developed to satisfy this growth. Additionally, many individuals are being priced out of the market due to growing housing affordability issues (Australian Government, 2010). This context has resulted in governments and private developers increasingly approving and building higher density developments to house multiple households.

Whilst there have been small scale, low-rise apartment living in Australia since the 1930s (Lewis, 2000; Randolph, 2006; Spearritt, 2000), the introduction of strata title legislation in Australia during the 1960s resulted in significant growth of high density residential housing in Australia. Strata title legislation allowed for the vertical subdivision of buildings, providing property rights in the form of ownership of individual lots (i.e. units, apartments, flats). As Johnston and Reid (2013) identified, this type of legal titling structure ties individual lots to communally owned property with a separate entity created to manage and enforce the rules of the entity (i.e. a body corporate, homeowners association or owners corporation). Strata title living implies physically close living conditions within confined environments, regular interaction amongst residents and imposed social norms and responsibilities governed by body corporate rules and regulations (Bugden, 2005).

In Australia just over one million individuals reside within an apartment, flat or unit, approximately 14 percent of the total population (Australian Bureau of Statistics, 2012). The Gold Coast, and particularly Surfers Paradise, is one of the most highly dense residential areas outside of Sydney, Melbourne and Brisbane Central Business Districts (Department of Infrastructure and Transport, 2012). Approximately 75 percent of residents within the suburb of Surfers Paradise, nearly 6,500 individuals, live in a flat, unit or apartment (Australian Bureau of Statistics, 2011). The majority of these residents (64%) live in building 4 storeys or higher (Australian Bureau of Statistics, 2011). Surfers Paradise residents living in high-rise buildings are typically lone person households, couples with no children or two people living together not in a relationship (Australian Bureau of Statistics, 2011). Furthermore, in line with previous research into the tenure structure of apartments, approximately 60% of these residents are renting (Australian Bureau of Statistics, 2011).

Despite the growing shift towards strata titled dwellings within Australian society, research into this area has been scant. In a recent review of the strata title housing literature less than 100 peer-reviewed, empirical research articles were identified (Johnston and Reid, 2013). Dredge and Coiacetto (2011) reviewed

common underpinnings of strata title research and summarised that governance, socio-cultural, economic and environmental literature themes have been prevalent. Strata title developments are governed by a myriad of legislation, planning controls and operational outcomes. Registration of a strata plan for a strata title scheme results in the legal existence of a body corporate that is responsible for the management of the scheme (Gration, 2009). This has resulted in a growing body of literature incorporating aspects such as legal rights and responsibilities of stakeholders (Bugden, 2005; Easthope et al., 2012; Randolph and Easthope, 2007; Sherry, 2010), relationships between stakeholder groups (Blandy et al., 2006; Cassidy et al., 2008; Guilding and Whiteoak, 2008) and participation (Allon, 2006; Gration, 2009; Woolcock, 2007).

Economic considerations of managing a strata scheme and property assets is another key tenet of the literature (Cassidy and Guilding, 2007; Warnken and Guilding, 2009; Warnken et al., 2003). However, research within the socio-cultural field of residents and users of strata title apartments have largely been overlooked (Dredge and Coiacetto, 2011). Stone and Hulse (2007), in an otherwise comprehensive scoping study of links between social connectedness and Australian housing, also failed to examine the context specific nature of residents within high density housing. The paucity of research into the sociological aspects of high-rise strata complexes is a concern as governments and planners prescribe a compact city planning approach. The lack of research in the socio-cultural field is concerning if future forecasts about the structure and shape of how Australians will live prove accurate.

Interestingly, Gifford (2007, p. 2) concluded that in fact "high-rises are less satisfactory than other housing forms for most people, that they are not optimal for children, that social relations are more impersonal, and helping behaviour is less than in other housing forms, that crime and fear of crime are greater, and that they may independently account for some suicides". Larger numbers of people residing within confined and shared space has resulted in a sense of sharing your dwelling with strangers, particularly in common use areas. "This fear of strangers leads to fear of crime, a felt lack of social support and the absence of community in the midst of many" (Gifford, 2007, p. 2). These factors have been theorized to have a negative effect on the level of guardianship provided by residents in these living contexts. Residents are much more likely to keep an eye out and act in defence or protection of their wider residential context and those within it if they are familiar with neighbours and feel a strong sense of community (see Reynald, 2011). In a study of high-rise living in Hong Kong researchers found that living in apartments constrains personal freedom and forces the need for cooperation (Yip and Forrest, 2002). As strata titling suggests individual ownership of a lot and a share in the common property of a building, lot owners form a body corporate to govern, manage and maintain these multi-owned developments. Therefore, there is an obligation to participate in the self-governance and body corporate activities as it has direct cost and lifestyle implications.

Places like Surfers Paradise have the added burden of a mix of uses (i.e. residential, touristic, retail, commercial, entertainment). A high proportion of rental and holiday letting in Surfers Paradise leads to high turnover rates and a number of social consequences for residents. The potential for conflict between

residents and tourists is high (Guilding et al., 2005). However, mixed-use multi-owned developments continue to proliferate as financing for these developments is more readily available (Warnken and Guilding, 2009). Developers are able to sell "off the plan" to individual investors rather than relying on traditional debt equity financing arrangements. The multitude of owners buying into these high-rise apartments is dominated by investors. Approximately 67% of all apartments sold in Australia are sold to investors, which enter either the private long term residential rental market or short term holiday letting (Easthope and Randolph, 2009). This supports the traditionally held perception that residential apartment living is considered a temporary housing option, something more attractive to investors than residential owners (Yates, 2001).

However, "neighbourhoods in which there is a high degree of population churning may be less likely to develop a strong sense of community or contain large numbers of residents with a strong sense of place and local belonging" (Forrest et al., 2002, p. 217). These aspects of belonging which tie an individual to place or connect them to community have beneficial outcomes. Developing a sense of community can be beneficial in creating a shared experience, an impetus for participation, social bonding, strengthening interpersonal relationships and perceptions of safety. It may encourage individuals to be aware of and look out for others that belong to their "group". However, there is a paucity of literature and research examining the role of community within high density environments.

A significant component of all apartments are held by investors who may absentee or disinterested in the liveability, functionality and maintenance of these buildings, which has ramifications for residents, building upkeep and management. The high degree of temporary or transient residents residing in apartments may limit an individual's willingness to become involved in and support establishment of community. Combined, these factors influence the functionality, social connectedness and perceptions of safety within many high-rise apartment complexes.

3.8 The Present Study

The preceding literature review indicates that crime concentrates with respect to a number of dimensions. While spatial and temporal dimensions are typically examined, the risky facilities concept suggests that crime can concentrate even *within* classes of places (such as railway stations, bars, and apartment complexes to name a few). The existence of risky facilities is useful from a crime prevention perspective as it not only highlights where resources should be focused to have the largest impact on crime problems, but it also allows researchers to explore the underlying causes of the differences in crime rates. Theory would suggest the most germane factors that explain the varying concentrations relate to place management, guardianship, and physical design.

Local councils in Australia have indicated that housing policies will need to move towards higher density housing in coming decades. This is noteworthy as housing density and physical design are thought to be strong determinants

of neighbourhood crime rates. But the nature of this relationship is not well understood and is highly contextually dependent.

The motivation for this research study was to use an existing suburb with high density housing as a case study to look at the likely consequences of changed housing policy in the immediate future. The study region of Surfers Paradise was selected as tourism provides a useful analog to communities with a high proportion of public housing and high resident turnover.

The approach taken in this research study extends previous research in a number of important ways. First, a mixed methods approach is used. Three studies are conducted each with different datasets and methodological approaches. Used in conjunction, we are able to provide a rich depiction of the primary causal factors contributing to the distribution of crime in high-rise residential buildings. Second, the different tenure types present in the study region (from long-term owner occupiers to short-term holiday lets) provides the ability to make comparisons between different building types and management style that can shed light on the underlying causes of riskiness of separate facilities.

Drawing on individual level recorded crime data over a seven year period, observations and interviews with building managers, we address the research questions posted in Section 2.2 in subsequent chapters.

4 Study 1: Recorded Crime and Risky Facilities

The purpose of this first study was to provide a description of the concentration and distribution of recorded crime among high density dwellings in Surfers Paradise. This study provides the most extensive coverage of the study region in that all buildings in the study region are included in the analysis. By the nature of the data, the analysis can only be exploratory so there is a limit to the depth of the analysis. Further insight is possible using the richer data sources and approaches in Studies 2 and 3.

4.1 Data

Three datasets were used to complete the first study of this research project.

Recorded crime All criminal matters recorded by the Queensland Police Service located in the Surfers Paradise Police Division, between 2005 and 2012 were extracted from the QPRIME database. Fields included the unique occurrence number (relating to the administrative reference number used by the Queensland Police Service to distinguish individual criminal matters), the date and time of the offence, the offence code classifying the offence and the physical location of the criminal matter. With respect to this last category the Queensland Police Service record both the street address of the location and feature name (usually corresponding to the building or business name). Post processing of recorded crime data involves geocodes the incident to provide latitude/longitude attributes.

Property parcel map A digitised geographic representation of property parcels in South East Queensland was used to perform spatial analysis of crime data. Property parcel (or cadastral) maps depict property parcels that are legally defined and recognised by the Department of Natural Resources and Mines, Queensland Government.

Buildings of Interest A research assistant made manual checks of Cityscope, which contains a map of the Surfers Paradise region by building, and Google Earth Street View Maps and collected all records relating to buildings in Surfers Paradise with a height greater than three storeys or more. The information collected from this database included street address, building name, building height, and use. Regarding the latter category, buildings

were categorised by their typical use. These included commercial, holiday apartments, hotel/resort, motel, retail, residential or any combination of the above.

4.1.1 Data Processing and Cleaning

Data cleaning was performed before data processing and analysis could commence. The street address in the recorded crime database contained numerous spelling mistakes and inconsistencies in coding (e.g. "Breaka" for "Breaker"). Text string searches were used to correct spelling mistakes based on the street names featured in google maps[1]. Trailing white space at the end of fields was searched for and removed.

There were a small number of anomalous values for the latitude/longitude values provided by the Queensland Police Service. Seven records had latitude values placing them in the wrong hemisphere (rectified by multiplying values by –1). Three records had latitude values placing them well outside the police division, yet all other information in the record corresponded to buildings of interest. These coordinates were manually recoded. There were another three records with coordinates well outside the division, but with insufficient information to make a judgment about their inclusion nor any connection to any buildings of interest. They were omitted from further analysis. 559 records had no spatial information (these observation were retained for the most part, but were omitted in the spatial analysis.)

The street address for the buildings of interest dataset required minimal cleaning, but they were transformed to all upper case text (i.e. "allcaps") to ensure text string matching would occur accurately. In addition, trailing white space at the end of fields was searched for and removed.

There were 290 properties in the buildings of interest database. This was used to create a copy of the property parcel map containing only the buildings of interest.

The recorded crime data contained all offences taking place between 2005 and November 2012 in Surfers Paradise police division, amounting to 72,952 records. This total was reduced to criminal matters relating to the buildings of interest using two methods[2]:

1. point-in-polygon matching: using a Geographical Information System, the recorded crime data set was displayed on a map and the buildings of interest map were overlaid. A point-in-polygon operation was used to select any point (crime) falling within any polygon (building of interest).

2. street address matching: the street address of the recorded crime dataset were matched against the street address of the buildings of interest dataset. This was performed using string matching.

[1] maps.google.com

[2] A third matching method was used, building name matching. Similar to the street address matching, this method used the building name text rather than the street address as the criterion for matching. No new records were identified using this technique.

In conjunction, the matching methods resulted in 11,055 unique records associated with the buildings of interest.

4.2 Analysis

The purpose of this first study was to conduct descriptive and exploratory data analysis into the distribution of crime within and between buildings of interest. This is an important preliminary phase of empirical research because it allows:

- the opportunity to rapidly gain an understanding of the nature and structure of the datasets;
- a first exploration of the main relationships and associations between the different data sources;
- the generation of research hypotheses that may not be apparent from the extant literature alone but emerges during exploratory data analysis; and
- an indication of promising lines of enquiry for the further stages of the research project, where data of a different nature may be incorporated.

4.2.1 Characteristics of Buildings of Interest

In addition to each building's name and spatial location, two primary attributes were collected on each building: *height* and *use*. Height was measured by the number of storeys dedicated to residential living. Figure 4.1 displays the frequency distribution of building heights for the 290 buildings of interest. Given the skewed distribution, this was recoded (using natural breaks in the distribution) to a categorical variable to allow simpler analysis. Table 4.1 shows the frequency distribution of the recoded heights of the buildings of interest[3].

Number of Storeys of Residential Living	Frequency
3 Storeys	103
4-8 Storeys	58
8-15 Storeys	51
15-20 Storeys	31
20+ Storeys	44

Table 4.1: Number of Buildings by Number of Storeys Dedicated to Residential Living

Building use was measured using a categorical variable encompassing the listed types of activities: commercial, holiday apartments, hotel/resort, motel, offices, retail, residential or any combination of the above. As the purpose of this research was to explore crime patterns in high-rise residential settings, a new variable *tenure* was defined using different categories of the use variable. The

[3]Three buildings had missing values for height and do not appear in this table.

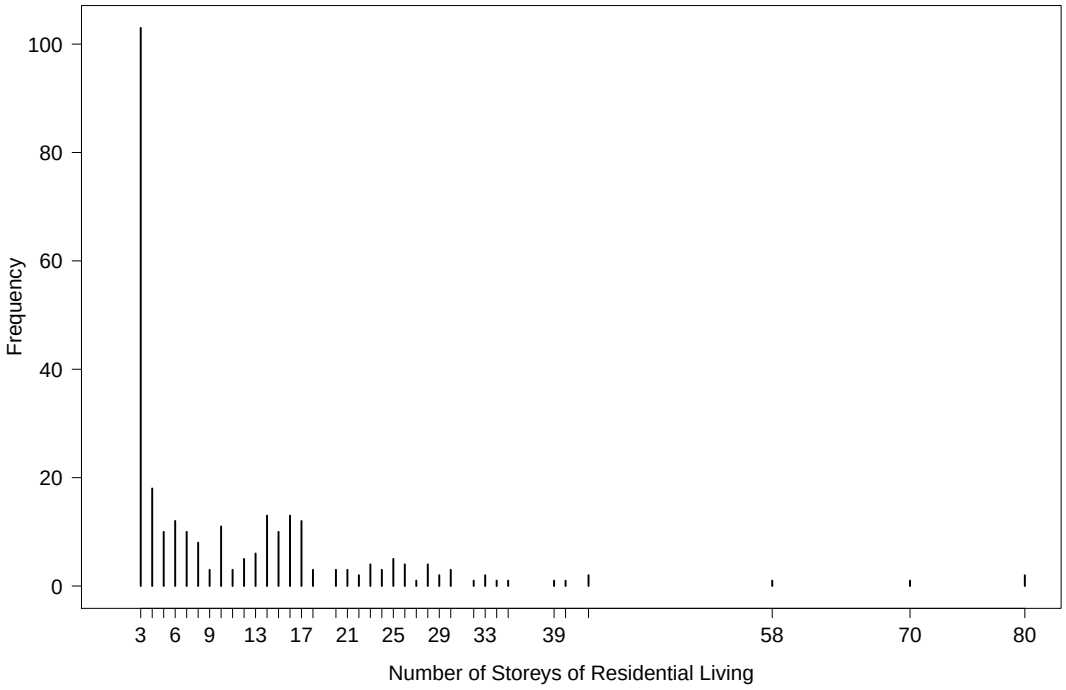

Figure 4.1: Number of Buildings of Interest by Floors of Residential Living Space

intent of the *tenure* variable was to capture the nature of building occupancy and use, and had five levels:

- *Long-term residential.* This category refers to buildings that are inhabited only by owner-occupiers or long term renters.

- *Short-term residential.* This category includes all buildings that house exclusively short-term occupants, typically holiday makers or inhabitants of a transient nature. The types of buildings included in this category include hotels, resorts, motels and holiday lets.

- *Mixed residential.* Buildings that contain a mix of both long and short term residents. Some buildings are primarily owner-occupied but reserve a number of units for short term holiday letting, or hotels that have several floors dedicated to long term residents.

- *Non-residential.* Buildings containing no residential units. This included pure retail, office or commercial buildings.

- *Unknown.* A small number of buildings contained no information about use.

Tenure	Frequency
Long Term Residential	87
Mixed Residential	87
Short Term Residential	99
Non-residential	9
Unknown	8

Table 4.2: Number of Buildings by Tenure Type

4.2.2 Major Crime Types

Crime events are initially recorded by police offices consistent with the Queensland Police Service offence codes. These are coded again to conform to the Australian and New Zealand Standard Offence Classification (ANZSOC). ANZSOC is a framework developed by the Australian Bureau of Statistics that stipulates national and uniform standards of classifying offences across jurisdictions and criminal justice agencies. For these reasons all analysis in this research was conducted using ANZSOC codes. Table 4.3 shows the frequencies of the major crime categories for the entire sample.

The top 10 offences account for 91 percent of all offences in the buildings of interest.

4.2.3 Risky Facilities – All Offences

Figure 4.2 shows the distributions of crime between all buildings of interest. There is an obvious concentration of crime among a small number of buildings. Frequency tables indicate the top 12 buildings (5% of the sample) host over 50 percent of the recorded crime in the buildings of interest.

Table 4.4 show the top 12 buildings hosting crimes in the data set. Buildings are referenced by an alphabetical code to prevent identifying individual addresses. The top two buildings have non-residential tenure, which is striking given this group makes up about three percent of the sample. Buildings with mixed- and short-term tenure make up the majority of the top 12 buildings hosting recorded crime. Long term residential building only feature once in the dozen buildings with the most recorded crime (at 12th place).

4.2.4 Risky Facilities – Top 10 Offence Types

Given the skewed frequency distribution shown in Table 4.3, we now restrict attention to the top 10 most prevalent offence categories. Note the y axes in Figure 4.3 have been rescaled for each panel. Each offence displays a concentration of crimes in a small number of buildings.

To appreciate the concentration of crime among the highest ranked buildings, Table 4.5 shows how many different buildings appear in the top dozen ranks for each of the 10 most prevalent offence classifications. If crimes were distributed randomly we would expect 120 different buildings to be represented (top 12 buildings multiplied by 10 offence classifications). We observed 35 buildings. Of these,

Offence	Frequency	Proportion
Other Theft (excl. Unlawful Entry)	3168	0.29
Drug Offences	1429	0.13
Good Order Offences	1352	0.12
Unlawful Entry	1105	0.10
Other Property Damage	895	0.08
Unlawful Entry With Intent - Dwelling	805	0.07
Assault	529	0.05
Liquor (excl. Drunkenness)	302	0.03
Unlawful Use of Motor Vehicle	244	0.02
Unlawful Entry With Intent - Other	236	0.02
Fraud	232	0.02
Handling Stolen Goods	152	0.01
Breach Domestic Violence Protection Order	86	0.01
Weapons Act Offences	86	0.01
Sexual Offences	83	0.01
Miscellaneous Offences	75	0.01
Trespassing and Vagrancy	70	0.01
Robbery	62	0.01
Other Offences Against the Person	59	0.01
Prostitution Offences	36	0.00
Unlawful Entry With Intent - Shop	34	0.00
Arson	11	0.00
Other Homicide	2	0.00
Gaming Racing & Betting Offences	1	0.00
Homicide (Murder)	1	0.00

Table 4.3: Frequency of Major Offence Categories

14 only appeared once. One building was ranked in the top 12 buildings in all 10 of the offence classifications, with three other buildings appearing in nine.

The analysis that follows only a single crime category will be presented (Other Theft excl. Unlawful Entry was chosen as it is the most voluminous). The number of crime categories in the dataset means that a full presentation of all crimes would be tedious and highly repetitive. A selection of the supplementary results is collected in Appendix A for interested readers.

For every crime classification examined we found consistent results. That is, a small number of buildings accounted for the majority of crime incidents and this distribution was highly concentrated for **all offence types**. This consistency held regardless of how the data were partitioned or aggregated.

4.2.5 Risky Facilities – Building Characteristics

Extending the analysis it is natural to look for associations in building characteristics that suggest why such disparate crime distributions are observed. One obvious explanation is the different size of buildings. So far only crime counts

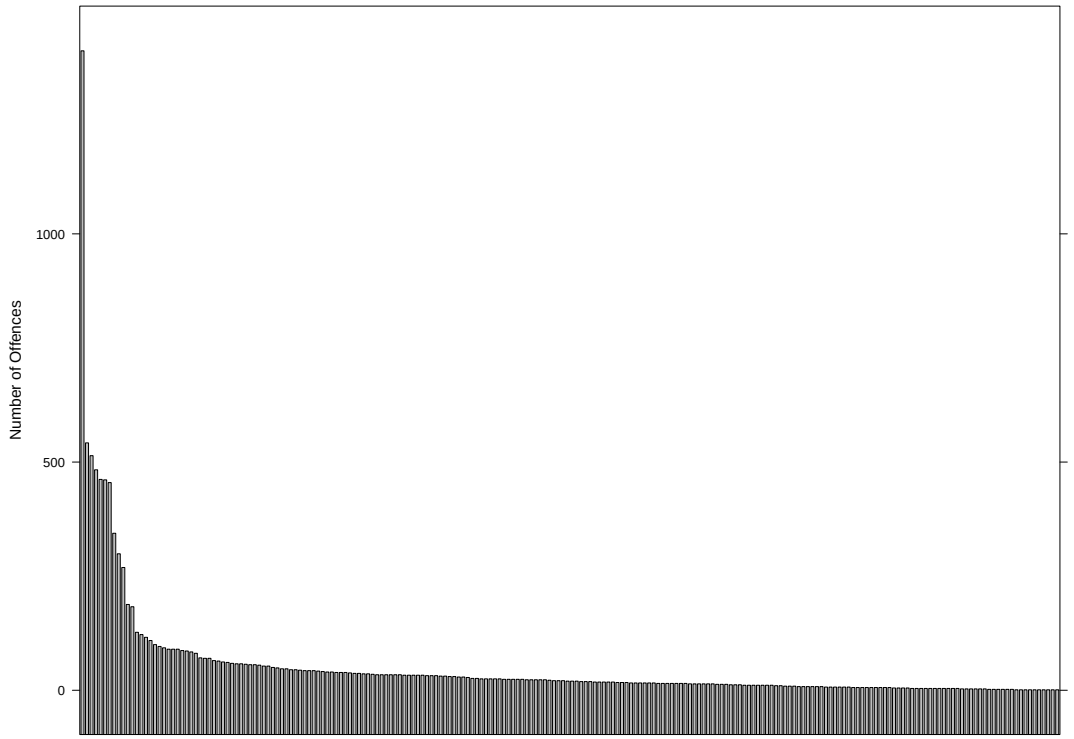

Figure 4.2: J Curve of All Offences and All Buildings

Building	Freq	Proportion	Storeys	Tenure
BD	1401	0.13	4	Non-residential
BS	542	0.05	7	Non-residential
AO	514	0.05	6	Mixed Residential
BN	483	0.04	16	Short Term Residential
EN	462	0.04	3	Mixed Residential
EP	461	0.04	15	Mixed Residential
BM	455	0.04	70	Mixed Residential
CY	344	0.03	30	Short Term Residential
CW	299	0.03	80	Mixed Residential
BW	269	0.02	26	Short Term Residential
BV	188	0.02	3	Short Term Residential
EY	183	0.02	4	Long Term Residential

Table 4.4: Top 12 Buildings with respect to Reported Crime and Building Characteristics

have been reported here, and crime rates (counts adjusted for the population at risk) are usually more appropriate to evaluate crime risks. A 10 storey building could expect, all other things being equal, to have twice the crime rate of a five storey building.

This next section explores the distribution of crimes through two building characteristics: tenure and height. Tenure was hypothesised to capture important

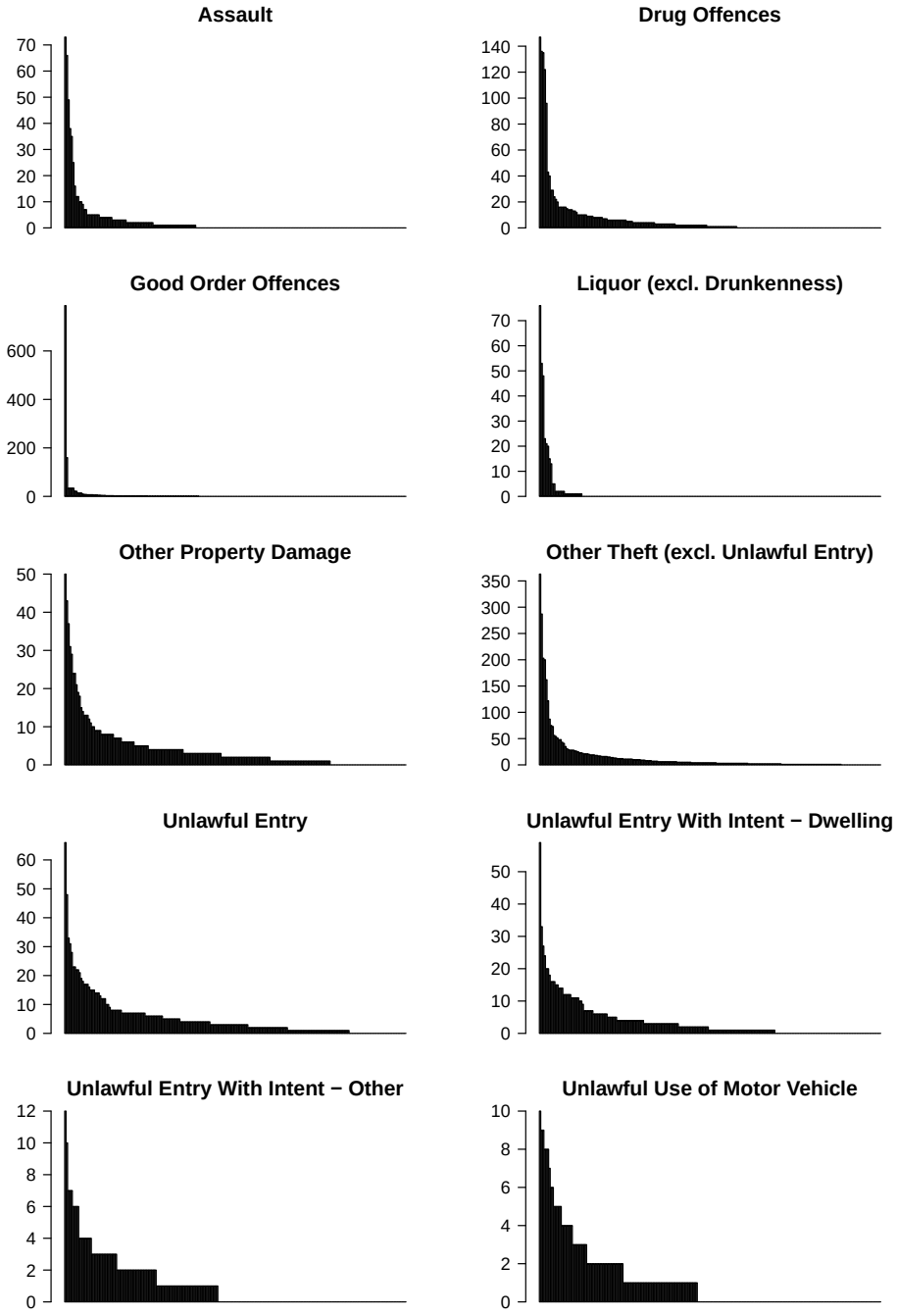

Figure 4.3: J Curves for Top 10 Offences

Number of Buildings	Frequency
1	14
2	7
3	2
4	2
5	1
6	2
8	3
9	3
10	1

Table 4.5: Number of Times the Same Buildings Feature in the Highest Ranking Dozen Buildings per Offence Classification

attributes of the building environment, resident routine activities and use (stake in community, ability to distinguish legitimate from illegitimate users). Height is a proxy for the size of building, acting here as a control variable. Larger buildings should produce more crime, all things being equal.

Tenure

Section 4.2.1 outlined how tenure was operationalised. As the purpose of this study was to explore the nature and distribution of crime, place management and guardianship in high density residential communities, the buildings of interest with non-residential and unknown tenure were omitted from this next phase.

Figure 4.4 shows the risky facilities of crimes classified as Other Theft (excluding Unlawful Entry) among long term, short term and mixed tenure residential buildings. There is considerably more Other Theft offences recorded at buildings with a mixed tenure (N=1743) compared to buildings with short-term tenure (N=875). Buildings with long-term residential tenures had much lower recorded offence counts for Other Theft (N=214). Despite this difference in volume, the degree of concentration was very similar. The top 10 buildings for each tenure type host 62.5 (short-term), 68.2 (long-term) and 71.1 (mixed) percent of Other Theft offences.

Patterns for other crime types are not shown here due to space considerations, but for *every* crime examined similar differences between tenure types were observed, but with very similar levels of concentration across tenure types. In other words, a small proportion of buildings account for most of the crimes, regardless of tenure type and offence classification. Overall, buildings with long-term tenure had the lowest volumes of crime, followed by short-term, with mixed tenure building hosting the most recorded crimes.

In order to establish generalizable relationships, for each of the top 10 crime categories, the average number of crimes recorded per building for each tenure type was computed. Using a negative binomial regression model allowed an estimate of the average *difference* in crimes for the typical building by tenure type. Table 4.6 shows the results. Long term residential tenure used as reference category, so estimated differences reflect the average increase or decrease in recorded

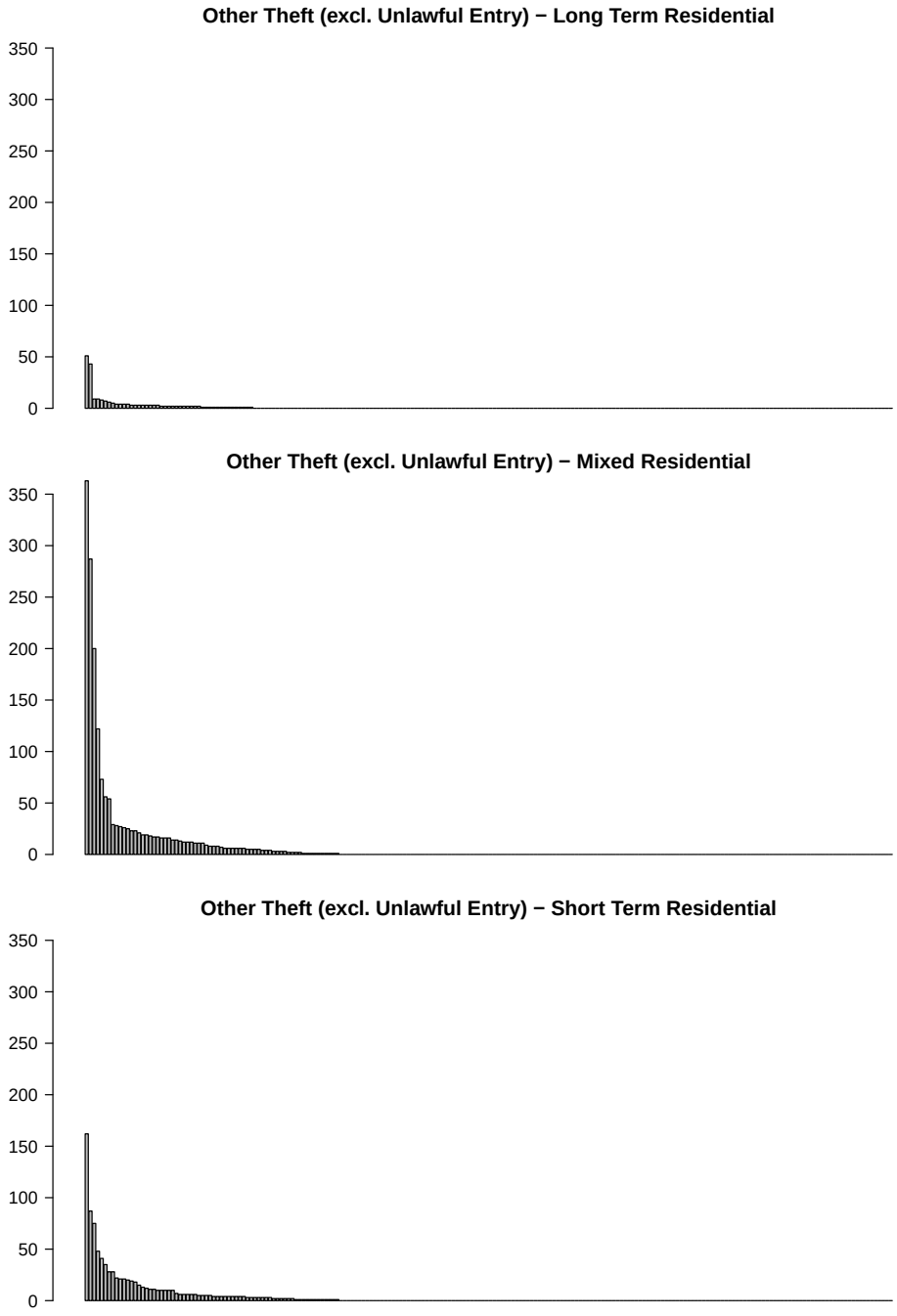

Figure 4.4: J Curves of Other Theft (excl. Unlawful Entry) Offences Conditioned by Tenure

offences from the long term tenure buildings. For example, a building with mixed tenure has an average 2.09 extra recorded Other Theft offences compared a building with long term tenure, all other things being equal. A building with short term tenure would have on average an extra 1.4 Other Theft offences compared a building with long term tenure, all other things being equal.

	Mixed Tenure	Short Term Tenure
Other Theft (excl. Unlawful Entry)	2.09	1.40
Drug Offences	0.98	0.76
Good Order Offences	0.08	-0.60
Unlawful Entry	0.58	0.79
Other Property Damage	0.59	0.30
Unlawful Entry With Intent - Dwelling	0.16	0.52
Assault	0.27	-0.77
Liquor (excl. Drunkenness)	-0.04	-1.79
Unlawful Use of Motor Vehicle	-0.92	-0.88
Unlawful Entry With Intent - Other	-0.90	-0.85

Table 4.6: Differences In Average Number of Recorded Offences Conditioned on Building Tenure per Building

Height

Figure 4.5 show the distribution of Other Theft (excluding Unlawful Entry) offences for buildings of interest at different heights. It is difficult to assess from the figure which building height is associated with more recorded crime, but the concentration of crime within buildings is clear. Table 4.7 presents some summary statistics. Regardless of height, the majority of Other Theft offences are concentrated in a small group of buildings.

	Building Height	Total Other Theft offences	Proportion in Top 10 Buildings
1	3 Storeys	565	0.77
2	4-8 Storeys	944	0.89
3	8-15 Storeys	590	0.74
4	15-20 Storeys	313	0.89
5	20+ Storeys	721	0.76

Table 4.7: Level and Concentration of Other Theft (excluding Unlawful Entry) Offences by Building Height

In order to establish generalizable relationships, for each of the top 10 crime categories, a average number of crimes recorded per building for each building height was computed. Using a negative binomial regression model allowed an estimate of the average *difference* in crimes for the typical building at each height. Table 4.8 shows the results. 3 Storey buildings were used as reference category, so differences reflect the average increase or decrease in recorded offences from 3 storey buildings. There is not a clear relationship between building height and

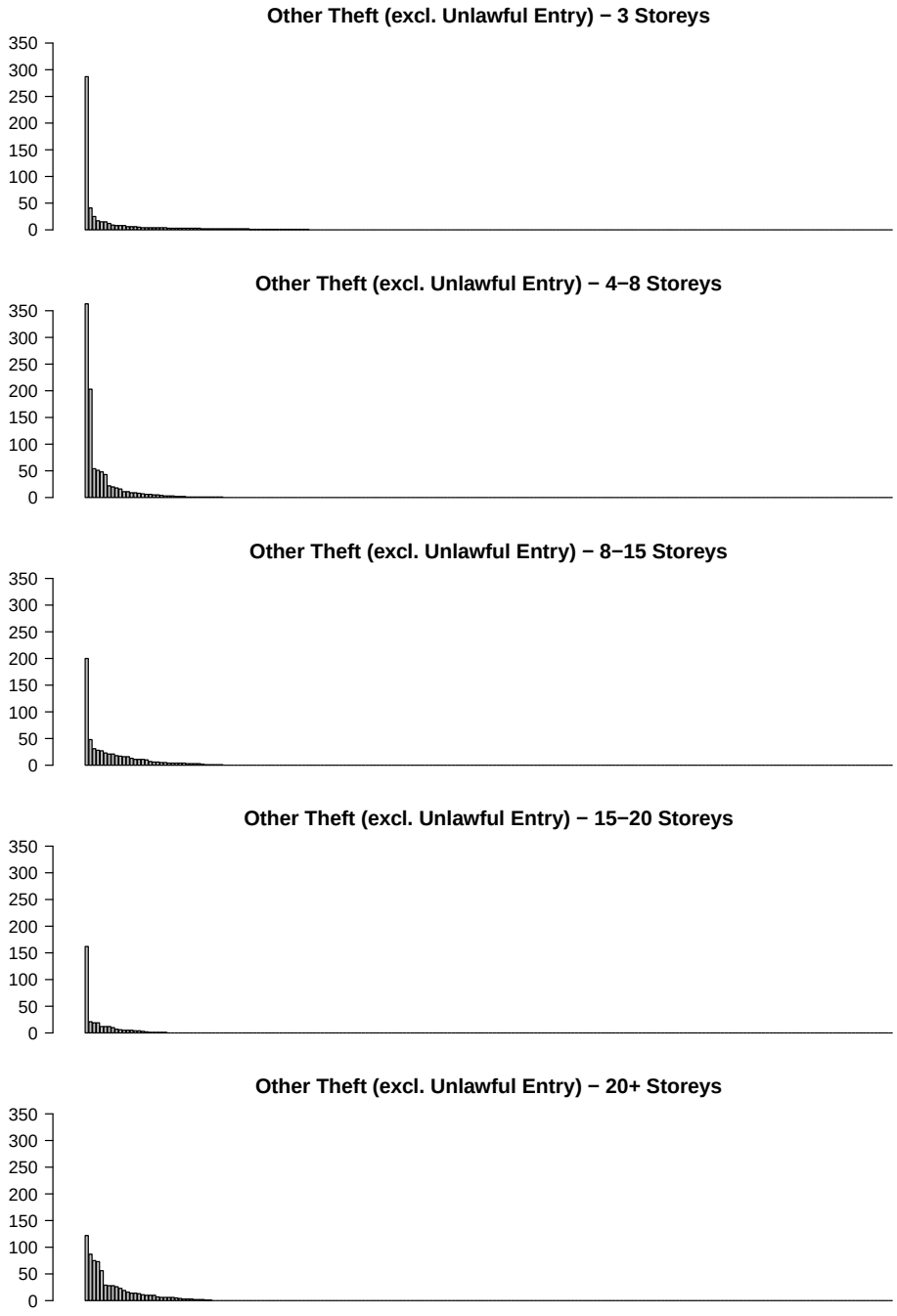

Figure 4.5: J Curves of Other Theft (excl. Unlawful Entry) Offences Conditioned by Building Height

expected number of recorded crimes. Indeed, for none of the crime types in Table 4.8 is there a positive correlation between building height and crime levels.

	Building Height (Storeys)			
	4–8 Storey	8–15	15–20	20+
Other Theft (excl. Unlawful Entry)	1.47	1.00	0.37	1.21
Drug Offences	0.56	-0.03	-0.11	0.80
Good Order Offences	1.58	-0.98	-1.39	-0.63
Unlawful Entry	-0.03	-0.30	-0.52	0.26
Other Property Damage	-0.12	-0.23	-0.75	0.27
Unlawful Entry With Intent - Dwelling	-0.37	-0.71	-0.91	-0.15
Assault	-0.08	-0.68	-1.88	-0.64
Liquor (excl. Drunkenness)	-0.49	-0.74	-4.28	-3.18
Unlawful Use of Motor Vehicle	-1.55	-1.85	-1.79	-1.16
Unlawful Entry With Intent - Other	-1.37	-2.08	-1.85	-1.04

Table 4.8: Differences in Average Number of Recorded Offences Conditioned on Building Height per Building

4.2.6 Risky Facilities – Seasonal Trends

Surfers Paradise is one of Australia's premier tourist destinations and experiences dramatic fluctuations in its residential population throughout the year. The consequence of this is the population at risk can be dramatically different at certain times of the year. This has the potential to undermine any analysis, such as the one presented here, which is based on counts of crime.

To guard against this issue, we designated an off-peak and at peak time period with a view to comparing whether the presence of risky facilities was restricted to certain times of the year. The peak period related to the months of November, December and January, which corresponded to school holidays and Schoolies. All other months were considered to be off-peak.

Figures 4.6 and 4.7 show the distribution of recorded crime among buildings for the top 10 crime types condition by peak and off-peak periods. We found no difference in the kind of relationships observed for the risky facilities. In other words, a small number of buildings host the majority of offences in peak and off-peak periods.

4.3 Summary

The analysis presented in this study used descriptive statistics and exploratory data analysis to depict the volume and distribution of recorded crime in high-rise buildings in the suburb of Surfers Paradise. We found high levels of concentration of recorded crime regardless of offence type, building tenure, building height and time of year.

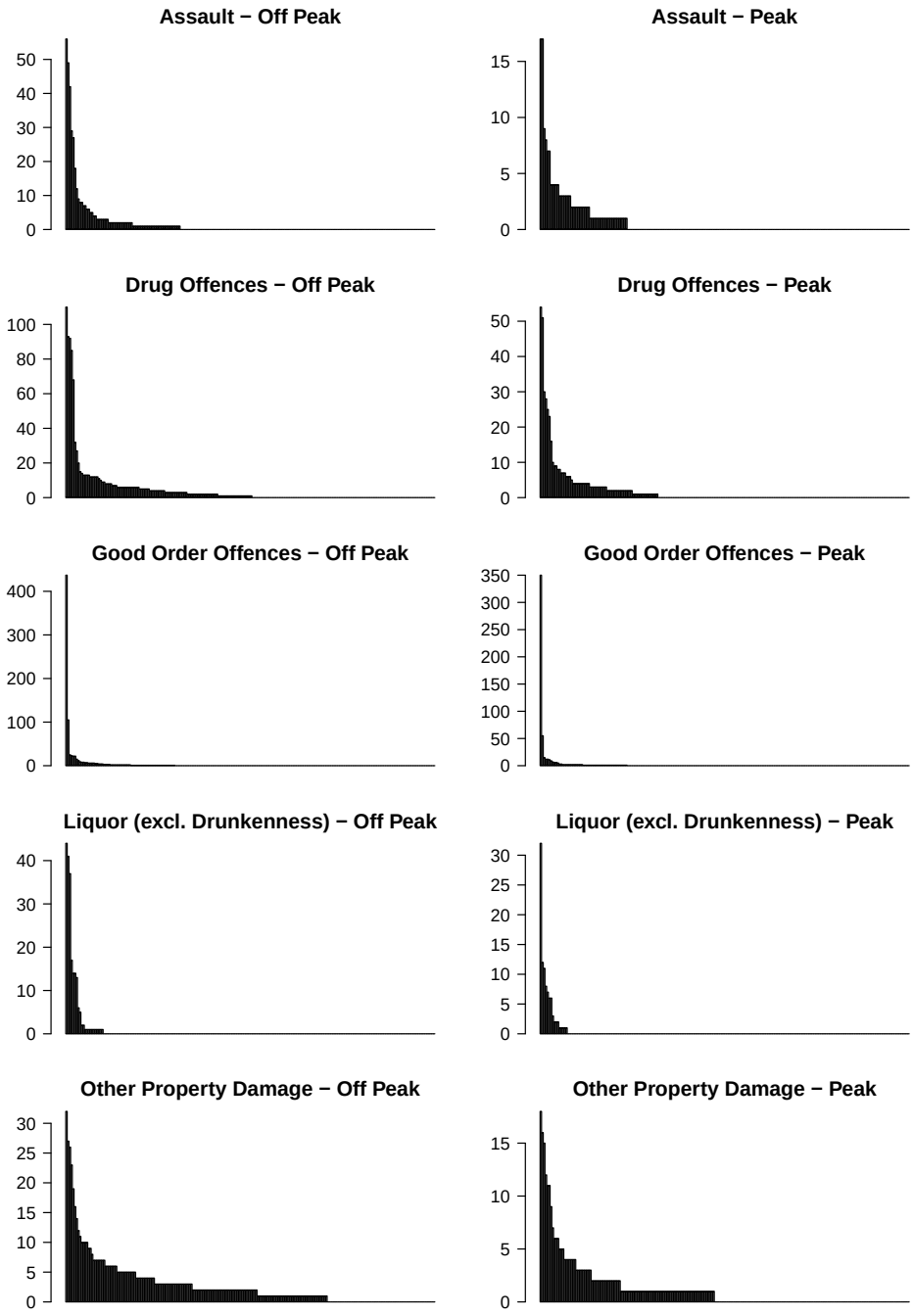

Figure 4.6: J Curves for Peak and Off-Peak Months for Five Offence Types

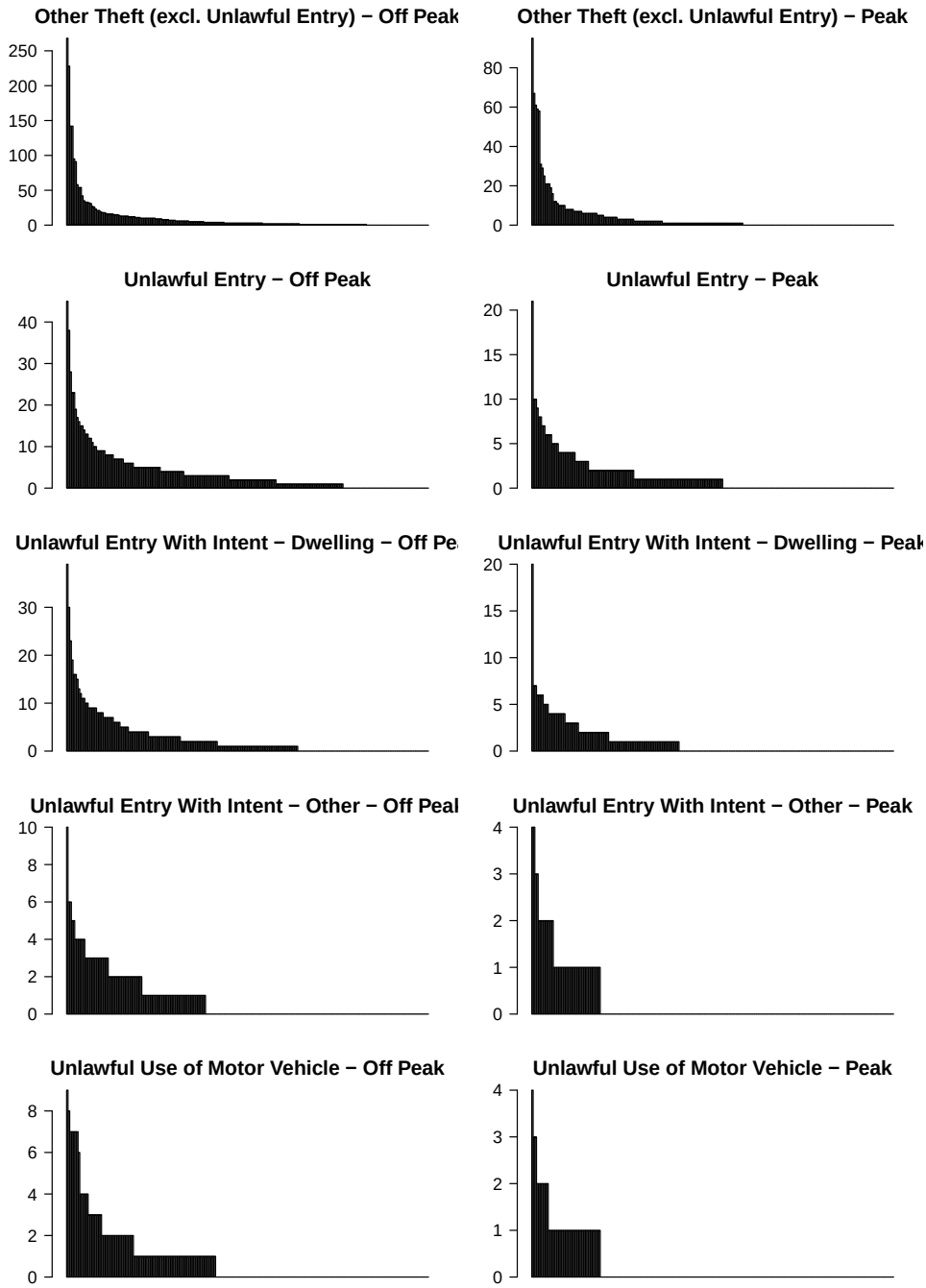

Figure 4.7: J Curves for Peak and Off-Peak Months for Five Offence Types

5 Study 2: Observations of Risky Facilities

The purpose of this study was to concentrate on a subsample of high rise buildings and conduct systematic observations using two existing observational protocols. Observers rated the observable social, physical and spatial characteristics of residential properties, facilities and their surrounding environments. This allowed measurement of place management, guardianship intensity, environmental design features, such as: territoriality, image/maintenance, surveillance opportunities and target hardening at each property.

5.1 Data & Method

Observations were conducted at 125 high rise apartment buildings on the Gold Coast suburb of Surfers Paradise in November, 2012. Observational data were acquired as a means of obtaining ecologically valid data about the physical environment in and around high rise apartment complexes, as well as the intensity of place management and guardianship available at these micro-places. The observational instrument used for this study was derived by combining various measures from two existing instruments that have been validated in previous studies – the Guardianship In Action instrument (Hollis-Peel et al., 2011; Hollis-Peel and Welsh, 2013; Reynald, 2009, 2011), and the place management at apartment building instrument (Eck et al., 2010). See Appendix B for the adapted observational instrument designed for the purposes of this study.

5.2 Inter-Rater Reliability

The team of observers consisted of six people who underwent observational training for two days before the field observations were conducted. Thirty-six percent of the observation locations were rated by pairs of observers (independently) in order to test the reliability of the observational instrument. Inter-rater reliability was assessed using Cohen's κ and results revealed strong reliability of the observational measures, with κ greater than .70 recorded for all variables used in the analyses. These results indicate that the observational instrument yielded consistent ratings across various observers.

5.3 Concurrent Validity

Having established the reliability of the observational instrument, our next goal was to test its concurrent validity by examining whether the variables measured were significantly correlated with those we would expect. For example, if the observational data was validly recorded, one would expect that the number of floors in each apartment building would have a significant positive correlation with the number of windows recorded for each apartment building, since both variables are indicators of the overall size of the building. Table 5.1 presents the Spearman's correlation coefficients, and reveals that all variables are significantly correlated in the direction we would expect, thus confirming the concurrent validity of our observational instrument.

Table 5.1: Inter-Correlations of Observed Apartment Complex Features

	1	2	3	4	5	6	7	8
1. Num. Floors	1.00							
2. Num. Units	.71**	1.00						
3. Num. Windows	.81**	.83**	1.00					
4. Num. Lights Complex Perimeter	.33**	.33**	.37**	1.00				
5. Num. Lights Complex Entrance	.35**	.39**	.34**	.37**	1.00			
6. Num. Lights Building Exterior	.29**	.23**	.26**	.22**	.17*	1.00		
7. Num. Lights Building Entrance	.53**	.56**	.56**	.30**	.50**	.44**	1.00	
8. Num. Lights in Parking Bays	.50**	.72**	.53**	.31**	.31*	.27*	.31*	1.00

Notes: ** $p< 0.01$,* $p < 0.05$

5.4 Study 2 Results

5.4.1 Crime Controllers at Apartment Buildings

Residents as Guardians – Active Availability

The first dimension of crime control observed at the selected sites was guardianship provided by residents of apartment building. Active guardianship, or the extent to which residents were actively available to supervise and guard their residential surroundings, was measured by observing (1) whether there were residents in apartment units who were visibly available to observers, (2) whether available residents were monitoring their surroundings by looking out of their windows or over their balconies, and (3) whether, upon seeing observers conducting observations of the apartment sites, residents intervened to enquire after their presence. Taken together, these three indicators were used as a measure of the level of actively available guardianship by residents at the sites (see Figure 5.1).

Scores for active guardianship were attributed based on each of the three dimensions identified in Figure 5.1. A score of 0 represented a low score, indicating that none of the dimensions of active guardianship were observed at the site.

Figure 5.1: Active Guardianship Score Items

A score of 1 indicated that at least one dimension of active guardianship was observed; a score of 2 indicated that two dimensions were observed; and a score of 3 indicated the highest possible score for active guardianship, as it suggested that guardians were observed to be available, monitoring and intervening when expected.

Results revealed that observed active guardianship tended to be low across the apartment complexes. Thirty-six percent of apartments attained a 0 score on active guardianship, and 40 percent attained a low score of 1 (see Figure 5.2). Less than 25 percent of sites attained higher scores, with less than 2 percent attaining the highest score of 3. The low overall scores may be explained by the fact that these measures were dependent on raters' ability to accurately observe whether apartment units were visibly occupied by residents. In high rise apartment buildings, there are limits to the extent to which this is possible, particularly with taller, larger buildings. If observers were not able to see residents who may have been available in their units, by the same token, residents were also unlikely to see observers unless they were actively monitoring, making intervention unlikely. Nevertheless, what our measure of active guardianship attempts to gauge is the likelihood that residents would be available to act as guardians, in the form of supervision and intervention, if outsiders (such as our observers) gained access to their residential environment. These results suggest that there may be practical constraints to this type of guardianship capability due to the physical design of high rise apartment buildings.

Building Managers as Place Managers – Active Availability

The second dimension of crime control observed at the selected sites was that of place management provided by managers of apartment buildings. The presence of actively available place managers at each of the apartment complexes was rated by recording (1) whether there was a building manager's office onsite, (2) whether the building manager was available when the observations were conducted, and (3) whether the building manager interacted with observers when they were seen

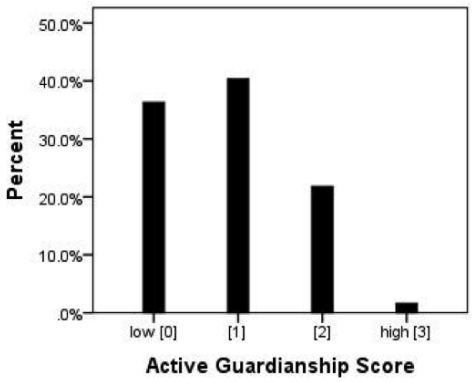

Figure 5.2: Active Guardianship Score Frequencies

conducting their onsite observations (see Figure 5.3).

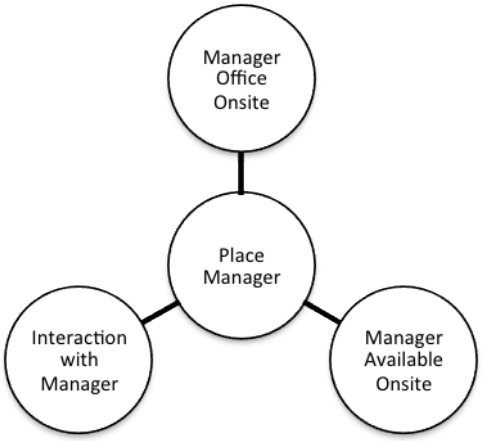

Figure 5.3: Actively Available Place Management Score Items

The presence of an onsite office for building managers was taken as an indicator of the potential for place management available at the apartment complexes. The actual physical presence of building managers onsite was taken as a measure of the immediate availability of place managers at the sites. Finally, the building manager's interaction with observers was taken as a measure of active availability of place managers, since this was interpreted as their active response to seeing our observers (as outsiders) at the apartment complexes. Taken together, these three indicators can be combined to provide an overall measure of the level or intensity of actively available place managers at these complexes.

Of the 125 apartment buildings rated, 61 percent were observed to have a building manager's office onsite. A building manager was observed to be physically available at 48 percent of the apartment buildings, and building managers interacted with observers at 33 percent of the sites. Active Place Manager Scores were attributed to each apartment building based on these three dimensions of actively available place management, with 0 indicating the lowest score (no observed place manager) and 3 representing the highest score (demonstrating that

all three dimensions were observed in the affirmative at the site). Based on these overall active place manager scores, Figure 5.4 shows that 38 percent of the apartment complexes in our sample attained a low score of 0 suggesting that there were no observable indicators of active place managers at these sites. In contrast, at least one indicator of actively available place managers was observed at 62 percent of the apartment complexes, with 32 percent attaining a perfect score of 3 for their observed level of place management.

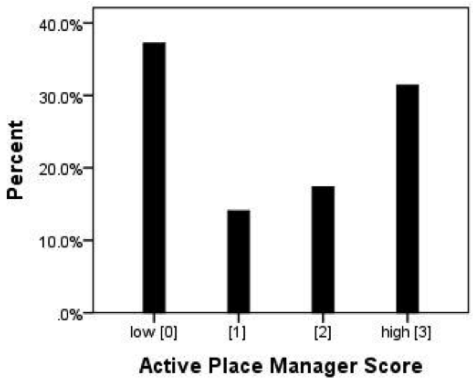

Figure 5.4: Actively Available Place Management Score Frequencies

5.4.2 Place Management & the Physical Environment of Apartment Buildings

Place Management – Image & Maintenance of Apartment Complexes

In addition to the availability of place managers, the level at which apartment complexes were maintained and the effect this had on the overall image of these facilities was deemed an important indicator of the level of place management. Each apartment building received an overall *Image/Maintenance Score* based on observation ratings on the presence of litter on the complex, graffiti on the complex and apartment buildings, junk items discarded on the complex, as well as chipped paint on apartment buildings, broken decorations on buildings and structural building problems (see Figure 5.5).

Scores were reverse coded so that high image scores represented well maintained apartment complexes. Scores of 5, therefore, indicated a high level of maintenance since it suggests that none of these maintenance issues were recorded at the sites. A score of 0 indicated a low image/maintenance score suggesting the majority of negative image/maintenance indicators were observed onsite. Figure 5.6 shows that the level of image/maintenance of the apartment complexes was quite high overall, as over 70 percent of sites received a high image score of 5, with very few complexes observed with low levels of maintenance. These results suggest that the sites in our sample tended to be well managed and maintained by place managers.

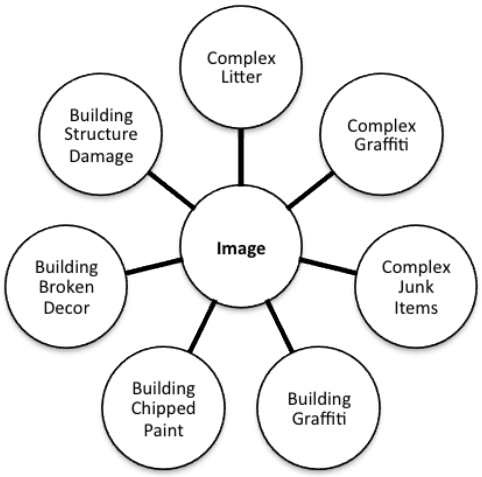

Figure 5.5: Image/Maintenance Score Items

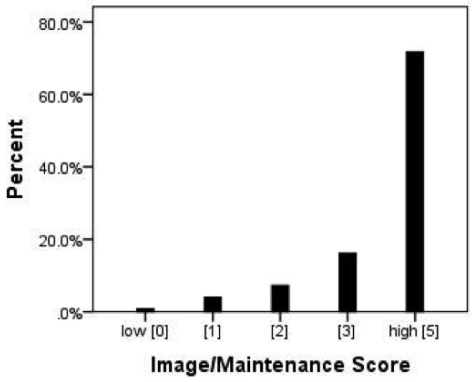

Figure 5.6: Image/Maintenance Score Frequencies

Place Management – Territorial Definition of Apartment Complexes

Alongside the image/maintenance of apartment complexes, the extent of their territoriality or territorial definition is also deemed to be an important indicator of the level of place management available. Each apartment building received two *Territorial Definition Scores*; one for physical and symbolic barriers around the complex, and one for signage on the complex. As discussed in the literature review, both of these scores represent dimensions of the territorial definition of properties that indicate signs of ownership and territorial control.

The *Territorial Definition – Barriers* score was created by observing the presence of physical or symbolic barriers on the properties, including walls, fences, gates and landscaping (see Figure 5.7). Apartment complexes received a score of 1 for each of these barrier items observed on the property. These were then added together to form the total *Barriers* score. A score of 4 indicated the highest possible *Barriers* score, while a score of 0 was the lowest.

The *Territorial Definition – Signage* score was derived from observed signs around the apartment complexes including apartment names, no loitering/soliciting signs, no trespassing signs, surveillance warning signs, signs for parking rules and

signs for other behavioural restrictions (see Figure 5.8). Apartment complexes received a score of 1 for each of these signage items observed. These were then added together to form the total *Signage* score. A score of 6 indicated the highest possible *Signage* score, while a score of 0 indicated the lowest.

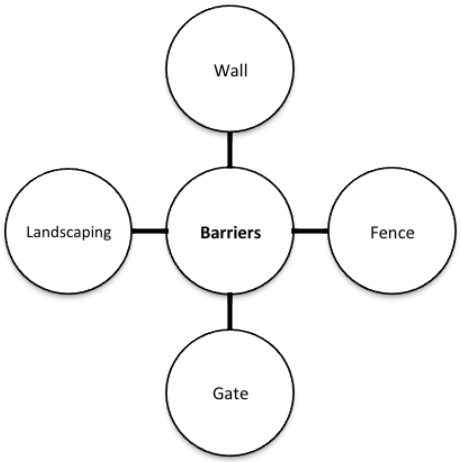

Figure 5.7: Territorial Definition – Barriers Score Items

Figure 5.8: Territorial Definition – Signage Score Items

Figure 5.9 shows that the scores for Territorial Barriers were normally distributed, as expected, with most apartment complexes rated as having at least two (42%) or three (27%) physical/symbolic barriers around the perimeter of the property. These scores suggest that the majority of apartment complexes had good territorial definition by way of barriers that demarcated it as private property.

Similar to the *Barriers* score, Figure 5.10 shows that the *Signage* score was approximately normally distributed, with most sites (89%) observed as having between one and three signs posted on their property. These results reinforce the suggestion that the majority of apartment complexes reveal good territorial definition in terms of possessing signs of ownership and control.

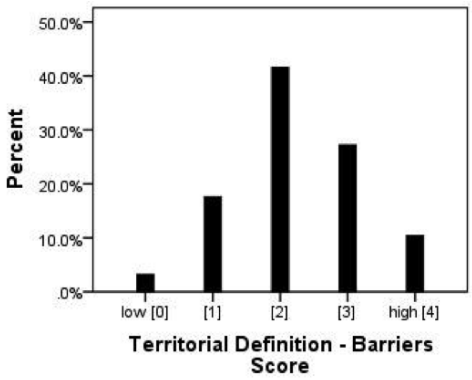

Figure 5.9: Territorial Definition – Barriers Score Frequencies

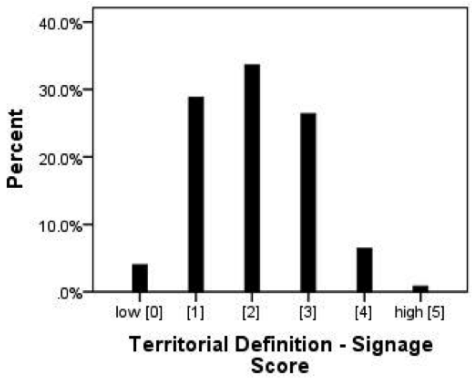

Figure 5.10: Territorial Definition – Signage Score Frequencies

5.4.3 Place Management & Opportunities for Surveillance

In conjunction with image/maintenance and territoriality cues, opportunities for surveillance are also viewed as critical indicators of the level of place management at apartment complexes since they represent an important feature of crime control. Opportunities for surveillance were assessed by measuring the availability of CCTV cameras (as a measure of mechanical surveillance) and presence of lighting observed around the sites.

Place Management & CCTV

The CCTV Score for each apartment complex was derived by adding the number of CCTV cameras observed on the exterior of the apartment buildings and the number of CCTV cameras observed at the entrance of apartment buildings (see Figure 5.11).

Figure 5.12 shows that 39 percent of sites were rated as having no observable cameras outside the buildings. The majority of sites (54%) had between one and four observable cameras in place around the exterior of the buildings. 6 percent had 5 or more cameras. In order to control for the size of apartment buildings, the CCTV score was divided by the number of floors recorded for apartment

Figure 5.11: CCTV Score Items

buildings. This CCTV score proportionate to the size of apartment buildings was used for subsequent bivariate analyses.

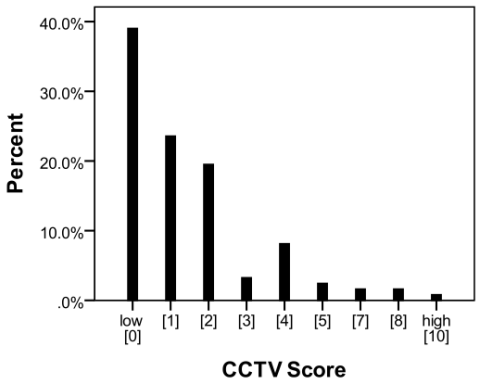

Figure 5.12: CCTV Score Frequencies

Place Management & Lighting

The Lighting Score for each apartment building was derived by adding together the observed number of lights around the perimeter of the apartment complex, at the entrance of the complex, on the exterior of the apartment building and at the building entrance (see Figure 5.13).

Figure 5.14 shows that few sites had no observed lighting around apartment buildings (just under 8%), with the vast majority recorded as having more than four lights around the buildings and entrance. In order to control for the size of apartment buildings, the lighting score total was divided by the number of floors recorded for apartment buildings. This lighting score proportionate to the size of apartment buildings was used for subsequent bivariate analyses.

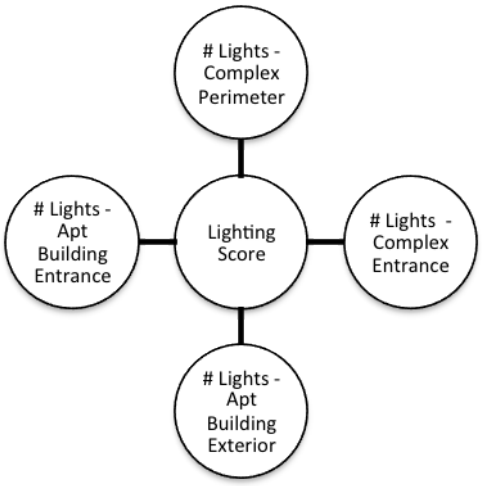

Figure 5.13: Lighting Score Items

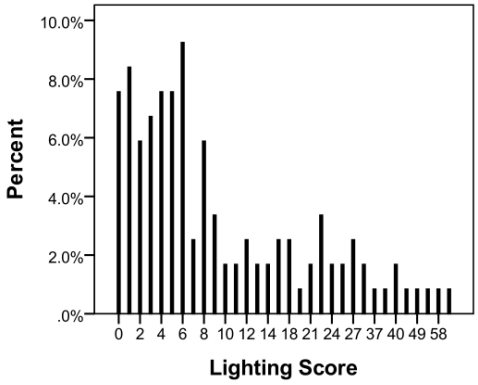

Figure 5.14: Lighting Score Frequencies

Table 5.2 provides some basic descriptive statistics of all aforementioned variables, including the minimum and maximum scores, as well as the mean and standard deviation. Table 5.2 shows that mean level of place manager availability was in the middle of the range of possible values, whereas the average level of active guardianship provided by residents was quite low. Both were quite variable, however, indicated by the magnitude of the standard deviation relative to the mean. Of particular significance is that the mean level of image/maintenance was generally very high. The mean score for territorial barriers was slightly above average across the sites, while the mean score for territorial signage was slightly below average. Both external CCTV and lighting scores relative to the size of apartment buildings was also quite low across all sites.

Table 5.2: Descriptives of Crime Control and related Environmental Variables

Variable	N	Min	Max	Mean	SD
Place Manager Availability	120	0	3	1.43	1.27
Active Guardianship	123	0	3	.88	.80
Image/Maintenance	123	0	5	4.26	1.27
Territorial Barriers	124	0	4	2.23	.97
Territorial Signage	124	0	5	2.05	1.03
CCTV (rate)	122	0	1.67	.17	.32
Lighting (rate)	118	0	11	1.15	1.57

5.4.4 Crime Control at Apartment Complexes: Examining the Relationship Between Place Management, Guardianship, Image/Maintenance, Territoriality & Surveillance

The next stage of the analysis involved the examination of the bivariate relationships among our collection of crime control variables (place manager availability and active guardianship) and their related indicators (image/maintenance, territoriality and surveillance variables). Table 5.3 reveals that the availability of place managers has a significant positive association with the CCTV, Territorial Signage and Image/Maintenance Scores. These results suggest that the more signage observed around apartment complexes, the more likely place managers were available. By the same token, these results indicate that the higher the level of maintenance at the sites, the more likely place managers were actively available. Similarly, Table 5.3 reveals that the higher the opportunities for surveillance in terms of the number of CCTV cameras available proportionate to the size of apartment buildings, the more likely place managers were actively available onsite. Taken together, these results are in line with expectations that the level of place management available at micro-places is reflected in physical environment cues related to the defensible space concepts of image, territoriality and (in this case, mechanical) surveillance.

Of particular note was the fact that there was no significant association observed between active guardianship and place manager availability. Moreover, although not significant, the relationship between available guardianship and image/maintenance was also negative, suggesting that guardianship and place management have an inverse relationship. These results may be explained by the difficulties inherent in observing guardianship by residents in high rise apartment building units. The presence of place managers is more visible, and consequently easier to observe, than the presence of available residential guardians.

Other notable relationships included the significant positive association between the surveillance variables – lighting and CCTV, as well as the significant positive association between the territoriality variables – territorial signage and territorial barriers. The only other significant association among these particular variables is between the two territoriality variables – observed territorial barriers and signage. A significant positive correlation was also observed between CCTV and signage.

Table 5.3: Inter-Correlations between Place Management, Guardianship, Image/Maintenance and Territoriality

	1	2	3	4	5	6	7
1. Place Manager Availability	1.00						
2. Active Guardianship	-.01	1.00					
3. Image/Maintenance	.20*	-.12	1.00				
4. Territoriality - Barriers	.05	.08	-.04	1.00			
5. Territoriality - Signage	.34**	.16*	-.09	.18*	1.00		
6. CCTV (rate)	.33**	.05	.03	-.05	.33**	1.00	
7. Lighting (rate)	.05	.06	-.05	.05	.08	.23**	1.00

Notes: *** $p < 0.001$, ** $p< 0.01$,* $p < 0.05$

Appendix C provides the full list of apartments along with their corresponding scores for active place management, guardianship, image/maintenance, territorial barriers, territorial signage, CCTV and lighting.

5.4.5 Guardianship, Tenure & Crime

Having established in Chapter 4 that Theft excl. Unlawful Entry as the most voluminous crime category, the analysis that follows will focus on examining the relationship between tenure and levels of guardianship with this type of crime. Recall from the analyses presented in Chapter 4 of this report that buildings with long-term tenure had the lowest volume of crime, followed by short-term tenure, with the highest volume recorded at mixed tenure buildings. When we examine the distribution of Theft excl. Unlawful Entry in high density residential communities among long term residential buildings, Figure 5.15 shows that this type of crime is lowest when guardianship intensity is high, i.e., theft was lowest at those long term residential buildings where residents were observed to be actively available guardians. When we look at mixed residential buildings, we see in Figure 5.15 that theft is much higher at those mixed residential buildings where no active guardianship was recorded. At short term residential buildings, we also observe that average theft is highest at those buildings where no active guardianship was observed.

5.4.6 Place Management, Tenure & Crime

When we examine the distribution of Theft excl. Unlawful Entry in high density residential communities among long term residential buildings, Figure 5.16 shows that while this type of crime tends to be very slightly lower when place management is high compared to when place management at these facilities is low, the level of theft tends to be similarly low regardless of the intensity of place management. When we turn our attention to mixed residential buildings, Figure 5.16 reveals that theft is highest when place management is low, and theft is lowest when the availability of place management is highest. What we observe

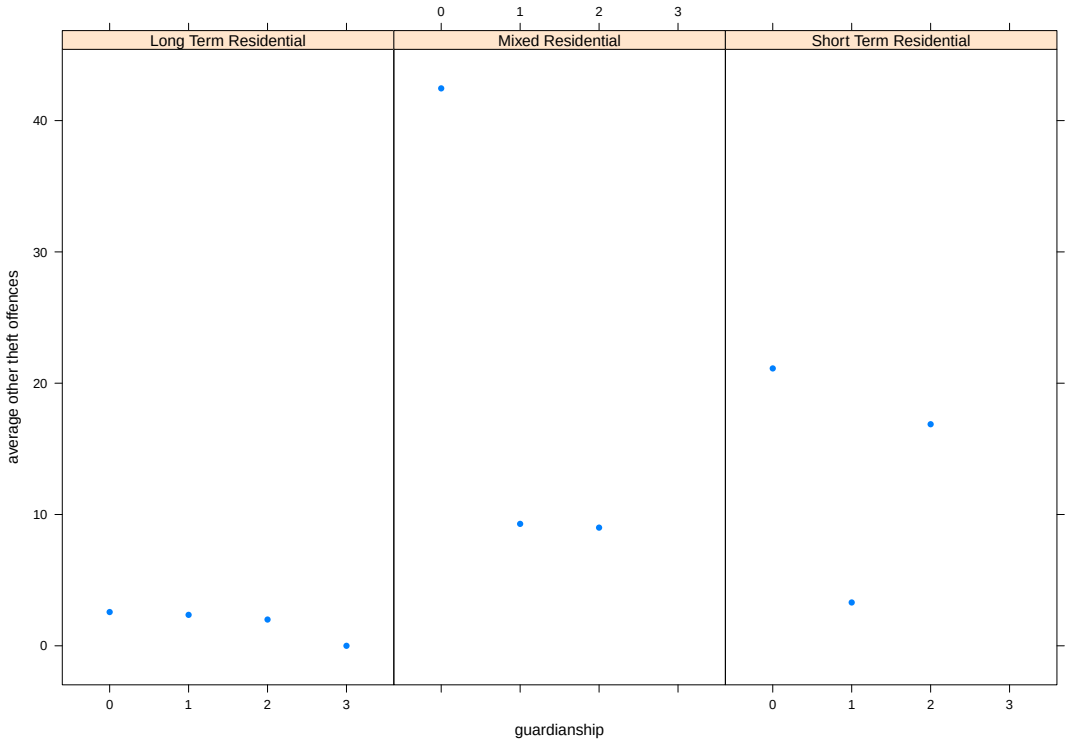

Figure 5.15: Relationship Between Guardianship and Other Theft Crimes Conditioned by Building Tenure

at these buildings of mixed residential tenure is that theft is lowest when a building manager's office is onsite and when building managers are actively available onsite. Finally, when we examine place management at short term residential buildings, Figure 5.16 shows that, in contrast, theft is lowest when place management is low, i.e., when no place manager is available onsite, or when a place manager's office is available onsite. When a place manager is actively available onsite, average theft is revealed to be higher in comparison.

5.5 Summary

Taken together, results from direct site observations reveal that the level of actively available guardianship provided by residents at high rise apartment buildings in our sample tended to be low overall. In contrast, the level of place management at these sites tended to be comparatively higher. Moreover, indicators of place management – in the form of image/maintenance, territoriality and opportunities for surveillance – also tended to be quite strong across these sites as the majority of apartments reflected high levels of management, maintenance and territorial control, and very good levels of surveillance opportunities. When we compared crime levels with tenure and levels of actively available guardianship, average recorded theft was lower at long term, mixed and short term residential buildings when guardianship intensity was lowest. Interestingly, in comparison,

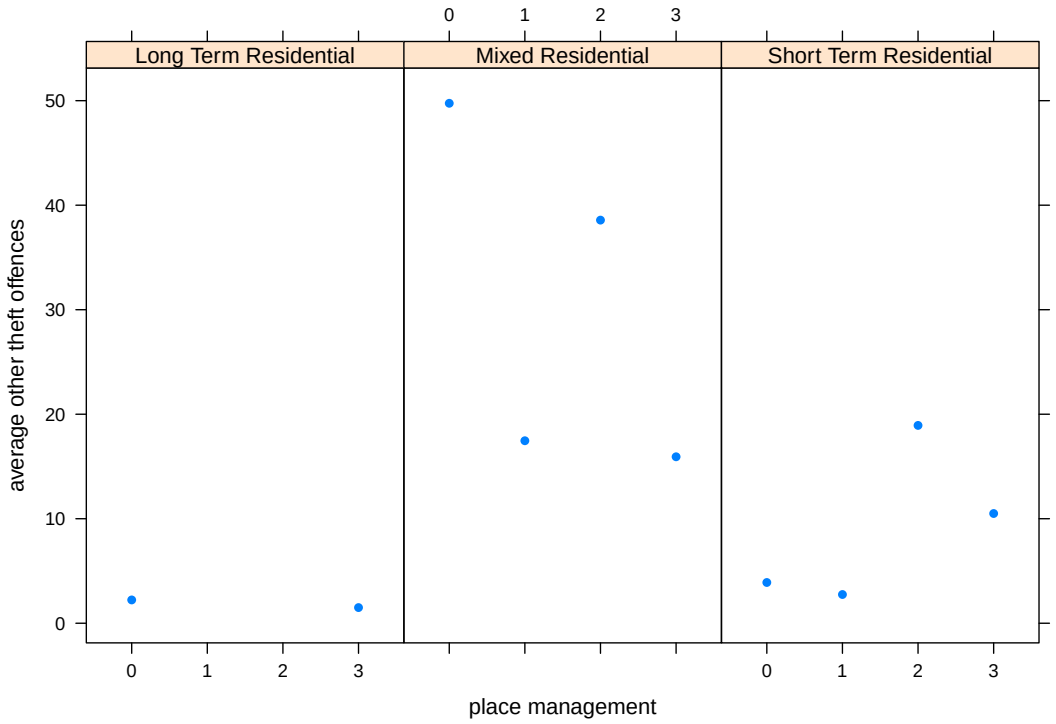

Figure 5.16: Relationship Between Place Management and Other Theft Crimes Conditioned by Building Tenure

we observed that theft was (approximately) equally low at long term residential buildings when place management was low and when it was high. At mixed residential buildings, theft was highest when place management was lowest and was lowest when place managers' office was located onsite and when place managers were actively available onsite. In short term residential buildings, theft was lowest when actively available place management was lowest.

6 Study 3: Discussing Risky Facilities

The focus of this study was perceptions of safety, incidences of crime and social connectedness or cohesion of those living in vertical communities. In-depth semi-structured interviews were conducted with residents, Queensland Police officers, building managers and body corporate managers.

6.1 Data and Method

Two datasets were developed to complete the third phase of this research project.

6.1.1 Resident Questionnaire

A questionnaire was designed to capture demographic, tenure and household type and residents' perceptions of and actual rates of crime in Surfers Paradise. Questions were asked of gender, what type of household structure (living alone, as a couple, family, group household), whether they were owner/in the process of owning or renting, on which floor level based on categories (levels 1–3, 4–8, 9+). Based on the British Crime Survey residents' perceptions of and actual rates of crime were categorised (from extremely unlikely to extremely likely). The categories included; robbed, assaulted, property damage or unlawful entry within their building and within their unit.

The questionnaire was randomly distributed to 1,000 letterboxes of residents within high-rise buildings in Surfers Paradise, representing an approximate sample of 1:3.5. To encourage residents to complete the self-adhesive reply paid questionnaire all respondents who returned their questionnaire went into the draw to win a $100 JB Hi Fi voucher. However, there was an extremely low response rate ($N = 44$ or 4.4%). Of the responses that were returned, many residents reported feeling safe in their unit and building generally. However, during peak tourist seasons and specific event periods (e.g. Schoolies or V8 Supercars) there were heightened feelings of fear.

The low response rate is concerning for a two reasons. First, not too much can be made of these findings from such a low sample size: it is highly likely there are selection effects operating, the completely expected results notwithstanding. Second, the extremely low response rate underscores the difficulty that the Queensland Police Service and building managers have in fostering community investment within transient residential populations. This will be a factor in any crime prevention policy developed in high density residential community.

6.1.2 In-Depth Semi-Structured Interviews

In total, 19 in-depth semi-structured interviews were conducted with police, body corporate managers, residents and an industry expert (see Table 6.1).

Table 6.1: Sample of Interviewees

Number	Respondent
10	Residents (in-depth case of one building)
5	Police
3	Body Corporate Managers
1	Industry Expert (specialising lawyer)

A semi-structured interview guide was developed with questions derived from the review of the literature. Four key themes guided the interview questions; general, building design, socio-demographic and management strategies. General questions opened the interview to build rapport and trust between the interviewer and interviewee. These included: perceptions of safety and fear of crime, what makes high-rises susceptible etc. Building design questions were framed around: effective building design features to enhance safety and security, number of apartments per floor, height of the apartment within the building and mix of tenure and type of facilities. Socio-demographic questions revolved around: price point of apartments, cost of living, mix of tourists and residents within the buildings etc. Management strategies explored the range of prevention strategies that have or could be implemented to enhance perceptions of safety and mitigating crime.

All interviews were digitally recorded and verbatim transcribed. Qualitative in-depth interviews provide a richness of data that builds theory through three levels of coding (Glaser, 1998; Glaser and Strauss, 1967; Neuman, 2005; Strauss, 1990). First, open coding of the interview transcripts ensured that the data was labelled, analysed, compared and categorised. Second, an axial coding process sought to identify relationships between the categories and subcategories. Third, the analysis underwent a selective coding process to identify core themes and their relationship to the categories. Throughout, and as a consequence of this research approach, there was constant comparison between emerging categories and consequent respondents for trustworthiness and theoretical saturation (Decrop, 2004).

6.2 Results

6.2.1 Difference Between Perceptions and Actual Rates of Crime

The subjective nature of perceptions of and fear of crime led many respondents to express views about the disparity between perceptions and actual rates of crime. As one respondent acknowledged, “Crimes tend to get publicity, and people can overlook the fact that they’re pretty rare” [I5]. The effect of media on perceptions of crime were also widely discussed. One respondent commented,

> "...it's the bloody Gold Coast Bulletin. It's the worst paper in Australia! So all of a sudden you've got three buildings living in bloody fear. So it's perception. The reality is that most of them don't get touched by crime" [I6].

The continual exposure of residents to media reports, whether sensationalised or not, has led to increased perceptions of rates of crime in Surfers Paradise. Another respondent identified that this may also be aligned with the demographics of the region. He noted:

> "Given that large numbers of people retire here, I suggest that those people, the level between reality and perception is far removed, because those elderly people are potentially bombarded with information about crime" [I8].

However, a number of respondents also acknowledged that high-rise living provided a unique context and "A false sense of security" [I6 and I5]. As a respondent indicated,

> "I think they feel secure because they're high, perhaps. I think there's a perception by guests and perhaps owners alike that they feel safer, as I said, being a little higher. But I don't think it's a big deterrent for the would-be thief" [I3].

There was an element that suggested that the higher up an individual lived or resided the more heightened their perceptions of safety. It was commonly commented that being removed from the ground floor or easy access led to this false sense of security, even though incidences of crime occur at all levels of buildings.

One respondent also commented that it is not until an individual became a victim of crime that the gap between perceptions and actual rates reduced. He stated,

> "So you'll tend to find, and I'm sure the research will show, that anyone who is a victim of this type of crime, that being some sort of property crime from a high-rise, from that point on will be quite familiar and quite aware of the risks and from that point on generally will take appropriate precautions. However, those that have not really had contact directly or even indirectly will tend to be a little bit more blasé until they're actually a victim of that and I guess that's across the board, irrespective of what crime areas you're looking at" [I7].

Therefore, it became evident that perceptions of safety and fear of crime in the Surfers Paradise area were heightened as a consequence of ongoing media reporting. However, as individuals retreated into high-rise buildings and apartments they were often lulled into a false sense of security. The disconnect with the ground and being above 'the others' led to these perceptions.

6.2.2 Location of Buildings/Apartments

The location of dwellings and their surrounds also strongly influenced perceptions of safety and fear of crime. The commercial and recreational nature of the Surfers Paradise precinct is dominated by entertainment, leading to heightened risks of unruly social behaviour.

> "Even walking through parts of Surfers Paradise of a daytime, late afternoon or early morning, you just – it doesn't feel safe. It feels as though it's – that's what it is at night, and that is it's a party – a party place. Then you're dealing with people who are drunk and out of control. So – the few times I've been to Surfers in recent years I've had that feeling that it's deteriorated a bit" [I5].

Apartment complexes in close proximity to risky facilities such as nightclubs, bars, convenience stores and fast food outlets had heightened risks.

> "... particularly the ones closest to nightclubs, like the Hilton and Circle on Cavill, where they have the inherent problems with crazies going through their buildings or trying to go through their buildings" [I1].

These risky facilities have been located in these areas well before many of these high-rise developments, which should indicate a buyer beware mentality. However, it did not deter some owners of apartments trying to have these venues closed. As one respondent discussed,

> "Those that might have bought on that side of the building overlooking Melba's as an example, and until whatever time in the morning they're doing their music and the talking and the screaming and things that have happened, and they have to close all their doors, they have to put air-conditioners on. ... basically people move in because all they've bought is just the environment of that building itself" [I1].

Unit owners are attracted to the location of Surfers Paradise due in part to proximity to facilities and amenities, but when faced with living in close proximity are confronted by the challenges.

As you radiated out from the core of the Surfers Paradise entertainment precinct this also presented challenges to perceptions of safety and fear of crime.

> "For example, if you've got a high-rise down off Old Burleigh Road – there is it? You know that backs onto where the river is here, where there are some derelict buildings. So next thing you get the heightened risk of entering into buildings because you've got derelict buildings where vagrants tend to hang out. So suddenly they've got to review their security" [I9].

> "If you're bringing together people of a lower socio-economic group in large numbers and there's the potential there for conflict and there's

> potential there for offences to be committed probably on a broader and wider scale than what there is if they're intermingled amongst the community. You know so yeah I think that would have a pretty decisive impact on what crime is being committed in the local environment" [I10].

Furthermore, as individuals transit through these spaces on their way home it presents opportunity for social amenity disorder, discarded waste, and opportunistic property crime.

6.2.3 Size of Community

Surfers Paradise is one of the most densely populated suburbs in Australia with over 75% of individuals residing in an apartment. The increased density presents opportunity for more individuals to be in the area on a permanent and semi-permanent basis. As a respondent commented,

> "So in a footprint in a residential area that might only be four or five houses, in a high-rise sort of area you might have 100 or 200. So I guess simple geography means that the person doesn't have to travel so far to reap the benefits of his criminal activity" [I7].

The size of many of these high-rise apartment towers also does not facilitate the opportunity to know who should be or should not be there. "... the smaller, older ones at least you get to know people and know who's supposed to be there and who's not supposed to be there. I often wonder when there are 600 apartments in a tower ..." [I4]. Another respondent notes, "You can walk in, just walk into these places and just join in the whole crowd and the community" [I2]. Nobody can really distinguish whether you have a legitimate right to be there or not.

Further compounding this, is the high proportion of holiday letting. As one respondent noted,

> "I think the fact that a high-rise building brings with it, potentially, significant numbers of people in a small location that – where there's not a – where there are not solely permanent residents. Where there's a turnover of people does, so that it – what I mean by that is an extra face in – coming and going. The fact that they may only be here – some may only stay one night. They may only be an overnight person, through to a short-term stay and those sort of things. So an extra face doesn't seem out of place. Another body walking around in the car park doesn't seem unusual. Another person [even on a] floor, the same floor – no one would potentially notice that" [I8].

Respondents also commented on how the layout of many of these high-rise buildings did not facilitate the building of social interactions amongst residents. One respondent acknowledged,

> "...the design or layout of a high-rise building doesn't lend itself particularly well to interaction with your neighbours. What I mean is the three of us could live on the same floor in three different units and we may not know each other. We could live there for years and not meet each other and not know each other" [I9].

As discussed in Section 6.2.5, the security features that have been installed in many of these high-rise apartments further limits opportunity for social interactions. As one respondent indicated "They only way they socialise is in the basement or in the lift, which is not ideal locations for perceptions of crime or fear of safety" [I1]. The common areas that often provide these opportunities are not ideal locations, often being in the basement car park, lift, lobby areas where individuals are often in heightened states of awareness about their safety.

6.2.4 Owner Occupied Buildings

It was clear that there was a difference in terms of respondents perceptions about the effect of owner occupied residential high-rise buildings compared with mixed tenure. As one respondent discussed "...by and large the higher the number of rentals in a high-rise is usually the higher the number of incidents" [I10]. The degree of transience of occupants influences their social connectedness to a building and its occupants (Forrest et al., 2002). Social connectedness influences behaviours and attitudes towards others and also property. Therefore, an owner occupiers and tenants, particularly short term or holiday tenants will interact with each other and the property differently. One respondent noted,

> "I think the full residential buildings they were pretty good because generally people talked to other people in the building and they have their probably body corporate meetings and because they all live there there's an onus on them all to understand the risks so they all are better educated" [I7].

Owners interact through a legislative obligation to self-govern and manage the building that they have brought into. Owner occupiers meet each other through body corporate meetings and through regular interactions and acknowledgement as they go about their daily lives.

These owner occupied buildings had a greater ability for guardianship and surveillance as they "will tend to know who should and shouldn't be in the building" [I7]. Another respondent commented,

> "...if it was an exclusive permanent, the people would get to know, even just by sight, the people that are on their floor, for example. So that the extra body on the floor would potentially look [out of place/ displaced]. Every person usually has a dedicated car spot, and people would walk past and see that there's constantly a red Commodore in that spot, so they know that a red Commodore owns that spot. ...as opposed to more touristy or overnight-y, or whatever you want to call it, focused – that other user group" [I8].

Therefore, the tenure type and mix of occupiers has a direct influence on perceptions of safety and fear of crime within many high-rise buildings.

6.2.5 Building Design Considerations

As noted in Section 6.2.3, the design of high-rise buildings has an influence upon occupants and residents perception of safety and fear of crime. Focusing on specifics of design respondents discussed the location of the apartment within the building, crime prevention through environmental design principles such as design, lighting, closed circuit television surveillance, and specific security inclusions such as access.

First, it was perceived that ground and lower floor apartments were at heightened crime risk due to ease of access. As one respondent discussed,

> "I think it's easier for somebody to access, illegally access, a lower level unit than it is an upper level unit. Even if you're on the first floor or the second floor, sometimes because of the way the balconies are configured, it's possible for an energetic person to quite easily get access to the first or second balcony, because I guess you can climb from one to the other. The further up you get, the more difficult that is I think" [I5].

However, as noted in Section 6.2.1 this can often lead to a false sense of security for those living at higher levels. As a number of respondents highlighted there have been numerous incidences of illegal entry through balconies even at these higher levels.

Second, a number of respondents specifically discussed principles of crime prevention through environmental design (CPTED).

> "Things like entry points being just clear and easy to access. Lines of sight from both ends, both externally and internally within the premises. Yes, just general maintenance of the facility itself, so it looks clean. It looks tidy. It gives the impression that it's cared for and looked after and someone obviously is responsible for that" [I8].

The ground level was considered particularly important as it facilitated access into the building.

> "...it's the design of the ground level that makes all the difference. Whether you walk up there with your three metre solid walls that people can't penetrate unless they've got iris recognition or finger print recognition, et cetera, or whether the building's just generally open so that people can jump fences and go and swim in pools and have these dark corners and basements are easy to get into to sleep in cars, knock off cars, damage cars. The design is a big issue I think" [I1].

However, architects and developers' aesthetic objectives sometimes overrule implementing CPTED principles. A number of respondents noted "the developers say, no, no, don't ruin the aesthetics of the perimeter of the building" [I1]. As a consequence, many of the newer high-rise apartment developments are reconfiguring the common recreational areas. "That's why you see more and more of these rec centres going higher in the building, because basically they're seeing it's making more private, people more comfortable" [I1].

Important changes are also being made to the design of high-rise buildings to overcome issues with illegal balcony access.

> "... some of the buildings will have a better design in terms of just not allowing people to be able to climb the balconies, just purely the way that the balconies are designed and that could mean – I'm not an engineer, so I don't know, the distance between the floors. Sometimes buildings will be – will have a bit more distance between each balcony whereby the offender hasn't got the ability to reach up and get the next one ... " [I7].

Or as another respondent acknowledged, utilising materials and design to limit climbing.

> "... there's the building and there's the balcony – it should be like that ... offset ... You can't reach out. That's never going to happen. It could happen as part of a CPTED principle of stopping balcony theft. It may be just be something simple, like, it's like that but it's got a curve on it – an anti-climbing device" [I6].

Clear visuals and lighting enhance an individual's perception of safety as they are aware of who is around. One respondent commented "Dark little areas where they can sneak up and climb up balconies, if you can eliminate that" [I7]. However, a number of respondents discussed the cost implications of lighting and particularly in reference to electricity charges and visual pollution. One respondent stated,

> "... people are reluctant to with the charges. With the electricity power supply now and the cost, there's going to be more blackness. People are going to start flicking bloody switches. Where a body corporate is running it and people are trying to save money they create a problem if they just flick all the lights off. But that's what some of them are doing" [I6].

Modifications or retrofitting lighting with sustainable technology such as LED or sensor lighting could assist body corporates in reducing long term energy consumption cost, however these changes will incur initial set up levies and costs for owners and bodies corporate.

The installation of CCTV or visual recording devices was commonly discussed by respondents as a tool to enhance perception of safety and rates of crime in high-rise buildings. As one respondent acknowledged "Most people do crime

because they think they get away with it, but if they know that they can't get away with it because there are these mechanisms, video cameras... they're all deterrents I think" [I1]. Individuals can no longer be anonymous. "... it actually takes a record of an incident and insurance companies and police like that, so that they can make sure they get the facts" [I1].

However, a number of respondents acknowledged that "cameras will catch an offence happening but it won't necessarily deter it ..." [I9]. The challenge being that they may be inappropriately located, not in operation or not being monitored. One respondent stated "we've got security cameras but nobody looks at them. The security guards we hire look at them in the evening. They're not there all the time" [I11]. Another detailed,

> "I could take you to any high-rise now and do an evaluation of the cameras in the building and you'll see that 98 per cent of them are totally ineffective for what you want. Why's that? They're ceiling mounted. Instead of – like, as you walk up to a door in a high-rise building where there's a keypad or a security pad, there should be a camera straight in your face. Because nobody thinks of that. They leave it to the security and security come in and say we need cameras. Yes, fine, we'll put one up there. So when you walk in it's looking down at the top of your head and your baseball cap – hoodie – no one sees it. But as you come to the door it should be sitting there going click, click, click – every time you move click, click, click. It could go to card. It doesn't have to go to digital video recording" [I6].

Therefore, the ineffective placement and location of cameras limits the success of cameras. As one respondent commented,

> "There's nothing worse for us if we go and have to respond to 10 or 15 vehicles that have been broken into in a basement carpark and we get there and the building manager says, – we've got CCTV but we haven't used it for years and it hasn't worked or – that's not uncommon for that to occur" [I7].

Others indicated that whilst cameras are good to have in operation it will not stop everyone. "Anybody that knows what they're doing won't get caught on a security camera" [I2].

Third, site specific security measures were also discussed as factors that facilitated enhanced perceptions of safety amongst high-rise residents. One respondent indicated that separation of uses and access may assist. He stated "Ideally a separate drive way for residential and a separate drive way for non-residential. Allow the public to use that, but the private one comes through here" [I1]. Overwhelmingly access into a building was a key factor facilitating perceptions of safety. As one respondent noted,

> "It starts off with some sort of ability to vet who's coming into the building. Whether that's just through the main foyer area or whether that's through delivery doors down in the basement. Who's accessing

> your car parks? It sort of needs to start off at that level at a really high vetting level" [I9].

Electronic access cards or fob systems are commonplace. These systems limit who can open the front door, car park gate and lift access depending upon how they are programmed.

> "Quite a lot of them are fob activated so it's not a matter of just walking through the front door; you need a fob to get into the front door in quite a lot of those buildings. So you just can't walk off the street. Also fob activated to get into lifts, on the floors and that, so they try to put security measures in place so that it keeps out people who really shouldn't be in the building. But of course, if people want to get in they can still get in" [I4].

Therefore, many times these access cards limit where an individual can go within the building to the carpark, lobby, and their floor of occupation. This has the potential of further limiting opportunity for casual social interactions and development of sense of community within some high-rise apartments.

However, problems can occur with these systems. Tailgating is a major concern, whereby an individual swipes to gain entry to a carpark and enters the gate with another car following at close proximity. One respondent commented,

> "... cars drive in and out and you've just got to walk in behind a car or follow a car in. The gates open and shut with the car, but they don't close on the next car. So if you tailgate it will just stay open. It's all well and good – the only way that you can have – is to control the security of access is to have a static guard at the front. It becomes too costly" [I2].

A similar concern exists with front door entry access. Therefore, site specific measures provide another layer of security to enhance perceptions of safety but may not necessary be the panacea. Active management of risks also needs to occur.

6.2.6 Management of Risks

In discussing management of risks respondents identified a number of opportunities beyond those discussed in Section 6.2.5. They indicated the advantage of onsite managers for guardianship, hiring of dedicated security and building lockdowns. A number of respondents also identified challenges to management of risks in the lack of police resourcing and issues with strata title legislation. These themes are discussed below.

First, it was perceived that having onsite managers enhanced the perception of safety through guardianship and visual presence.

> "... my view is it probably does, purely because an onsite manager has a much better awareness of who lives there and who doesn't and

> who should be coming and going and they just take a real ownership in the place rather than – an offsite manager only gets a phone call when something's not working or something has gone wrong" [I7].

Their awareness of legitimate users and enforcement of body corporate rules and regulations ensures they act as casual monitors of property. "Generally with onsite managers... they will keep the building reasonably secure during the day and you don't often need security" [I1]. Another respondent stated,

> "I think because the onsite manager is very familiar with the building. He or she is here generally 24/7 and can usually attend to most matters very quickly if needed and has usually a finger on the pulse and – both good and bad – can attend to certain aspects of life in the building. It would be a deterrent as such but the thief doesn't know that there's a resident manager in place. I guess, from a comfort point of view, the owner of the unit or even the guest may feel some comfort in knowing that there's a resident manager there – not that he or she is going to go out and chase the culprit or do the security rounds like some of them think the managers should" [I3].

Onsite management can take three distinct forms in strata title buildings; caretaker, resident manager or offsite manager. Caretakers are hired by the body corporate on shorter term contracts, usually three year terms, to undertake maintenance, repairs and general upkeep of a property. The other forms, resident and offsite managers, often have purchased the management rights to a building, for a period of up to 25 years. Management rights is a business that enables contract holders to undertake the roles of caretaker and letting agent for units in the rental pool. Management rights businesses often include the purchase of a unit within the complex, usually on the first or ground floor, which they can choose to reside in or not. As one respondent indicated,

> "... an onsite manager has a much better awareness of who lives there and who doesn't and who should be coming and going and they just take a real ownership in the place rather than – an offsite manager only gets a phone call when something's not working or something has gone wrong" [I7].

However, contrary to some beliefs, a manager of a building is not responsible for the security of the building. They have the ability to consult with the body corporate or to engage security through a contract.

Second, hiring of security personnel was a distinct management strategy that respondents identified. As mentioned previously, if there was an onsite manager it was considered that dedicated security may only be required at night or during peak periods such as weekends and special events. As one respondent discussed, "I would make it mandatory to have a certain level of security within the complex. Such as, either regular security patrols or full time security depending on the complex" [I2]. However, once again hiring of dedicated security incurs costs. This respondent went on to note,

> "...security's the last thing that people worry about within the complex, they spend the whole money – the whole heap of money on caretaking, lawns, gardens, grounds, pools, repairs, fixing things. Then security budget's another $40,000 or $50,000 – that's [unclear] take 10 here or 20 there. That's always the first thing to suffer, which affects the complex" I2].

Another respondent indicated that these costs factors could be overcome by working in collaboration with neighbouring high-rise buildings. He stated,

> "...it's very cost prohibitive to have substantial security services per building. So the idea is, we have buildings side by side, why don't they have a large service and we're not actually paying 100 per cent of the cost. We're paying a portion of the cost" [I1].

The apportionment of costs and co-utilising of security services may enhance response times, and provide an added perception that there is a dedicated full time security team in that location.

Third, a number of respondents identified the necessity for buildings to go into lockdown at a certain time, usually of an evening. In discussing this, one respondent highlighted,

> "Like Circle on Cavill, it gets locked down at seven o'clock. It's almost impossible as a visitor to get into that building, okay. Intercom systems basically aren't as effective if you're not right next to the intercom system. Getting to the intercom system sometimes can be hard if you've got a group of people hanging around a door and they're really struggling with trying to keep their building safe" [I1].

The problematic nature of mixed uses, residential and touristic, within the one building provides challenges to locking down buildings. However, some buildings during major events have had to outlay additional costs on security personnel to monitor and manage building lockdowns. They indicated that it was the only way they could ensure the safety of residents, occupants and the property itself.

Despite the management tools and techniques for security of high-rise buildings in Surfers Paradise a number of challenges limit their effectiveness. First, police resourcing and powers are limited. As one body corporate manager indicated,

> "...the police basically said our problem is that we don't have the resources to look after this. When the special events on, you're [building is] just going to be in the middle of it and we're not going to respond any quicker to you. You get more security and look after yourself" [I1].

Queensland State budgetary pressures have further constrained police resources, with one respondent acknowledging,

> "In Roma Street, in police headquarters, you used to have a community safety crime prevention branch but now they've chopped them down. They've come down – they've got rid of the civilians and they've now got three senior sergeants. One is in charge of Neighbourhood Watch, one is in charge of Crime Stoppers and the other one is in charge of school-based police constables" [I6].

The positions and roles of the civilians working or consulting to the Queensland Police Service through the Community Safety Crime Prevention Branch were not renewed, placing further pressure on police officers and communities, particularly in attempting to proactively address high-rise safety and security.

> "Then there's the powers of the officers and then there's the convenience of you have one arrested. You take three or four officers away to go and process them, and then all of a sudden it's open slather because there's less presence there. [I1]

One strategy that police use to overcome these resourcing issues has been through education and external communication. One respondent discussed a community meeting, he stated

> "We sent out as many as we could and said look, we're going to have this meeting. Come along, we'll talk about high-rise security – because we haven't got the scope to go into every building and do the whole lot. So I did a high-rise crime prevention factsheet and we talked just generally about building security, from cameras to lighting to control of access – checking tenants" [I6].

Embracing media technology also has potential, with another respondent indicating that going building to building, or door to door can be "...a bit of a time consuming process". He went on to note "the police service only in the last 12 months has got into the blogging world" [I8]. While the Queensland Police Service has been lauded for its use of social media in disaster recovery, opportunity exists to enhance these forms of communication and education channels in the future.

The second factor limiting the effectiveness of management practices is the strata title legislation. Discussion abounded about the need for changes to strata title legislation, the Body Corporate and Community Management Act (BCCMA) in Queensland. The Attorney General is currently reviewing a number of aspects of the BCCMA. One recent change, which may influence perceptions of safety within strata title buildings relates to pet ownership. Previously, many bodies corporate had specific bylaws in place that limited or banned pets in apartments. However, the Body Corporate Commissioner through the Adjudicators Office has indicated that within reason a body corporate does not have the right to limit an individual's ownership of pets. As one respondent highlighted,

> "I still say to senior citizens anytime – they're the greatest safety asset you'll ever have – is a yapping little dog. I say to any senior – any

> veteran – go and get yourself a little bloody dog. A little Jack Russell, a little foxie, a little bloody Chihuahua. It's the best mate you'll ever have. You've got the companionship and it will always tell you when someone is around. They bark" [I6].

Another respondent went on to state "... in insurance reports they say that the greatest deterrent of criminals is the fact that there's an animal on the property. Because they can't sneak in and sneak out, because a pet's got better hearing than all of us" [I1].

The BCCMA currently legislates on the activities, roles and responsibilities of lot owners, bodies corporates, and committee members. However, as noted by a number of respondents there is no security obligations within the Act.

> "You have mandatory obligations as a body corporate committee now to provide indemnity insurance and having fire insurance and having building insurance and having – looking after pest control. You have to do that, you can't just not do it. As a committee it's part of your obligation. Why don't you do the same with security? You need to provide a certain level of community within these gated communities based on a certain parameters, I would have thought" [I2].

Increasing jurisdictions throughout Australia are dealing within increasing densities. Over the next 30 years the proportion of Australians living in strata title accommodation will dramatically increase (Easthope and Randolph, 2009). Therefore, many respondents indicated there was a need for improvements to the legislation to cater for these responsibilities of keeping residents safe. Further opportunities exist for "... probably an industry body or an industry standard that they could refer to, to bring themselves up to a standard" [I9].

6.2.7 Communication Portals

Another strategy that was extensively discussed involved the need for greater, more transparent and honest communication. This communication was both internally within a building, between residents and managers, and externally with other stakeholders. Opportunity exists for bodies corporates to take a lead. As one respondent noted,

> "... communication portals have to be a part of the structure of the body corporate. There's a few programs that are running around at the moment where basically you have this internal [notice board] this portal, and people get to express their concerns and kind of it gets sorted out and the real issues come out of that. I think it's something that we're looking at to see whether that makes any difference" [I1].

Body corporate meetings can also provide an opportunity for owners to exchange information. However, body corporates only includes lot owners and does not encompass tenants and particularly tourists. As one respondent acknowledged "some of them even potentially give out a little pack to the people, when

they arrive with a whole range of stuff in. Which has got some little bit of security information for it" [I8]. New technologies such as social media groups or interactive portals would be effective mechanisms as whole of building communication portals.

Relationships between residents, and also residents and managers, are also essential in facilitating effective communication.

> "They see that manager on a regular basis, either in the office when they come to and from, or encounter them wherever. Or have a personal relationship with that manager, because they've lived in the apartment for a period. So they're more likely, I would suggest, to at least raise it with someone else" [I8].

> "...onsite managers are always going to, I guess, be the point of contact for the building and without them it's sort of a rudderless ship, you don't have anyone to go and speak to about the building as a – as an entity rather than individual residents" [I7].

However, a number of respondents identified that sometimes individuals can be overly concerned. This was discussed in terms of the 'squeaky wheel'. As one respondent stated,

> "I think the greatest concern we have is emails. As funny as it sounds, but on the subject it's too easy to communicate the slightest concern, the minor concerns. You just flick a screen and you've already got an email open that you're sending it off to the chair person or to the body corporate manager. Then people have this great expectation when you send an email, that's like a royal decree that something should happen. So I think that creates expectations that are unrealistic" [I1].

First, residents need to take up concerns with the onsite manager or raising the issue with the body corporate. "If talking doesn't do it then it's got to be put it down in writing and send it to them, and then if it's still not addressed that's when they have to take further action" [I4]. Just because an individual makes multiple complaints this does not legitimise their issues.

External stakeholders are also important to facilitate communication. A respondent noted that "the capacity to network and to share information is I think very, very important" [I8]. External communication with other stakeholders assisted education and strategic planning for security of high-rise buildings.

> "...we set up a body corporate association specifically for Surfers Paradise buildings wherein we were able to have chair persons communicate with other chairpersons and try and get some more streamlined way of getting the benefit of the services, particularly security" [I1].

> "...it's important that they do maintain a network between other buildings, because one building may become the victim to a particular type of crime which is new or a method of gaining entry which hasn't really been used before and if they've got a network they can all..... identify that issue and then proactively start trying to mitigate the risks of them being attacked. So if they all operate independently that's not going to work very well" [I7].

However, it is challenging and time consuming "to distribute information because it's hard work, and because they turnover. The rights get sold or whatever" [I8]. As noted earlier, new technologies will be key to the future of external communication.

> "I think there's tremendous capability in terms of social networking or social media to get our message out there. Where traditionally in the old days, you had to walk door to door to door to door to door. That's probably still a little bit of the thinking probably from some of the unit managers and some of the police. Whereas maybe technology can get us around some of these issues or whatever" [I8].

Therefore, communication within and externally of buildings ensures that residents are aware of the actual risks to their safety and security. Communicating about effective strategies to mitigate these risks can reduce the need for these communities to have to experience some of these issues first hand. However, communication alone will not overcome these issues. Residents need to be educated, with one respondent identifying,

> "...it's a difficult one because even if a resident is aware of it sometimes they'll be unwilling to do anything because it puts themselves – it compromises their own safety. So education is probably the key" [I7].

6.2.8 Individuals Taking Responsibility

The diversity of crime, as identified in Chapter 4, makes planning for and mitigating a challenge. However, many of the respondents interviewed discussed opportunistic crime and noted that there was a need for individuals also to take responsibility and not rely solely on managers, bodies corporates, developers, security and police.

First, respondents identified that residents getting to know each other and developing social bonds and ties facilitates a sense of community. A strong sense of community builds a shared responsibility to each other. As one respondent stated,

> "...the fact that people have got to know each other in this building is very helpful. As I was saying, we have had for the last three years we have a monthly social, sometimes two monthly, and through that people have formed friendships and bonded and know each other and

will look after each other and each other's properties when necessary and I think it's very successful" [I11].

Developing those mutual bonds and social ties can be important to enhancing individual's perceptions of safety and security. However, in transient populations with high turnover and individualistic societies this is extremely challenging to develop. One respondent commented,

> "you'd know this building has got a problem – the one that people are complaining about it. The rest of the people don't even give a shit. What's going on? As long as it doesn't affect them – that's the problem. The reality is that one or two people have been affected in a building of 400 people so the rest of them don't care" [I6].

Furthermore, the responsibility for personal safety and responsibility needs to be considered at an individual level. "We can't go around and close your doors for you, you have to take responsibility for your own actions" [I3]. As one respondent concluded,

> "You can design things and do things so far, but ultimately it's people involved. So you need to motivate those people to utilise any preventative aspects that are there, motivate them to use whatever those preventative aspects are" [I8].

Second, bodies corporates also must acknowledge the overall safety and security of the communities that they govern. Many bodies corporates have invested significantly in security systems and management strategies to represent their duty of care to occupants within their buildings.

> "The owners create the environment that they want within their high-rise. So it's just not about structure it's about people and it's about the mechanisms that they put in place. The strategies they put in place to manage the clientele they decide to attract" [I9].

However, this is at a cost to lot owners. With such a high proportion of absentee or investor owners this is often a challenge to convince them that they need to invest in these systems. "I guess, all of this is coming back to how much money they're prepared to spend to create the environment that they want to have surrounding that building" [I9].

Compounding this is, is the body corporate system generally. As one respondent acknowledged,

> "Body corporates, just from our own experience here in this building, body corporates seem to be a very slow moving mechanism. Very slow to respond to anything. Very political. Yeah they're not the way to manage a building" [I10].

The political nature of governing strata title communities places a lot of pressure on lot owners and body corporate committees.

> "We often get complaints about body corp committees and intrusions or invasion of privacy, of stealing, of misappropriation and all these sorts of things. So it's just a minefield. It's a complete minefield. I wouldn't want to live in a unit complex purely because of being governed by a body corp" [I10].

In an increasingly litigious society the role and responsibilities of bodies corporate in governing and managing large vertical communities may be beyond the scope and capabilities of existing lot owners. Greater transparency and inclusion of professional body corporate committee members may ease some of this burden. However, it is the responsibility of the body corporate "to provide a duty of care for us... Otherwise they'll be end up liable" [I2].

Third, in developing new high-rise apartment product the developer has a responsibility to ensure the safety and security of future occupants. However, "developers will consider whatever the market considers important. If the market is looking for something that is safe and secure, the developers will respond" [I5]. Property developers are cost sensitive and market driven. That is developers will create a visually appealing product at a price point that is demanded by the market. If the market does not put a value on the additional features of safety and security, then it is unlikely a developer would include these in their developments. As one respondent stated,

> "...a lot of buildings are built without those features in it, if any features at all. So we've got – on the Coast here – we've got a combination of, and no doubt other places, of reasonably old buildings that have been done... Some would be almost, I would suggest, not cost effective to upgrade to the standard that some of the most recent buildings are. Because I imagine, at the end of the day, it comes down to a commercial decision. So I suppose the ultimate thing would be effective planning in the design phase, which includes some of those crime prevention through environmental design principles" [I8].

The market purchasing these apartment products needs to drive the demand for inclusion of these security features to enhance the perceptions of safety and security for occupants.

6.3 Summary

Perceptions of safety and fear of crime are highly subjective. In Surfers Paradise, a disparity of views exists depending on the individual and also on their occupancy type. Permanent residents are more likely to have been exposed to ongoing media report of crime in the newspaper and through television. The demographics of residents also play a significant role, particularly due to the ageing nature of residents in the region. However, some residents may be lulled into a 'false sense of security' as a consequence of living in high-rise apartments.

Whilst a range of security features and management techniques have been incorporated into vertical communities in Surfers Paradise, this does not always

correspond with decreasing levels of crime. Social amenity and opportunistic crime abound. It is unlikely that these will be mitigated due to the nature of Surfers Paradise, particularly the range of risky facilities present. Compounding this is the touristic nature of the region and the mix of resident and tourists with differing objectives residing within the same building. However, individuals need to take on some of the responsibility for their safety and security.

7 Discussion And Conclusions

7.1 Significance of the Research

The research reported in this project makes a unique contribution to criminology and housing policy by adding to knowledge of crime in high-density strata-title vertical communities. The value of this research is its analytical approach that combined five normally disparate focus areas. This research increases academic knowledge in the following ways:

1. this is the only study conducted in Australia focussing on high-rise residential apartment complexes;
2. this study incorporates a multi-method approach to avoid privileging one method or data source;
3. this study focus on residential crime in a tourist destination; and
4. this study measured place management and guardianship in the same locations concurrently.

The research project had three studies. Study One examined nearly seven years of recorded crime data and used quantitative methods to explore relationships between building type, housing tenure and distributions, and type of crimes. Study Two applied observational methods to investigate the relationship between place management, active guardianship, territoriality and actual and perceived crime rates. Study Three adopted a qualitative approach in which primary stakeholders were interviewed to elicit information about crime and perceptions of safety. The mixture of these methods uncovered remarkable consistencies. For instance, Study Two established that locations with high place management and/or high guardianship were associated with the lower levels amounts of crime. These findings were qualitatively confirmed in Study Three through the interviews with building managers, police officers and residents. The perception of these stakeholders was that buildings with low territoriality experienced more crime than other buildings was quantitatively supported.

While previous research has investigated high density public-housing in an Australian context (Matka, 1997; Weatherburn et al., 1999), the unique blend of residents, tourists and businesses in this research sample provides fresh insights into a housing type predicted to experience rapid change over the next decade. The focus on residential crime in a tourist destination is unique. Crime prevention studies typically focus on crimes against tourists in public spaces (Brunt

et al., 2000; Lemieux and Felson, 2011). The contribution of this research adds substantially to extant findings with its supplementary focus on a broader range of crimes. This feature of the research allows long-term residents greater capacity to consider real crime risks in a tourist hotspot. Not only does the current study examine crime risks, but it also takes a unique look at the inter-related dimension of crime control at tourist destinations in the form of direct observations of residential guardianship and place management. In doing so, it allows for the first-time comparison of crime risk, residential tenure and directly observed place management and residential guardianship.

The study blending place management and guardianship in the same locations contributes to the previous literature by extending the usual unidimensional approach. Accordingly, the findings reported here cast light on the previously unexplored relationship between these two controlling factors of routine activity theory. Moreover, the relationship appears to be less than straightforward. In some buildings there is a relationship between place management and guardianship, whereas in others there is no relationship. This observation, if generalisable, may require scholars to rethink the relationship between these two important and central constructs of routine activity theory.

A particular strength of this is research is the combination of strata-title inquiry and criminology. Strata title literature rarely makes reference to crime, favouring a focus on governance. The criminological literature has considerable empirical evidence suggesting the volume of crime at locations is directly correlated with the effectiveness of place managers. The absence of crime prevention in the strata title literature seems an obvious and necessary gap to complete.

7.2 Limitations and Future Directions

It is important to highlight some of the limitations of the research. The constraints of the project necessitated a cross-sectional design. The cross-sectional approach is good at establishing relationships between constructs provided they remain stable over time. Should the value of variables change over time, longitudinal designs are consider more appropriate. Madensen (2007) outlines a dynamic model of place management in the context of licenced premises, whereby management decisions are a result of previous crime and disorder problem, which in turn impact future crime and disorder problems. While residential building management is an under explored topic compared to bar management, Eck et al. (2010) notwithstanding, it seems likely a similar dynamic model of residential place management could operate. Place management decisions made today are a response to yesterday's crime problems. Extrapolating this view, then is that ideal place management is never a static set of processes and procedures.

In addition, the cross-sectional nature of the research means that the direction of causality is difficult to establish for the relationships examined. For example, place management and crime may display a positive correlation (i.e., high place management for buildings with a high crime). Of itself, this may appear to be counterintuitive because it would be expected high levels of place management to diminish opportunities for crime, all things being equal. However, this pre-

supposes the direction of the relationship, that management practices produce levels of crime. It is more likely that the level of crime instigates levels of place management.

Similarly, apart from the duplicate measures to establish inter-rater reliability, each building was only visited once in Study Two. Conventionally, locations would be visited on multiple occasions in order to purposively sample from the range of management and guardianship activities. In this research, it was determined that to gain a more representative sample of buildings in Surfers Paradise more buildings should be included, but only visited once. It may be that place management and active guardianship are different on weekends compared to weekdays, during daylight hours compared to nighttime hours

Measures of crime used in this report are from administrative data from QPS. It is acknowledged that these data are subject to a number of filters that skews the true measure of crime, something this research shares with the vast bulk of studies that examine the spatial distribution of crime. Nevertheless, this is an inevitable compromise in research of this type given that victimisation surveys, generally regarded as providing a more valid depiction of crime, would not be feasible in this context. Regarding the survey in this research, the very low response rate for the resident questionnaire suggests a massive degree of oversampling would be required to achieve statistical power using a victimisation survey. In addition, this low response rate to the resident survey is disappointing, however, it does highlight the folly of trying to engage highly transient residential populations in community safety agenda.

The environmental variables captured in this report have been limited to the property parcel of the buildings. Eck et al. (2010) looked at the immediate environment of buildings (such as nearest public transport node, licensed premises). These variables were not included in the analysis due to restrictions in time available.

While providing highly useful findings, this research could be extended and enhanced in four ways. First, taking account of the dynamic and responsive nature of place management, it seems further analysis of facility management is an appropriate extension to this research. While the current findings represent a snapshot of vertical communities and crime, building management practices and residents' attitudes are more likely in response to the history of victimisation and are likely to change over time. A different research design would be required to explore this aspect of place management and guardianship.

Second, due to the restrictions on the recorded crime data, the distribution of crime within buildings has not been explored. Further, it will be useful to unpack why mixed tenure buildings had higher crime rates than short-term and long-term tenure buildings. Is it that long-term residents in mixed tenure buildings experience higher victimisation then their counterparts in long-term tenured buildings? Or do residents in mixed tenure buildings experience the elevated risk uniformly? If so, what explains the increased crime at these locations?

Third, Study Two revealed a curious and hitherto unexpected relationship between place management and active guardianship. Given that these two constructs have never been measured at the same location in the extant literature, it is difficult to speculate on the nature of their interaction, but this is an area

ripe for further research. Study Three provides some clues, namely that residents living on upper floors feel safer from crime than residents on lower, more physically accessible, floors. It was expressed by some that residents feel that in the presence of a place manager their personal responsibility for their protection is waived.

Fourth, the research literature on strata title is conspicuously silent regarding crime. Building management generally have no obligations/responsibilities around security. Body corporates are responsible for commissioning security provision. From a criminological point of view this is a dangerous disconnect. Routine activity theory suggests that place managers play a vital role in deterring criminal opportunities, even without formal security responsibilities. The upkeep and image of buildings can play a role in reinforcing territoriality and natural surveillance opportunities for residents and building managers. This seems a fruitful direction for development for strata title research.

7.3 Policy Implications

The findings from this research inform policy development in the key areas of crime and tourism, and housing policy over the coming decade.

There are some obvious implications with respect to crime prevention arising from this research. A surprising finding is that for the major crime types explored we found highly consistent patterns of concentration, whereby a small group of buildings were responsible for the majority of crimes. While rational choice theory suggests analysis and prevention efforts should be highly crime specific (given the opportunity structure for crime is highly crime specific), our results imply a buildings-based approach to prevention might be more effective. It appears that building managers of short term and mixed tenure building are best placed to impact the opportunity structure of crimes.

The obvious disconnect between responses to responsibility for safety within buildings needs to be addressed. To date, all lot owners on settlement of their property become a member of the body corporate. The body corporate is responsible for the day-to-day management and operation of a strata title scheme, making decisions and entering into contracts on behalf of lot owners to ensure this occurs. While place management is one such contract, the terms and length of these contracts varies considerably depending on bodies' corporate experience and knowledge. The voluntary nature of self-governance and owner apathy or disconnect to rental properties leads to identifying cost cutting measures, which may have longer term consequences on opportunities for crime to occur. Body Corporate and Community Management Act legislation in Queensland needs to be opened up to consultation regarding the responsibilities of managers and bodies corporate in providing suitable duty of care to residents. Specifically, clarity in terms of responsibility for security and crime needs to be addressed.

As many locations around Australia, and internationally, move towards a compact city approach with more people living in vertical communities, it is important that planners and developers are aware of this research. The perceived safety of "living the high life" needs to align with an individual's ability to interact

socially and with a sense of security. Developing private enclaves that disconnect individuals from each other will have negative social and communal consequences. Traditional policy approaches to communities need to adapt away from suburban sprawl and infrastructure provision so as to acknowledge the new communities that millions of individuals are choosing to reside within.

While not the focus of this study, there are implications for the tourism industry arising from these findings. Surfers Paradise and the Gold Coast are internationally recognised as tourist destinations. Mainstream media coverage of crime problems can have a drastic effect on local economies underpinned by tourism. The record high Australian dollar has made Australia an expensive destination for holidaymakers. Improving place management at locations likely to host crime (short-term and mixed term tenure buildings) will have a significant impact on the reputation and enjoyment of tourists visiting Surfers Paradise. Tourism industry stakeholders need to work in collaboration with crime prevention and local council to assist in this endeavour.

Compounding this challenge is the legal obligation on place managers to educate short-term tenants about the building and potential safety and security. However, due to the nature of their tenure and their "holiday mode" many individuals may be less conscious of their personal safety whilst in touristic locations, providing crime opportunities. Tourism industry, building managers and police need to work collaboratively in identifying solutions to educate and make short term tourists aware.

7.4 Conclusion

This research showed that a small number of buildings were responsible for hosting the bulk of crimes, regardless of crime type or time of year. The relationship between place management and active guardianship appears to be opaque in high-rise buildings, with some residents eschewing their guardianship responsibilities in the presence of building managers. Compounding this, there is a disconnect between the responsibilities of building manager and crime prevention/security.

Reform of strata title legislation is required in order to bridge the gap (between building managers and body corporate), but also more research conducted into the dynamics of effective and ineffective management.

A Supplementary Results from Study 1

A.1 J Curves for Building Tenure

A.2 J Curves for Building Height

A.3 J Curves for Temporal Patterns

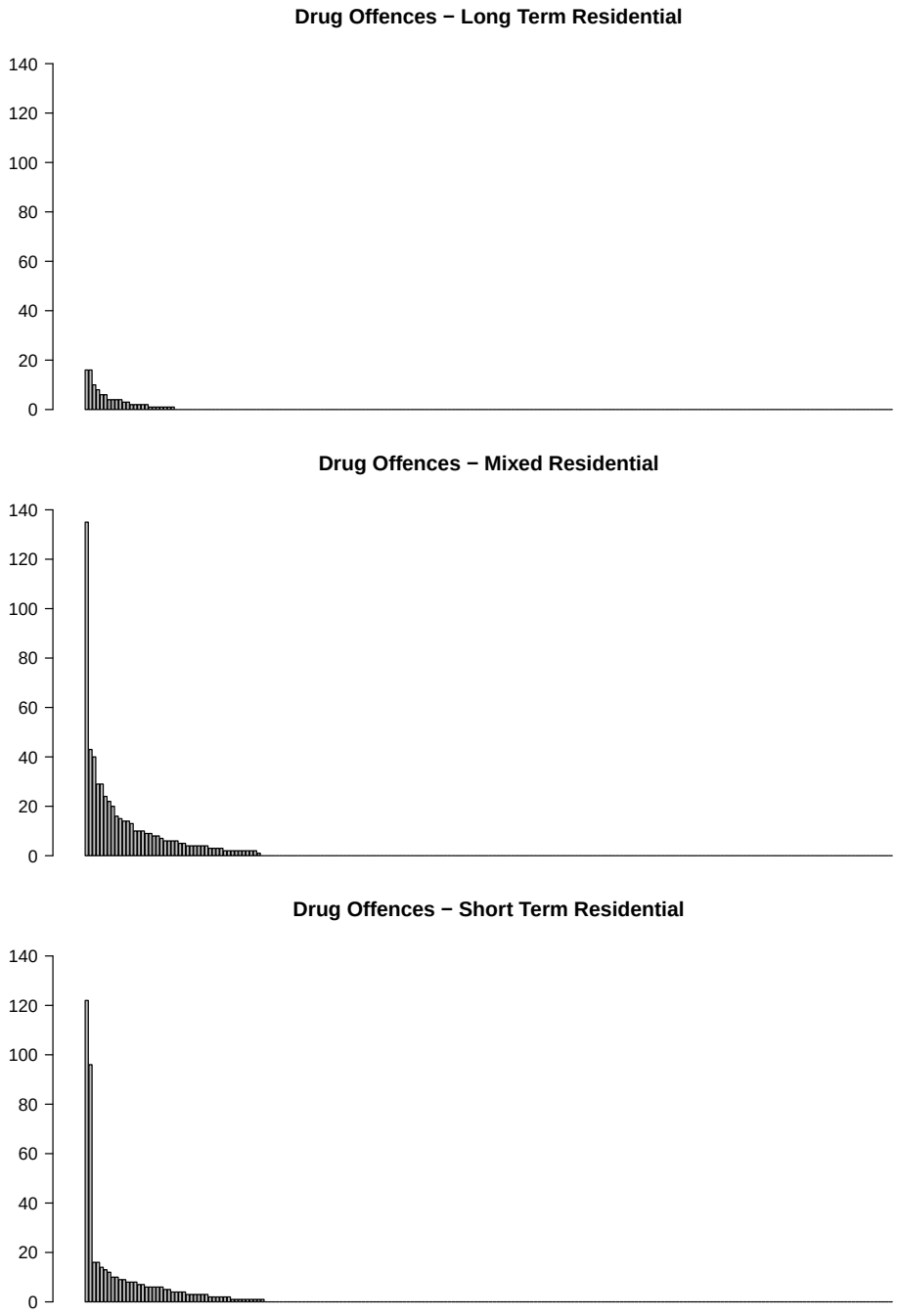

Figure A.1: J Curves of Drug Offences Offences Conditioned by Tenure

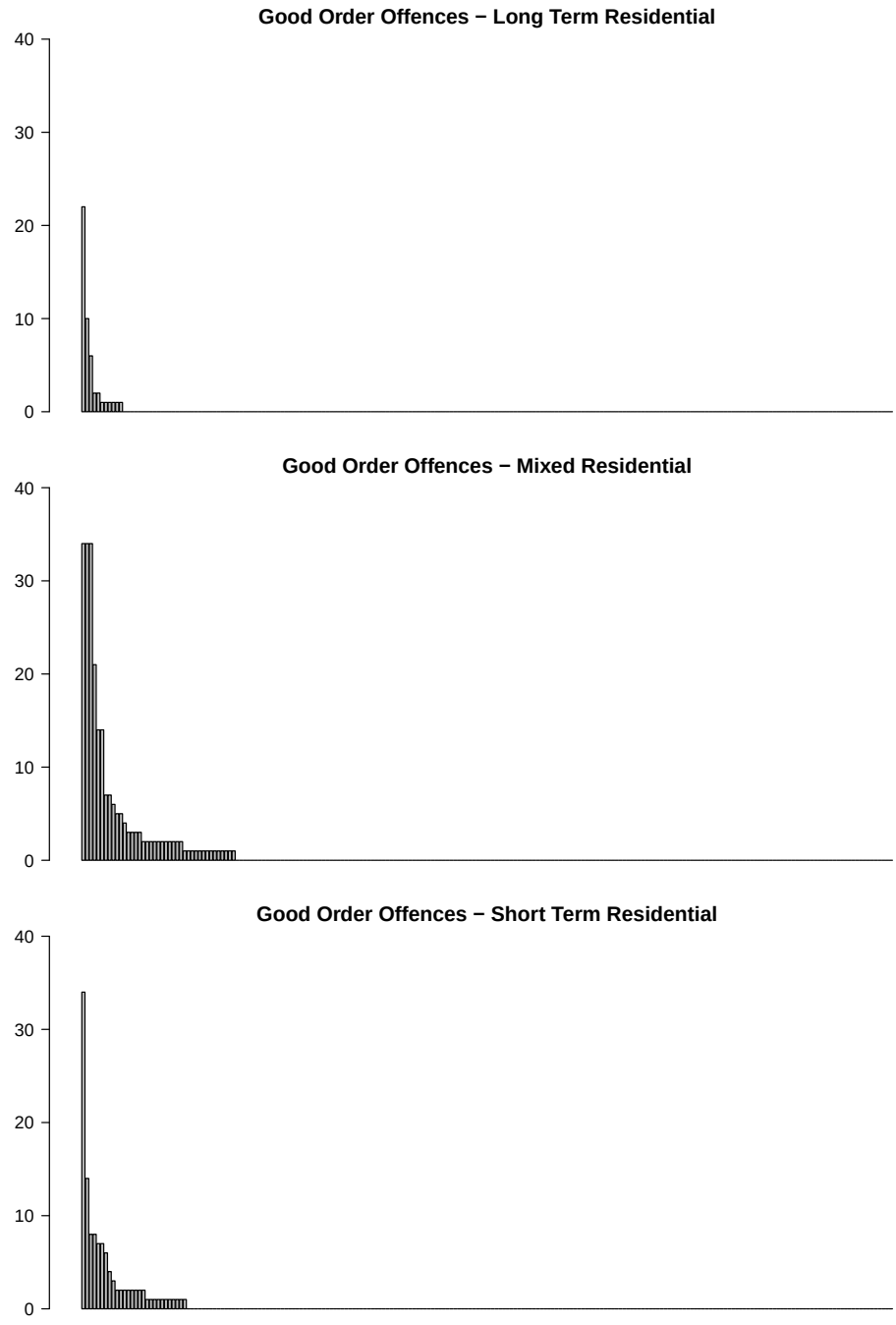

Figure A.2: J Curves of Good Order Offences Conditioned by Tenure

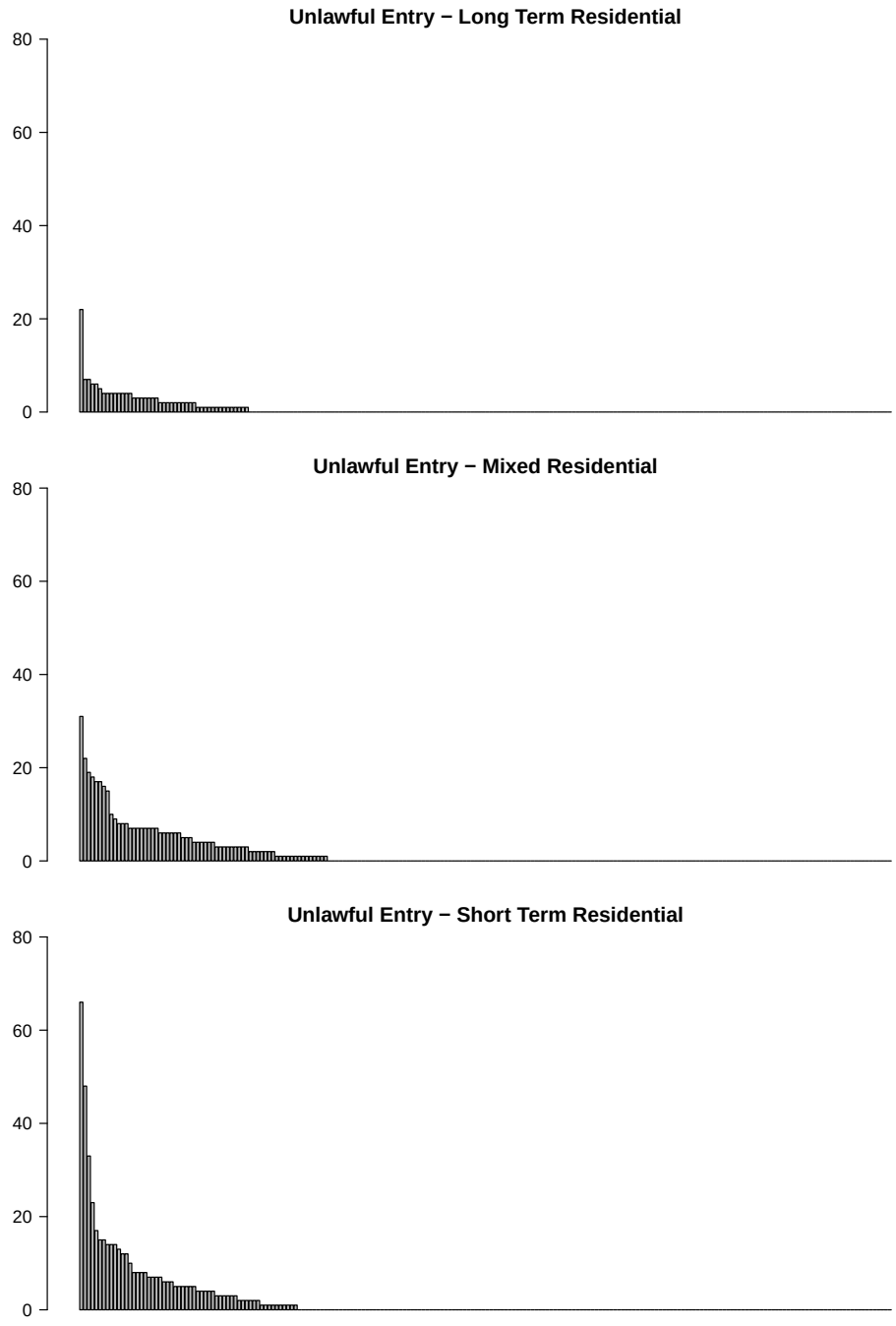

Figure A.3: J Curves of Unlawful Entry Offences Conditioned by Tenure

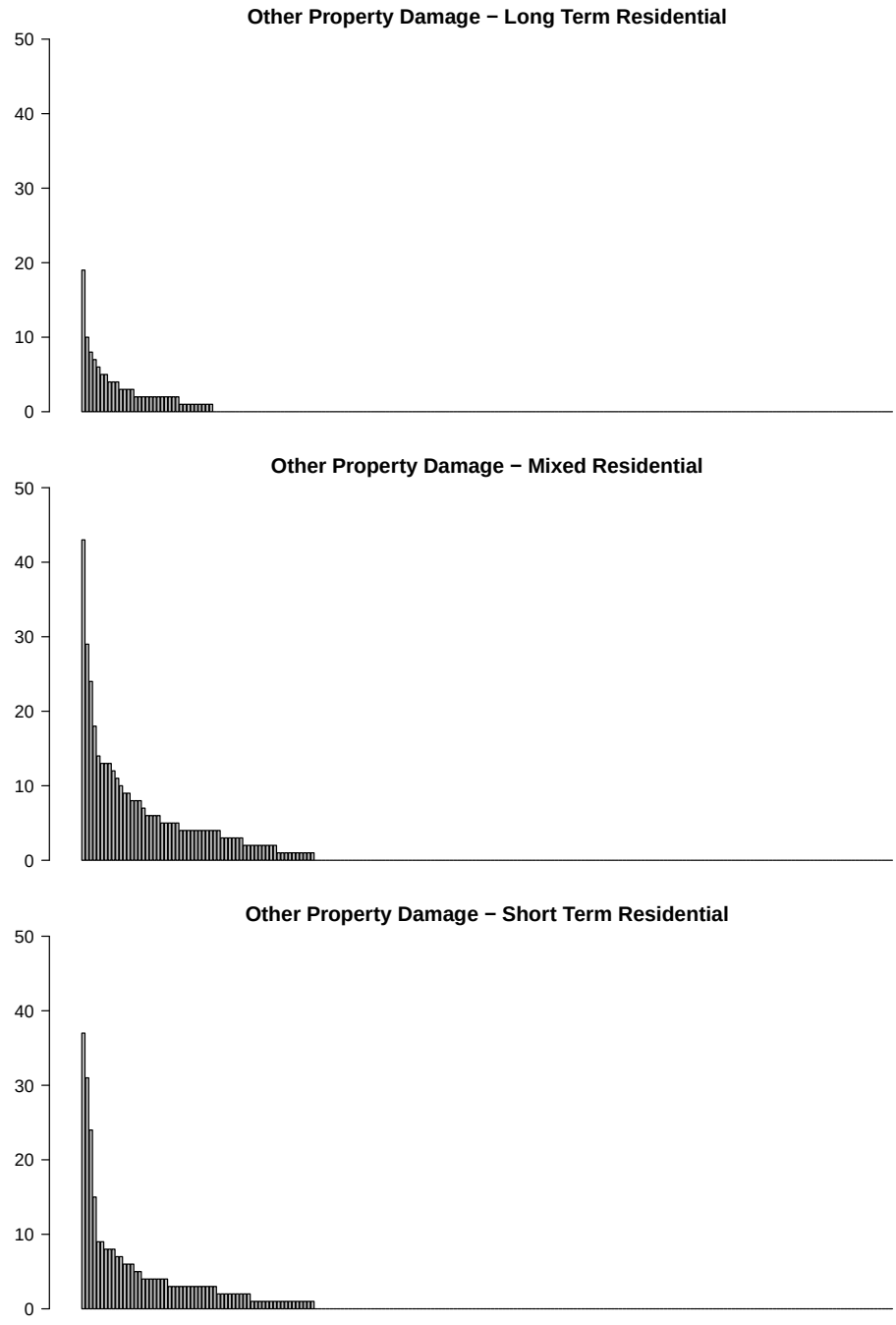

Figure A.4: J Curves of Other Property Damage Offences Conditioned by Tenure

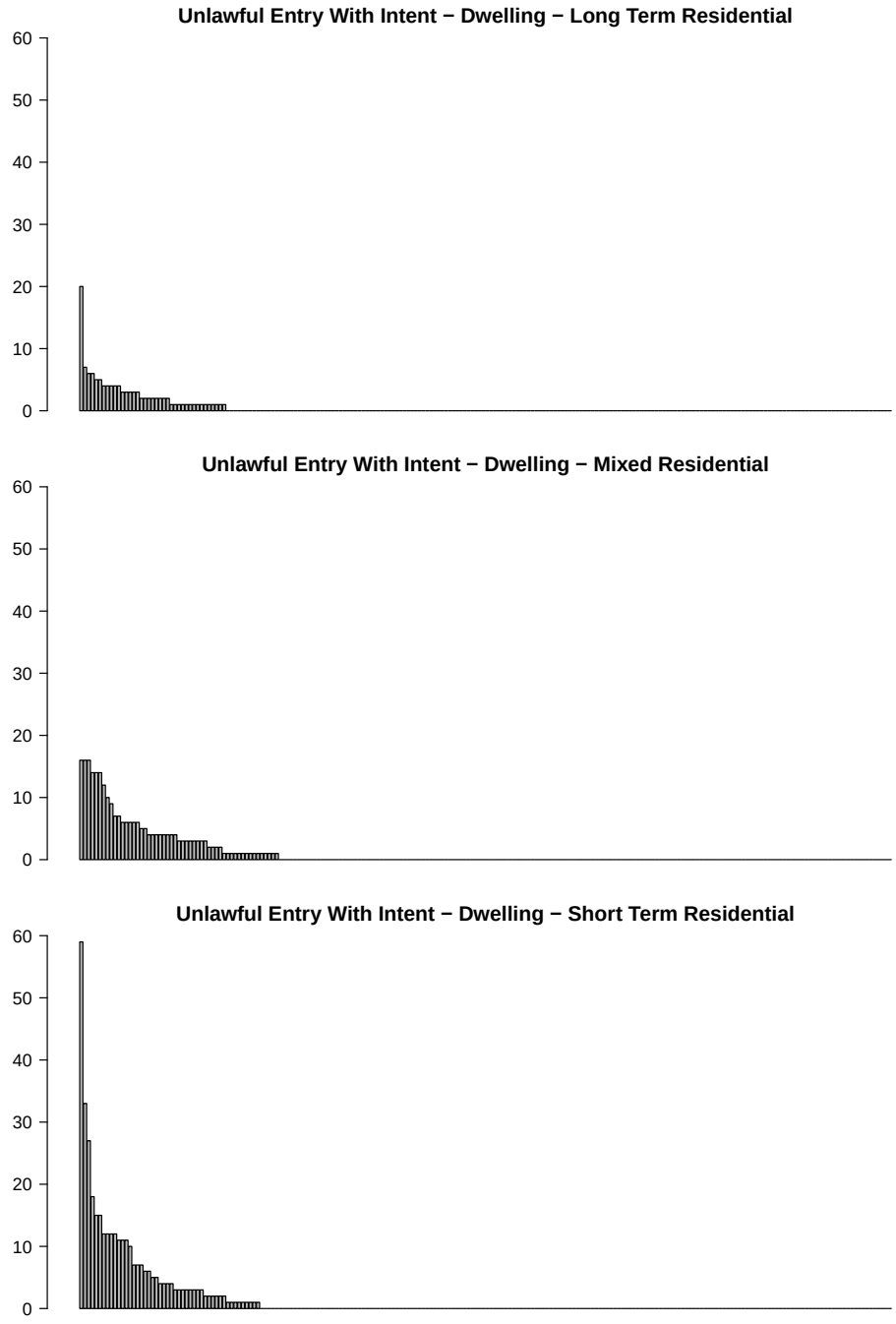

Figure A.5: J Curves of Unlawful Entry With Intent - Dwelling Offences Conditioned by Tenure

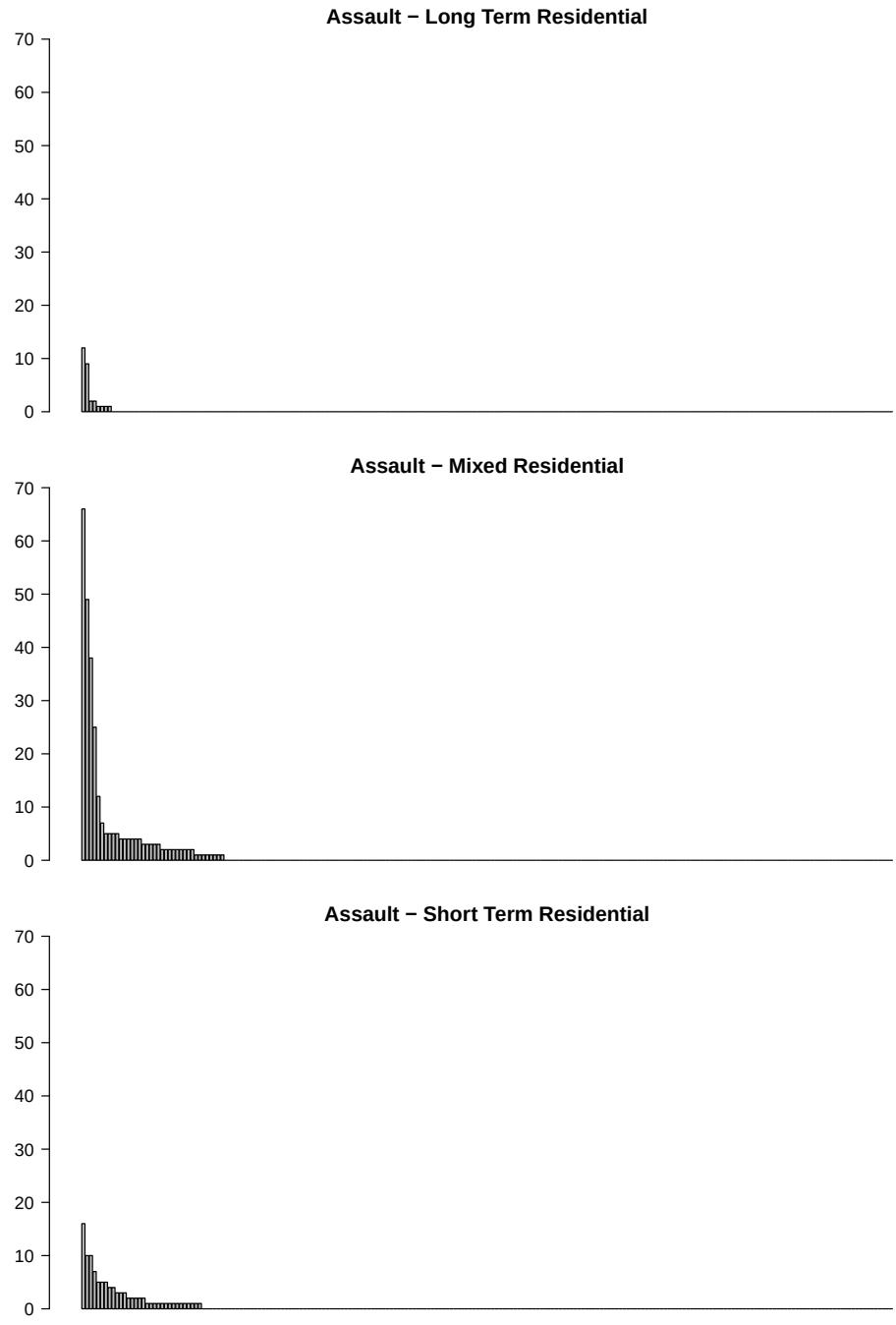

Figure A.6: J Curves of Assault Offences Conditioned by Tenure

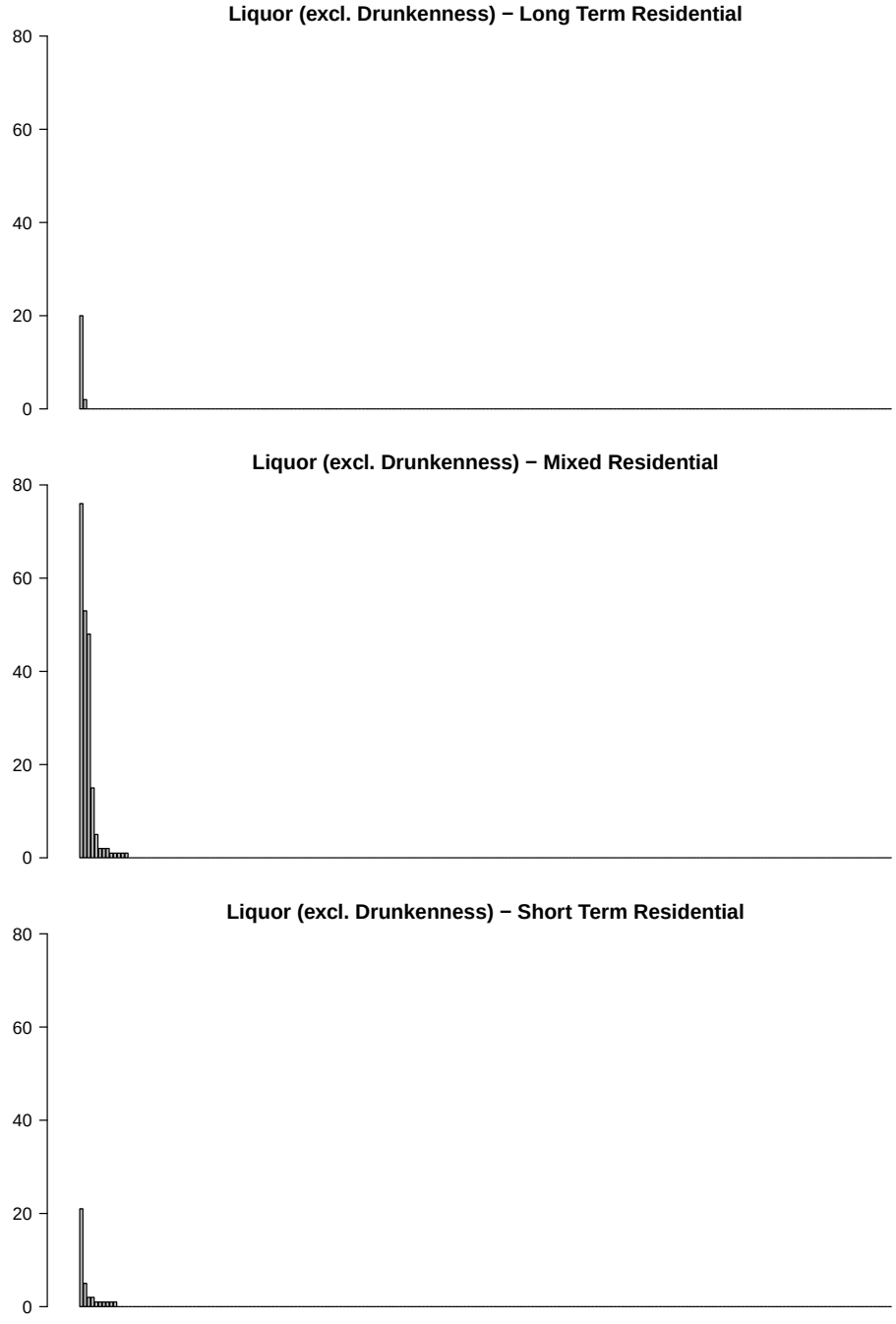

Figure A.7: J Curves of Liquor (excl. Drunkenness) Offences Conditioned by Tenure

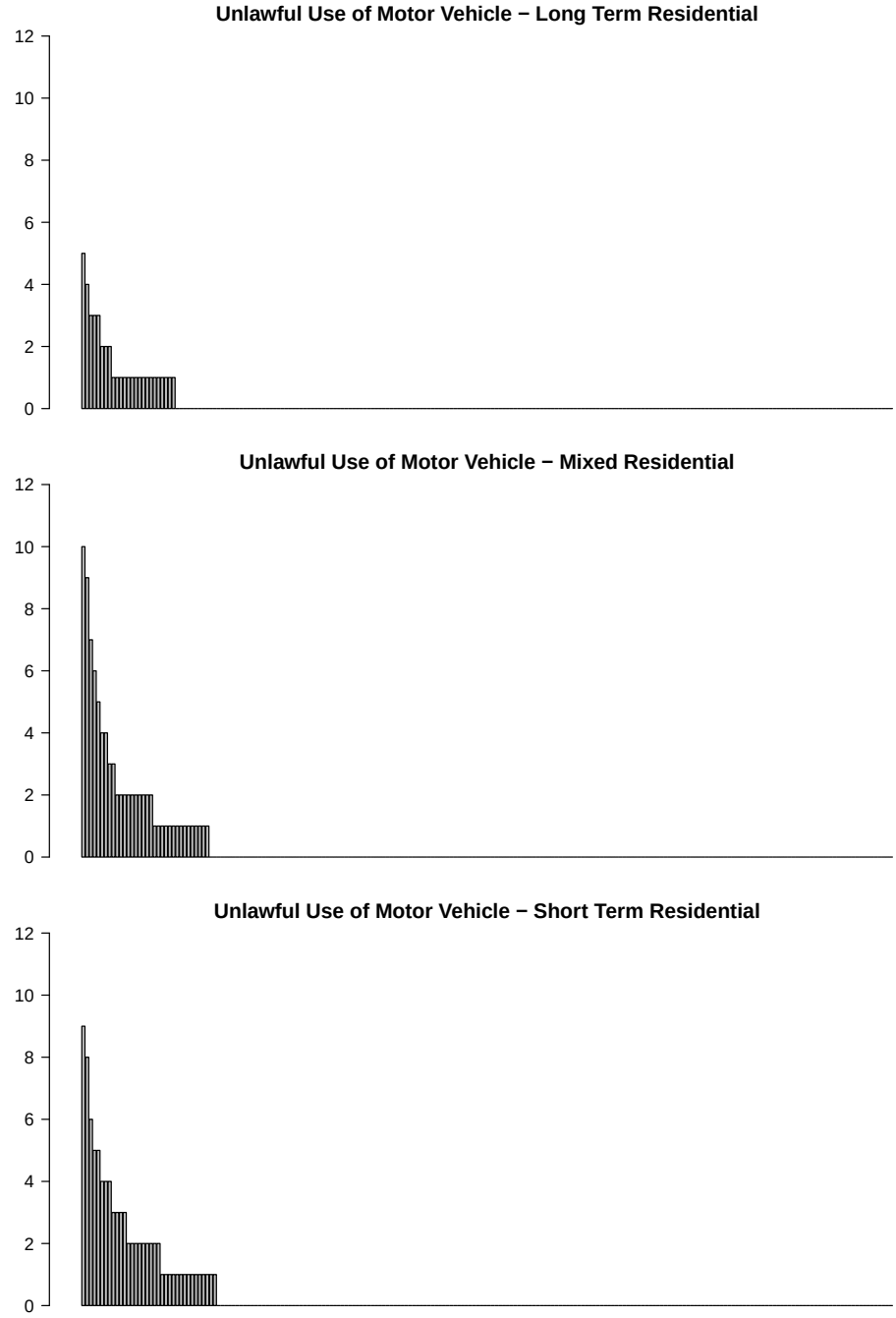

Figure A.8: J Curves of Unlawful Use of Motor Vehicle Offences Conditioned by Tenure

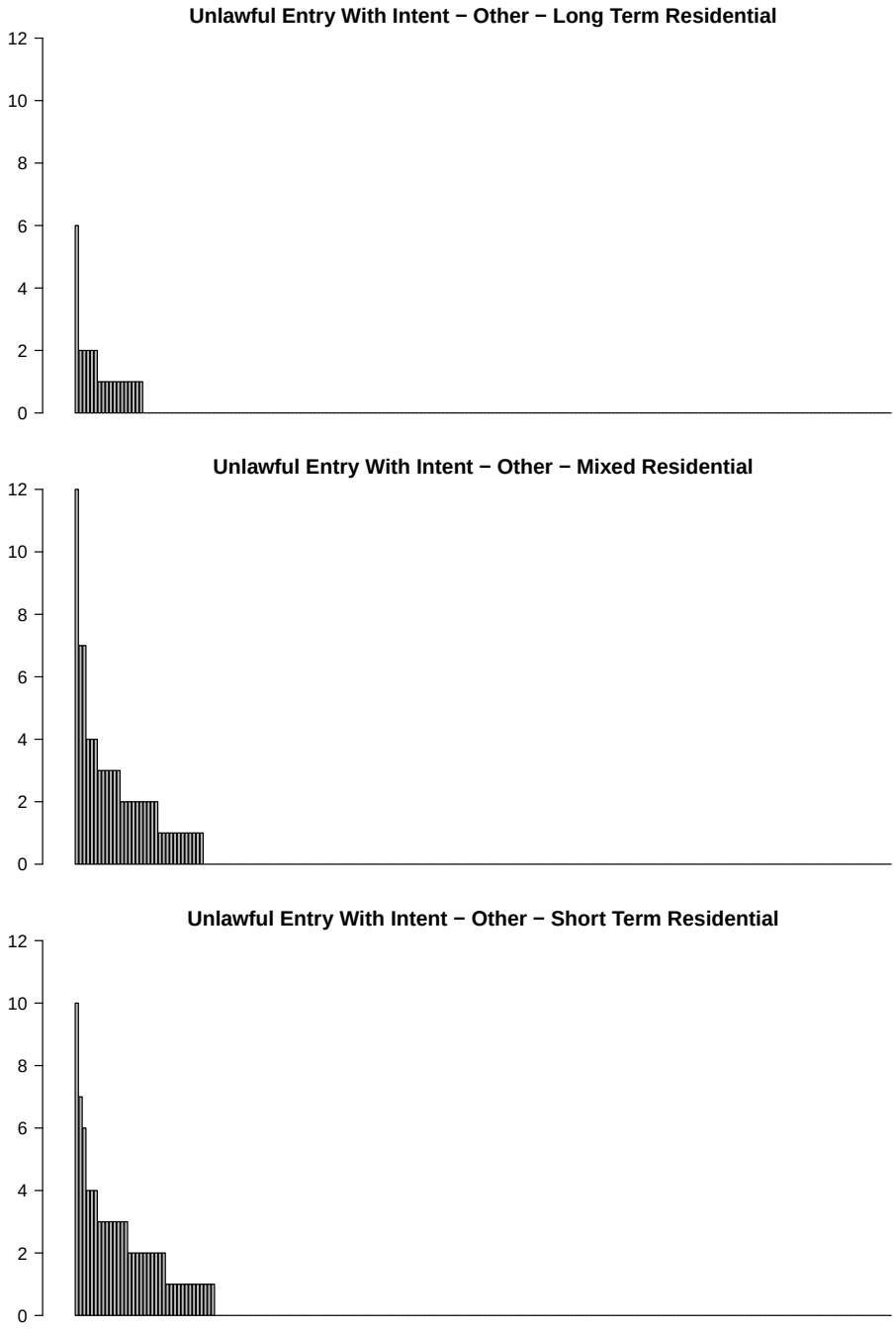

Figure A.9: J Curves of Unlawful Entry With Intent - Other Offences Conditioned by Tenure

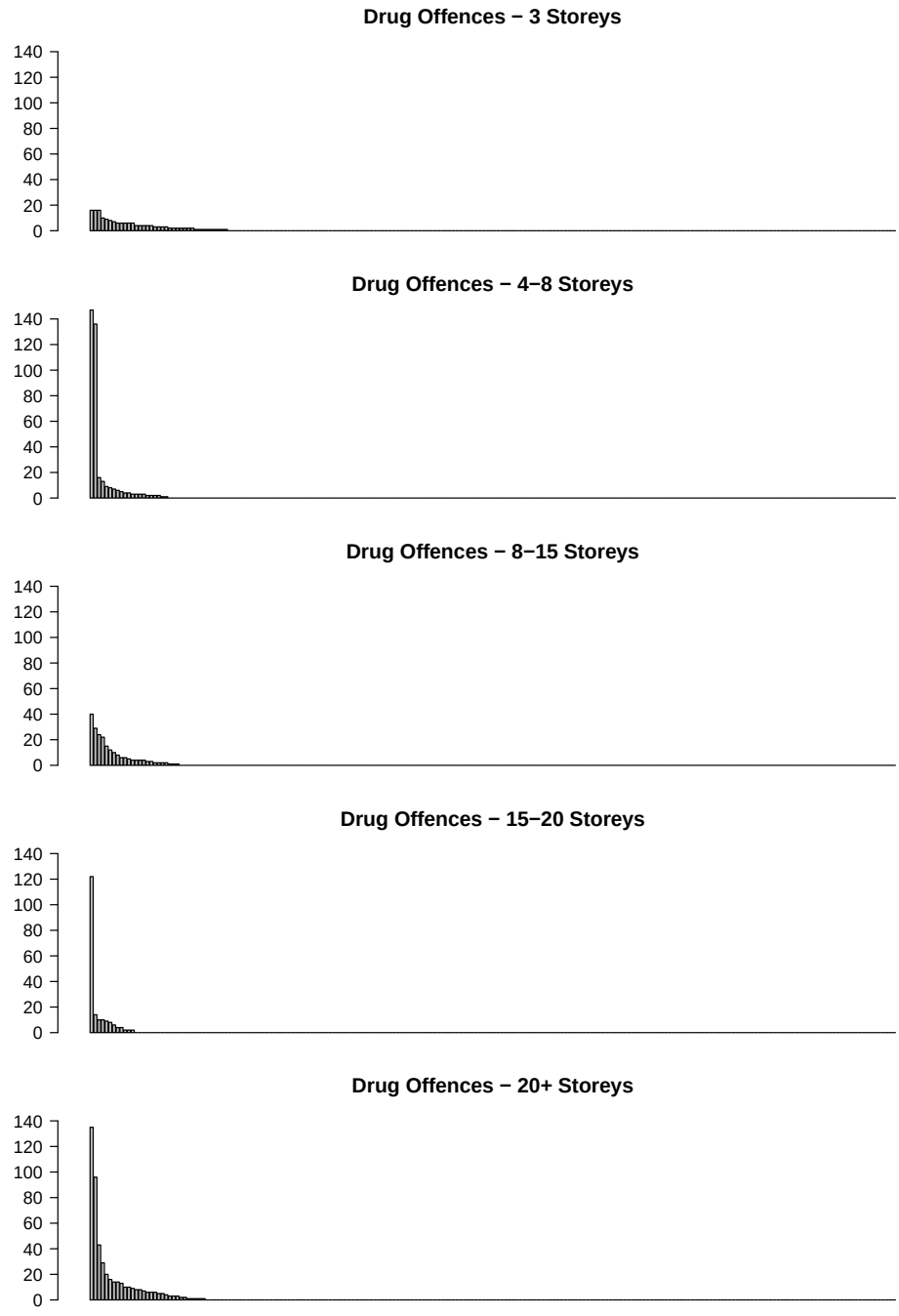

Figure A.10: J Curves of Drug Offences Offences Conditioned by Building Height

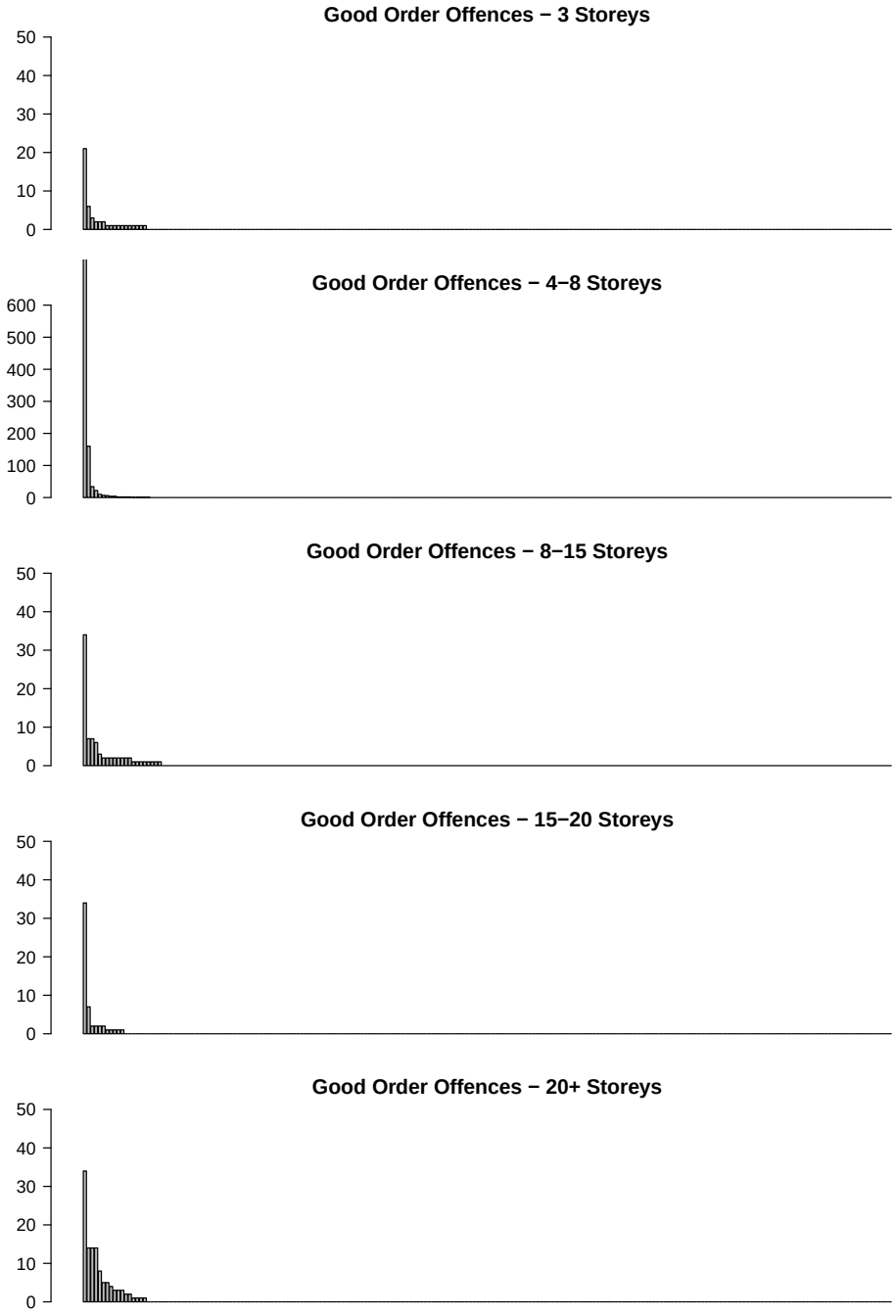

Figure A.11: J Curves of Good Order Offences Conditioned by Building Height

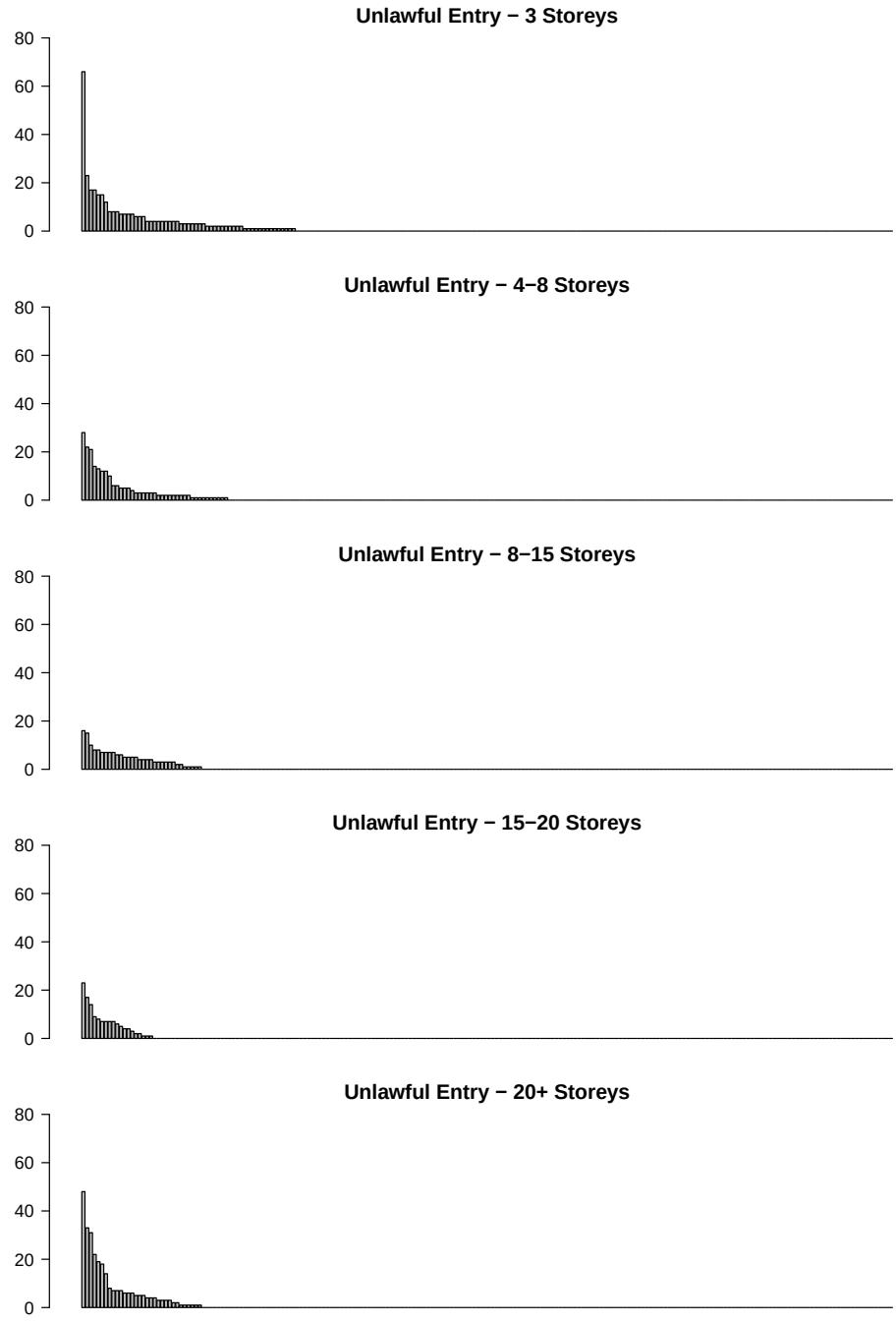

Figure A.12: J Curves of Unlawful Entry Offences Conditioned by Building Height

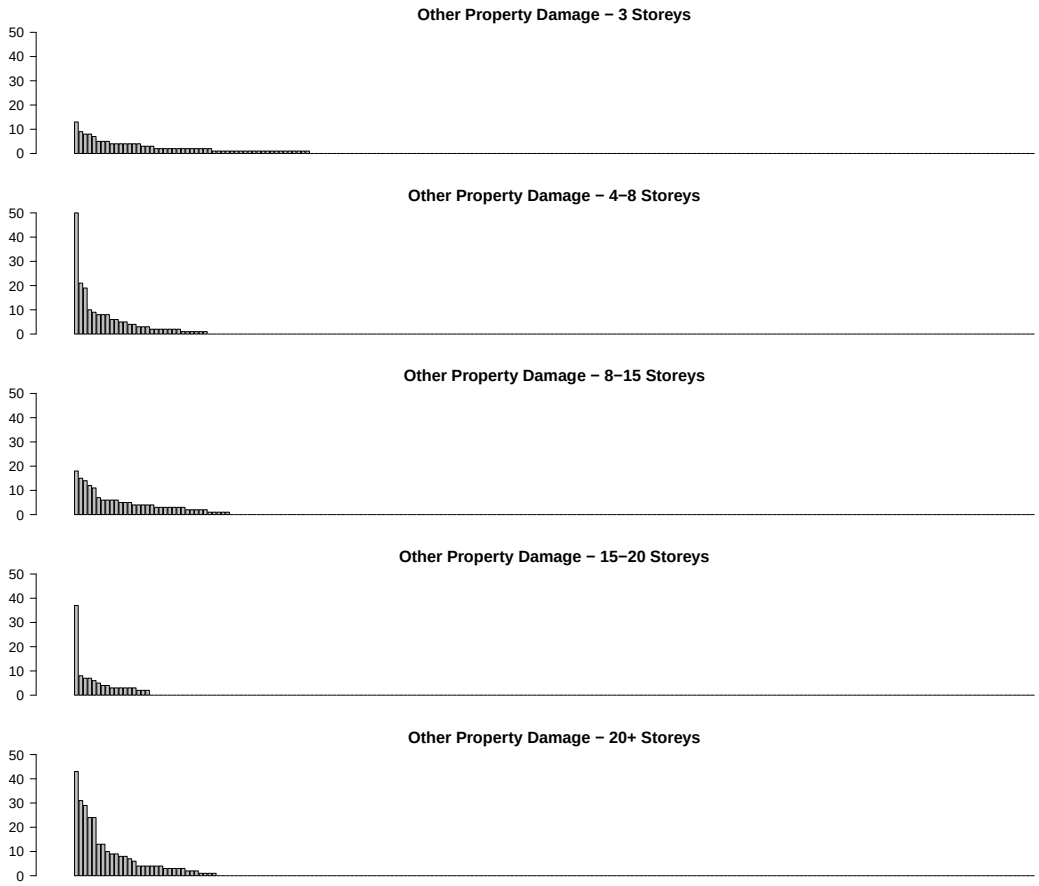

Figure A.13: J Curves of Other Property Damage Offences Conditioned by Building Height

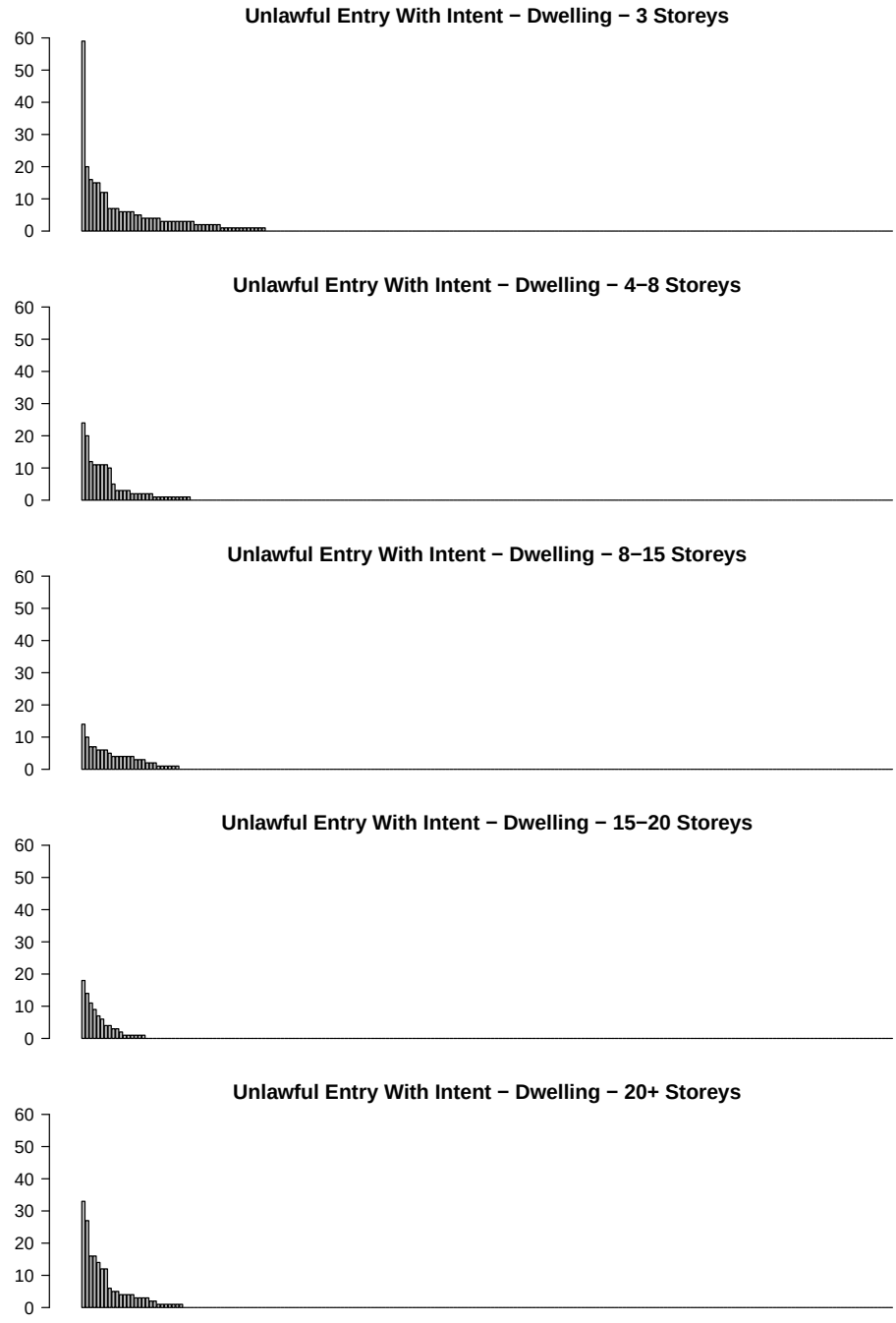

Figure A.14: J Curves of Unlawful Entry With Intent - Dwelling Offences Conditioned by Building Height

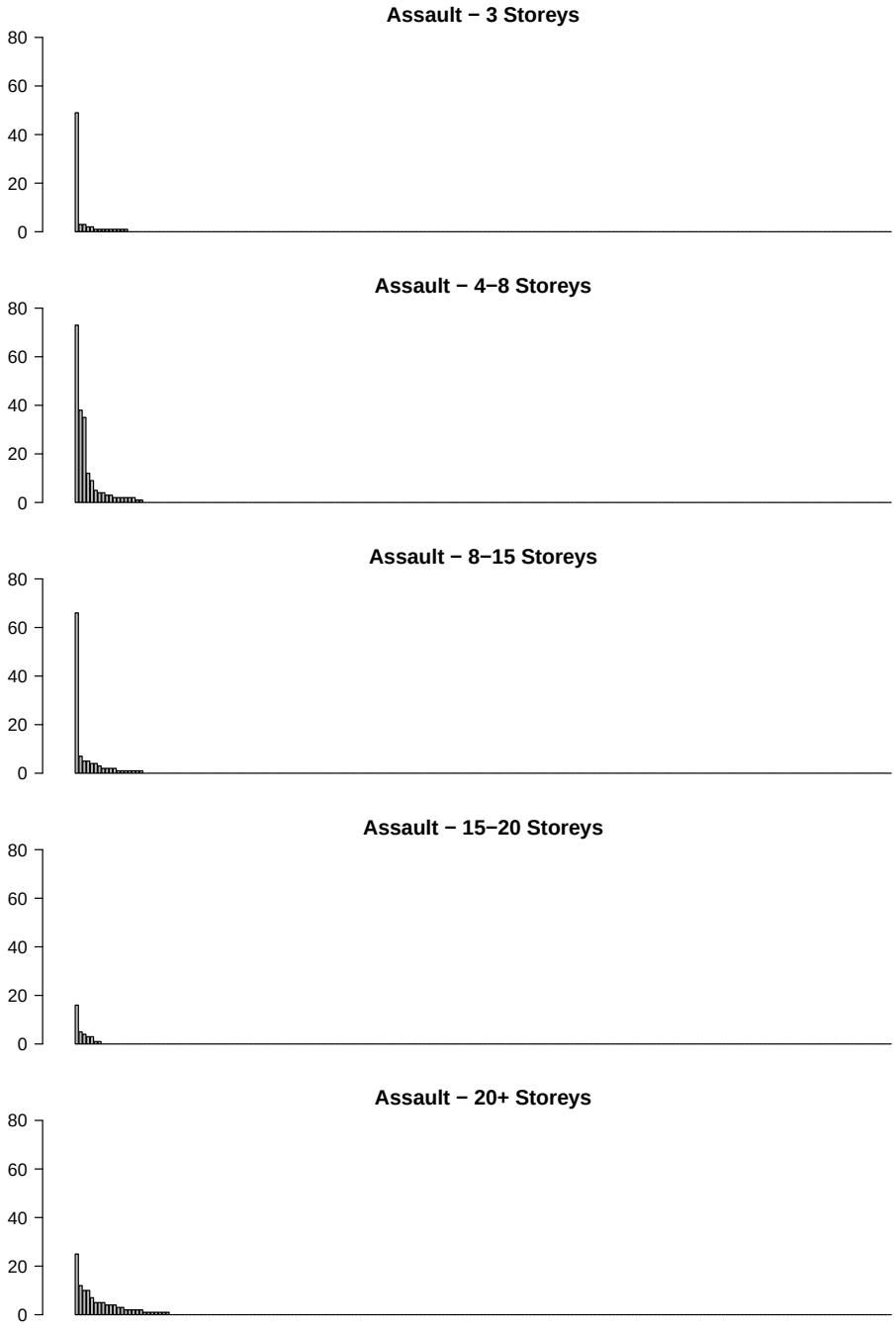

Figure A.15: J Curves of Assault Offences Conditioned by Building Height

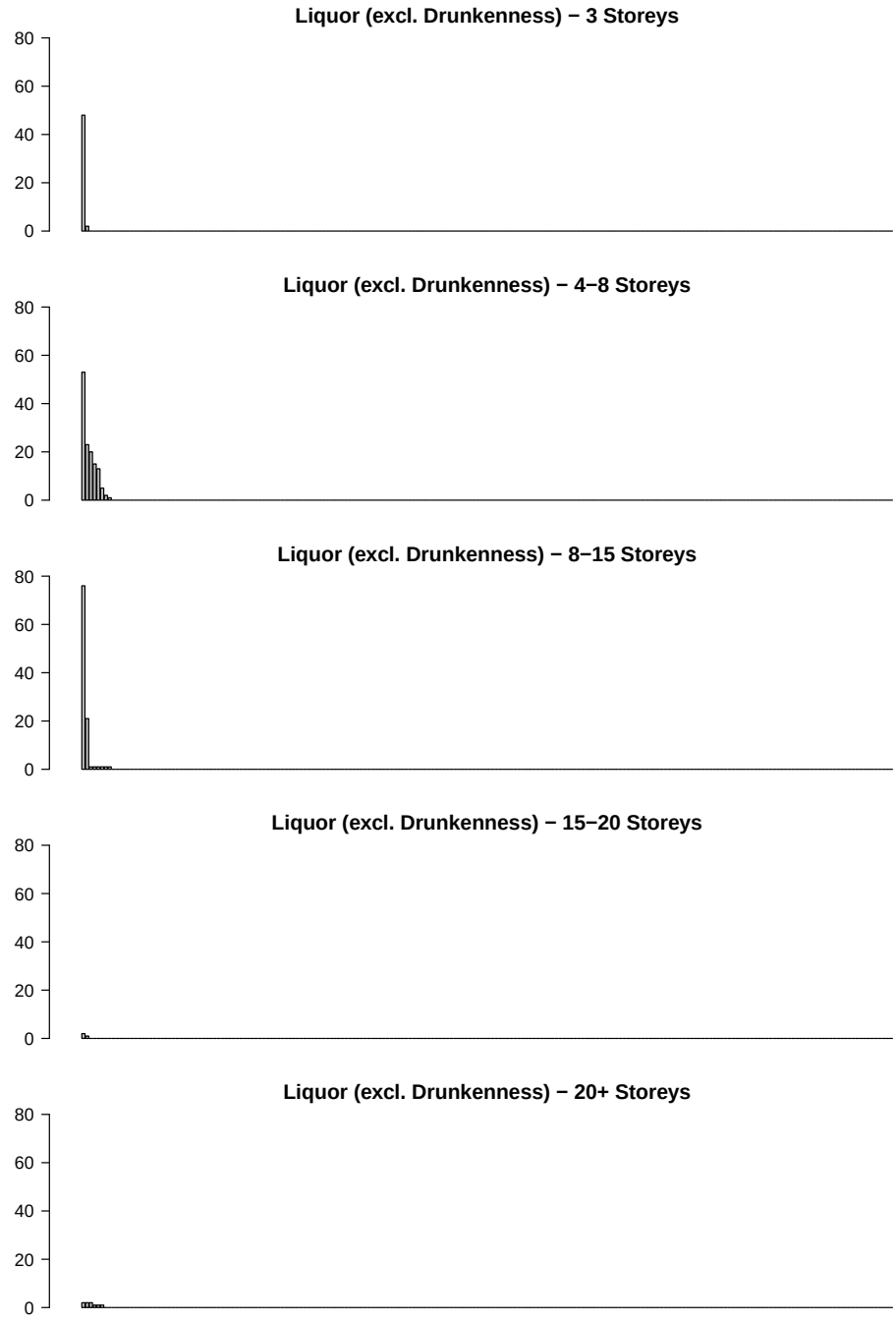

Figure A.16: J Curves of Liquor (excl. Drunkenness) Offences Conditioned by Building Height

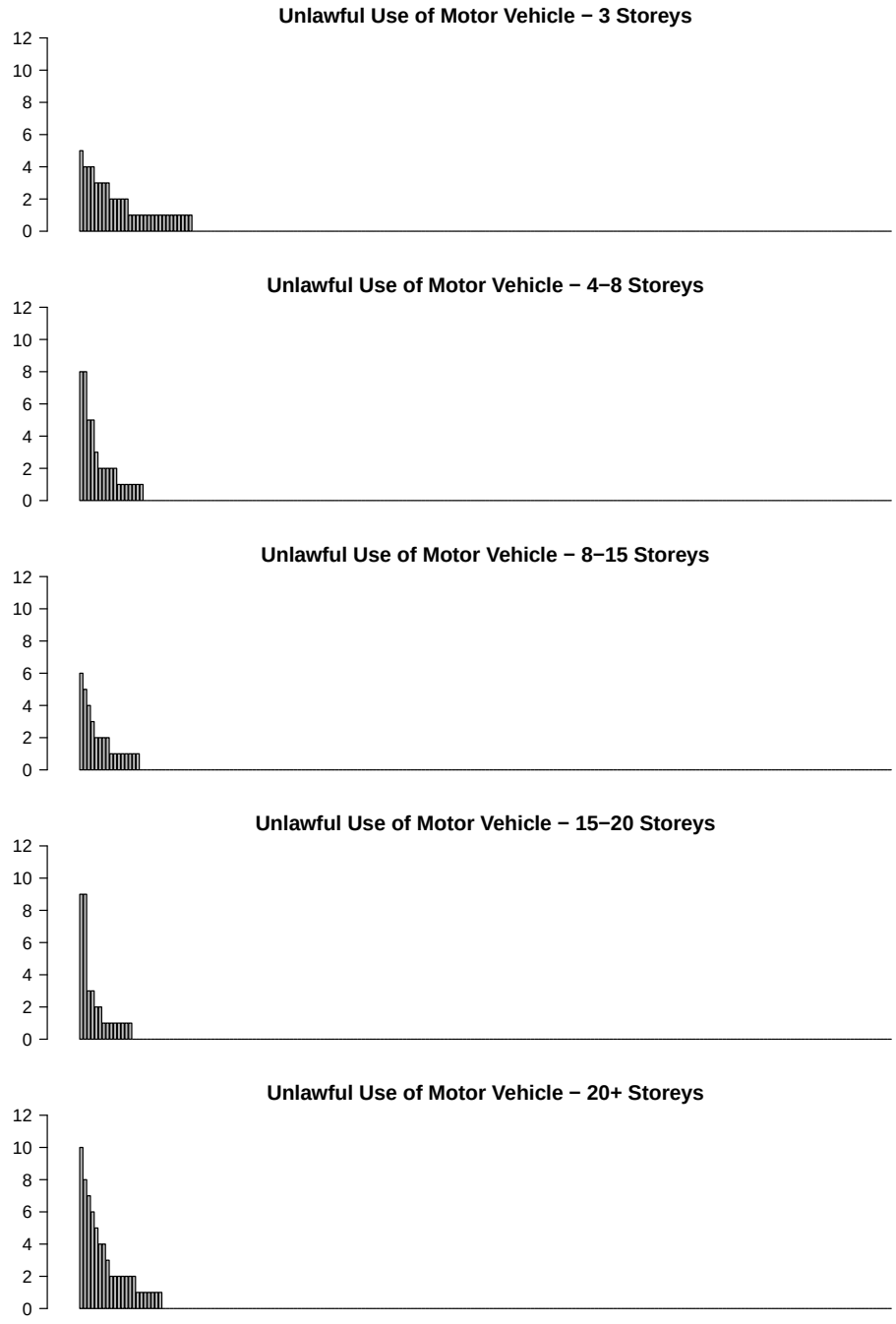

Figure A.17: J Curves of Unlawful Use of Motor Vehicle Offences Conditioned by Building Height

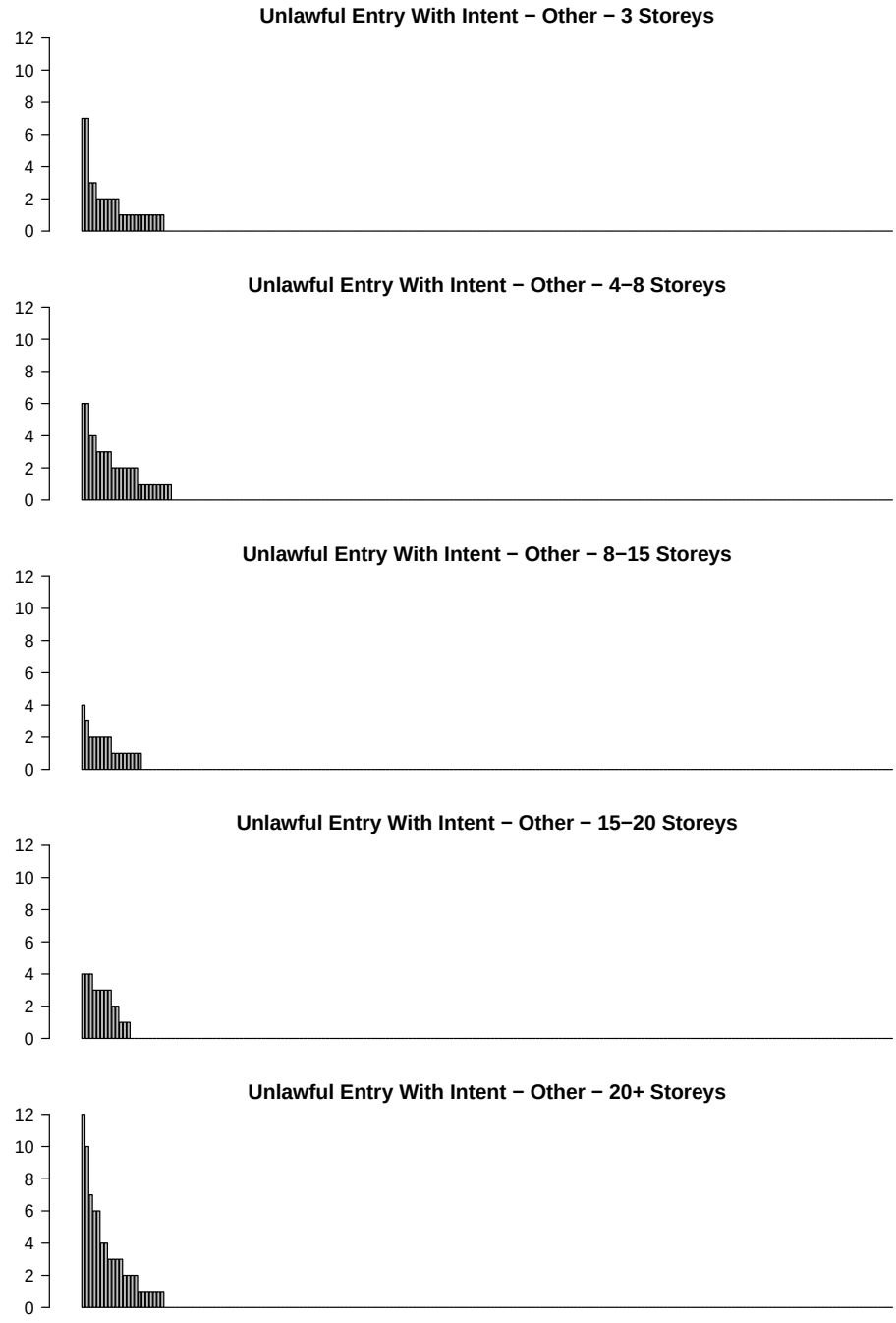

Figure A.18: J Curves of Unlawful Entry With Intent - Other Offences Conditioned by Building Height

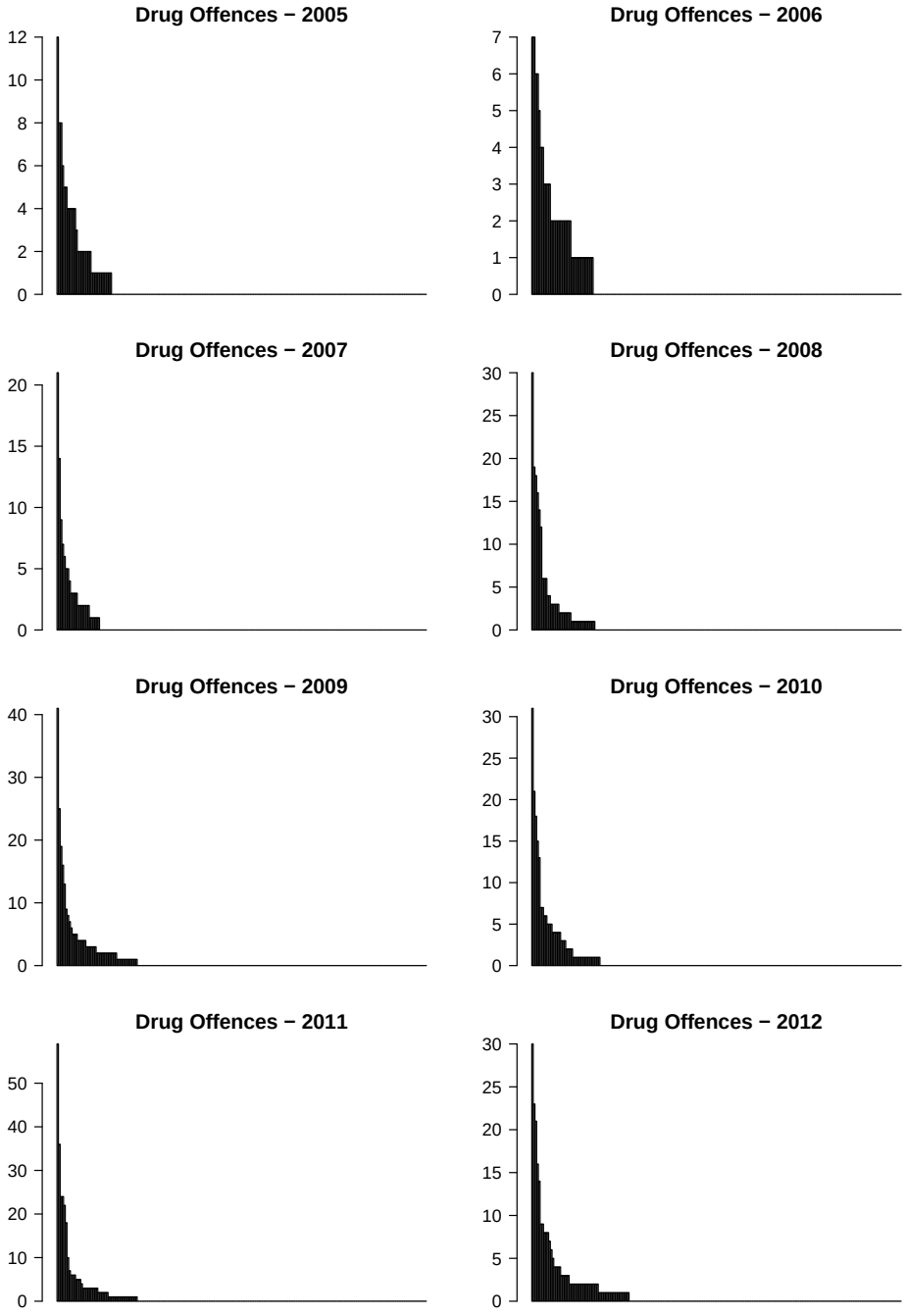

Figure A.19: J Curves of Drug Offences Offences Conditioned by Year

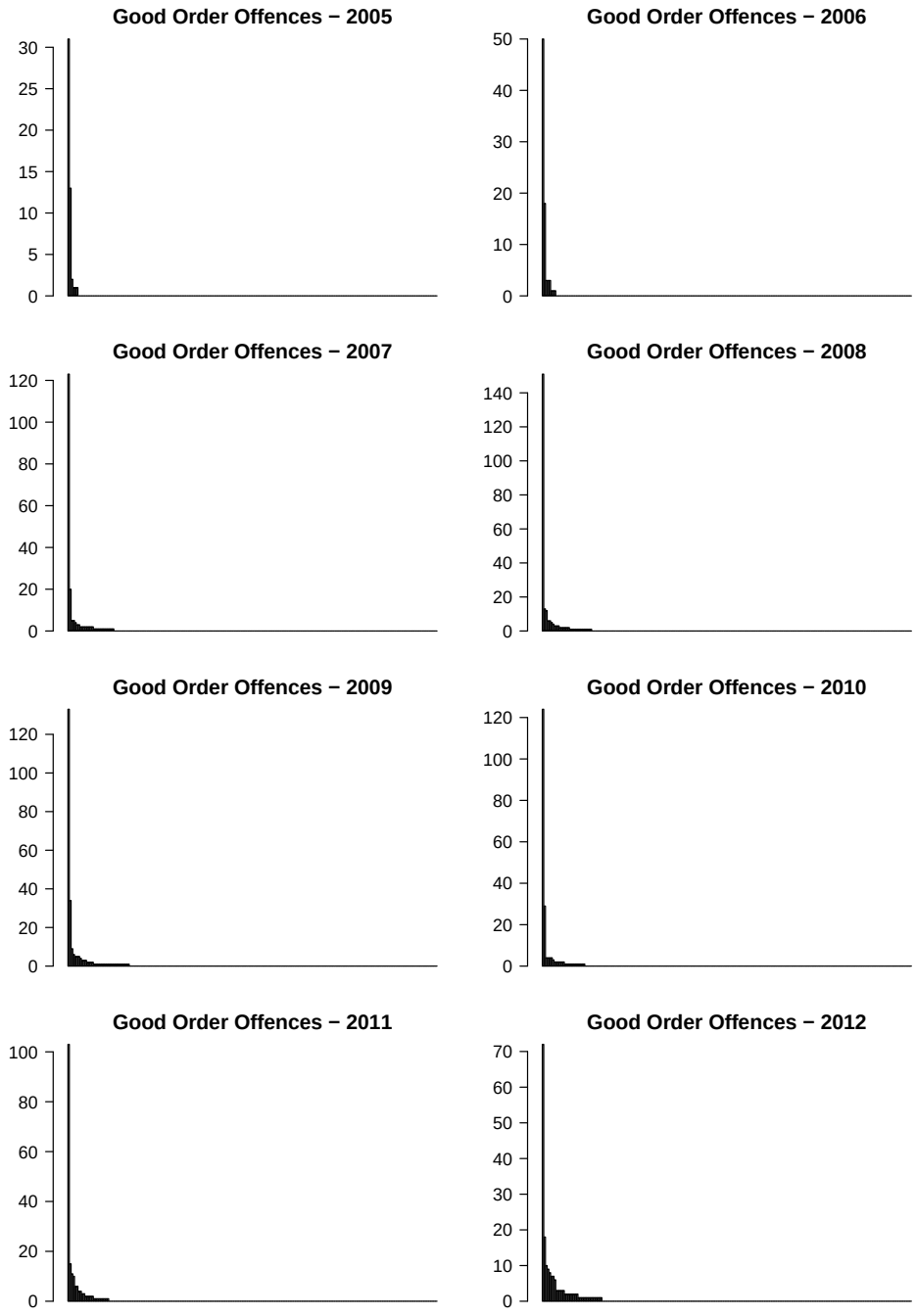

Figure A.20: J Curves of Good Order Offences Conditioned by Year

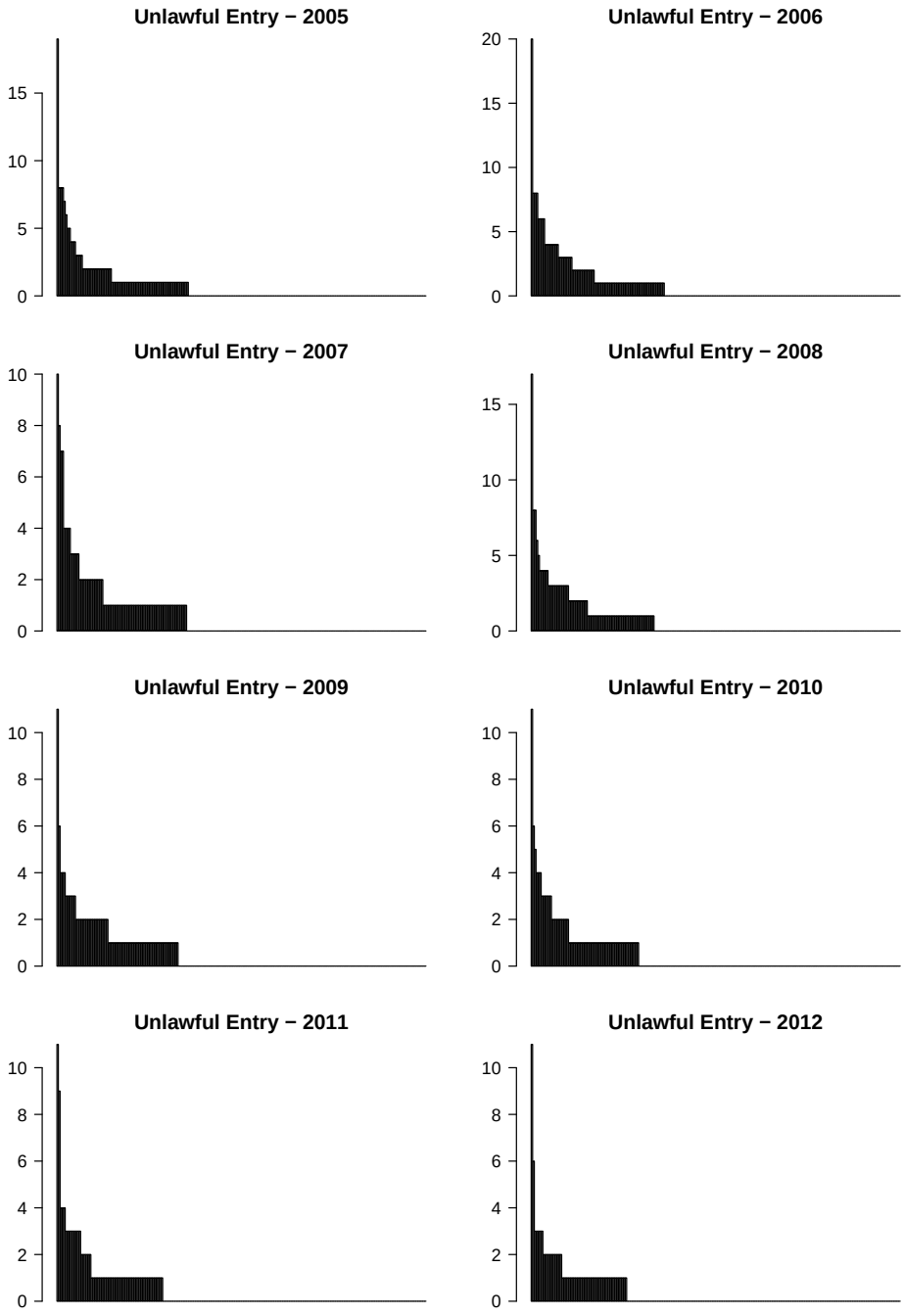

Figure A.21: J Curves of Unlawful Entry Offences Conditioned by Year

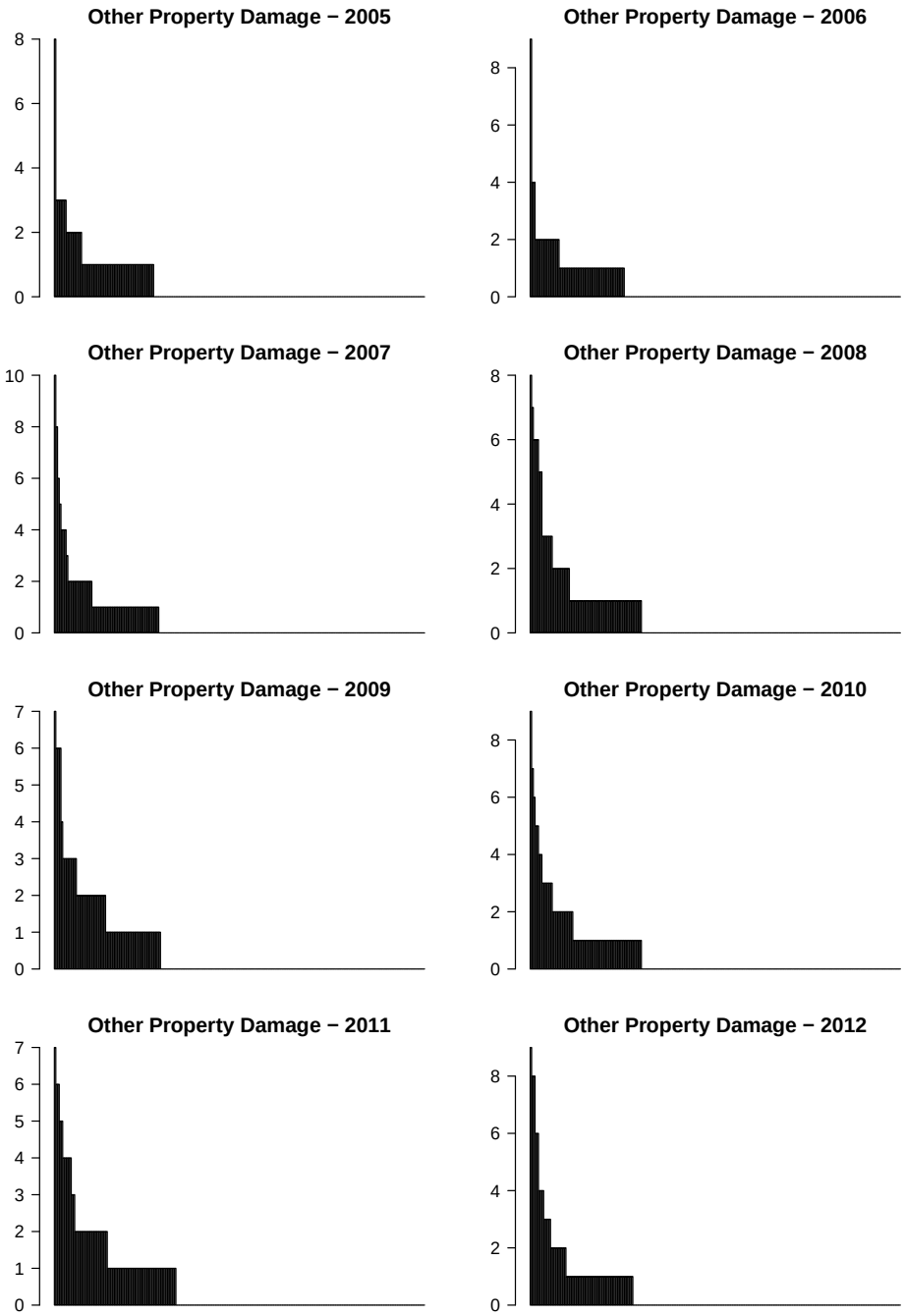

Figure A.22: J Curves of Other Property Damage Offences Conditioned by Year

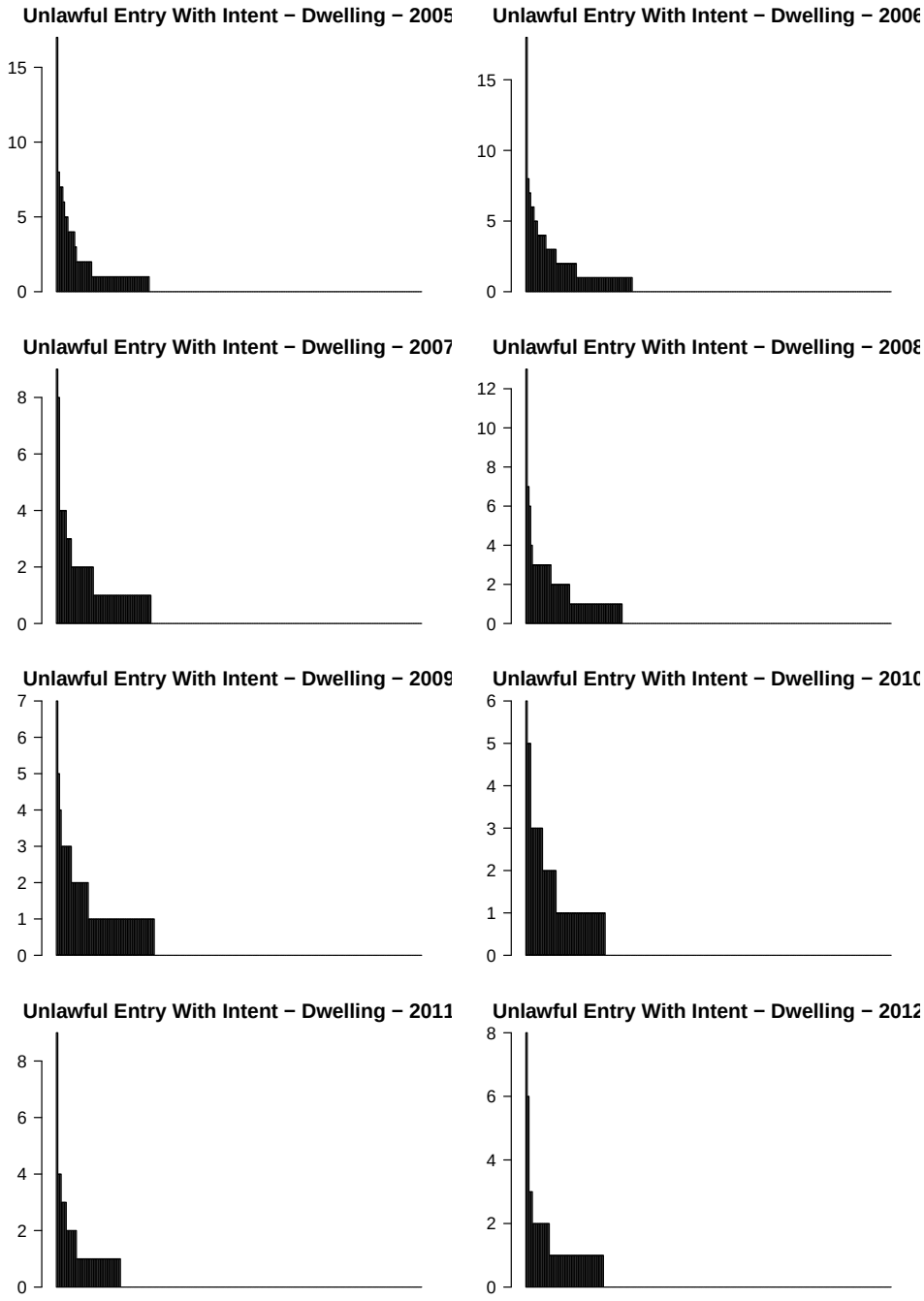

Figure A.23: J Curves of Unlawful Entry With Intent - Dwelling Offences Conditioned by Year

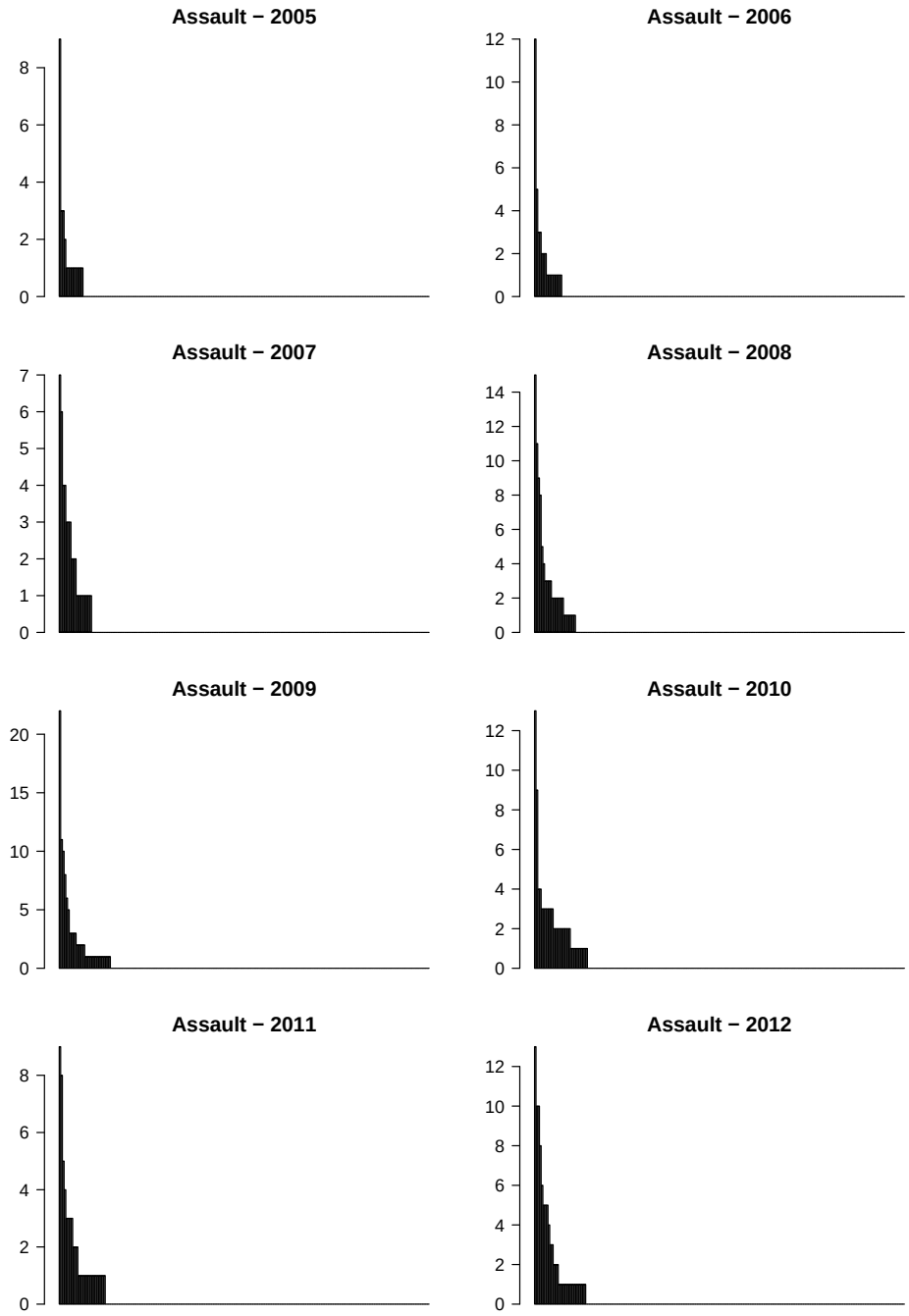

Figure A.24: J Curves of Assault Offences Conditioned by Year

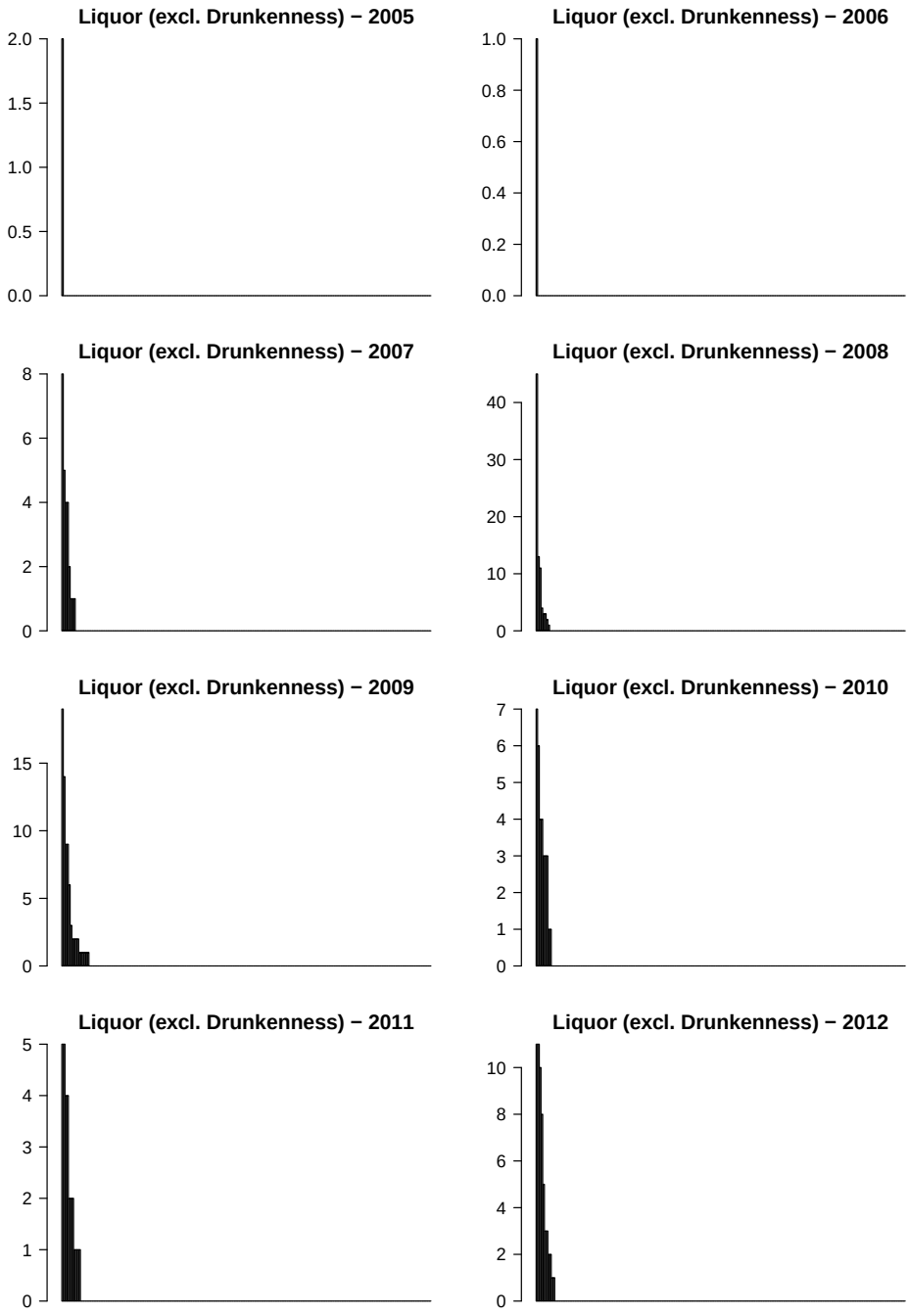

Figure A.25: J Curves of Liquor (excl. Drunkenness) Offences Conditioned by Year

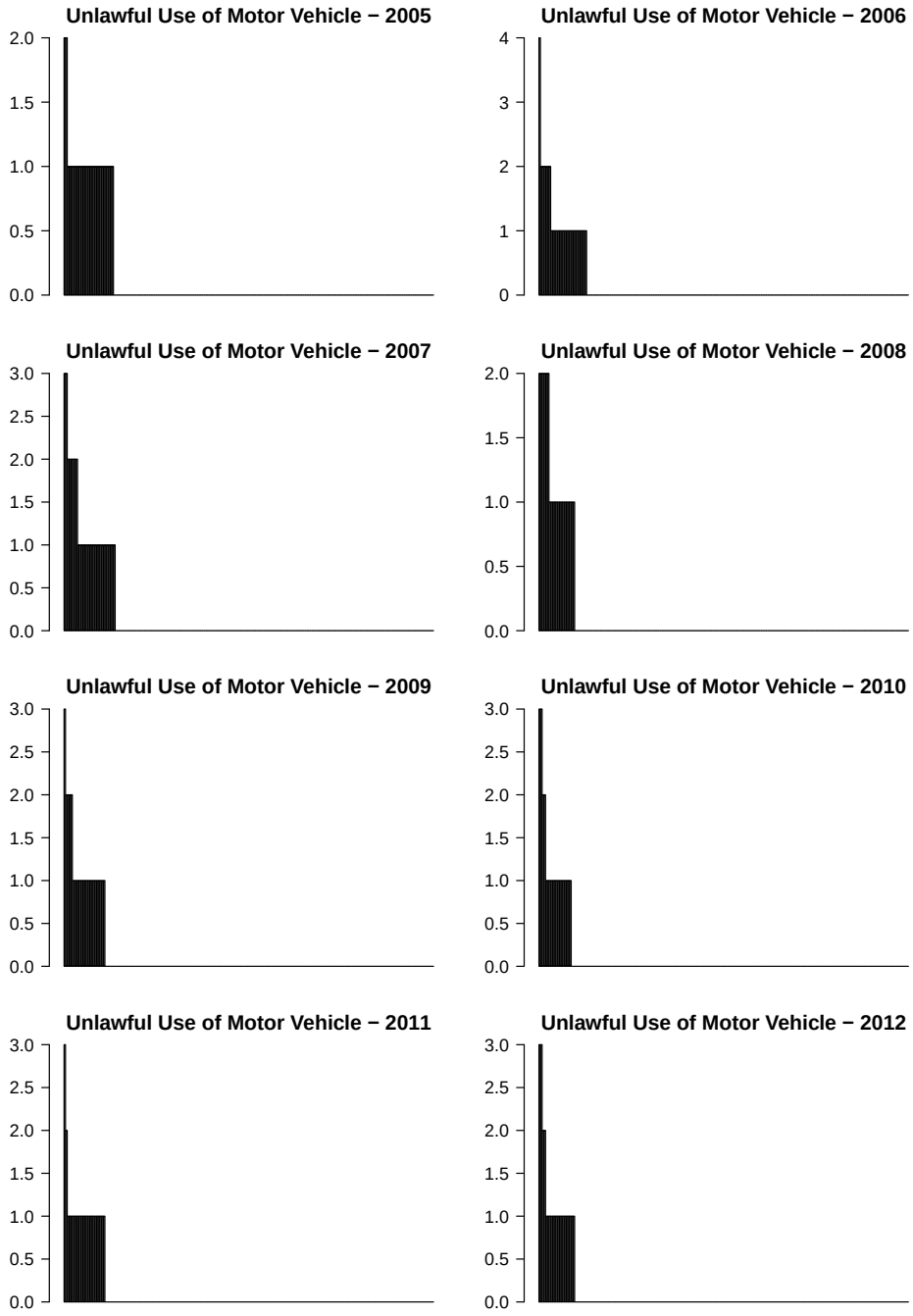

Figure A.26: J Curves of Unlawful Use of Motor Vehicle Offences Conditioned by Year

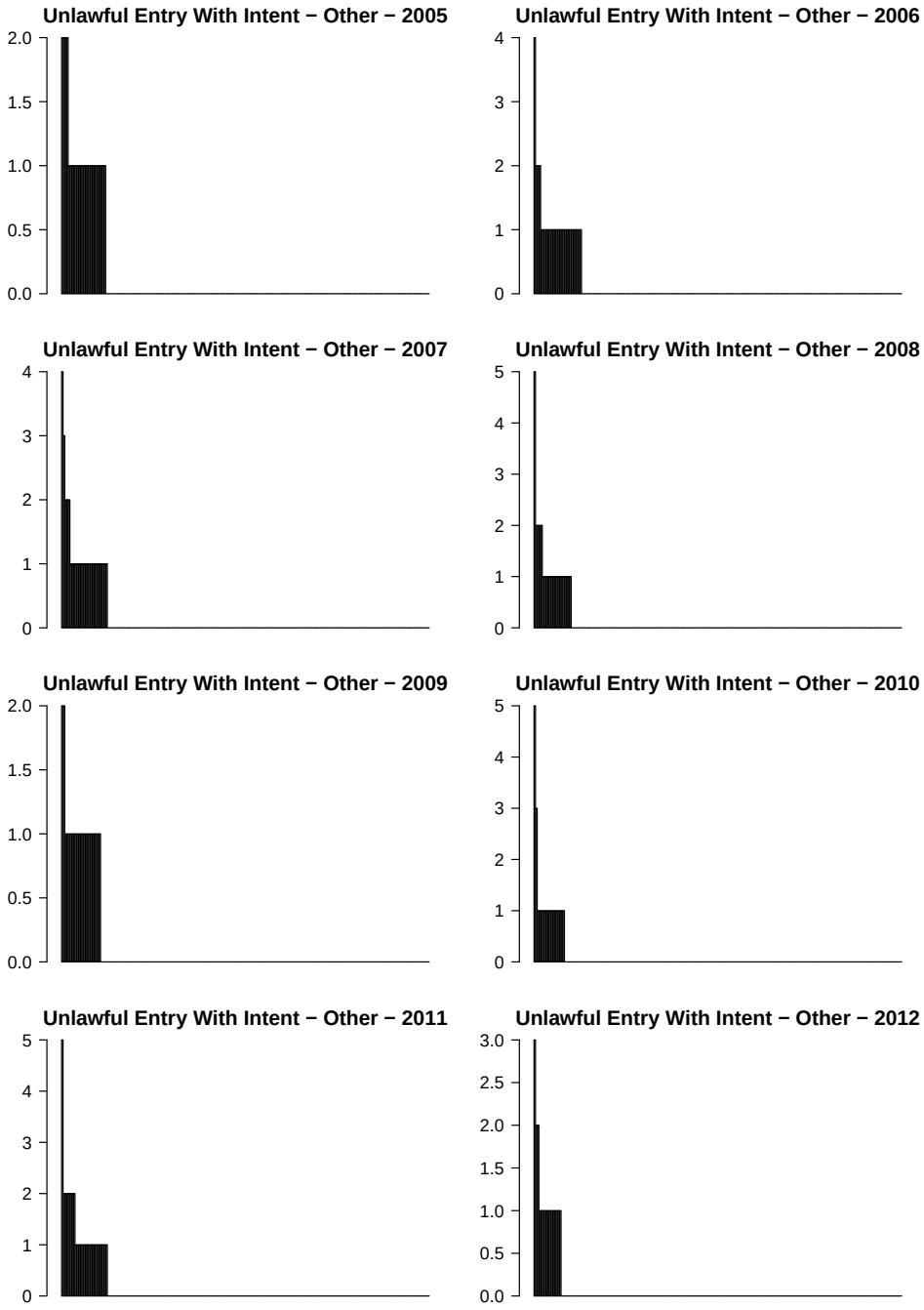

Figure A.27: J Curves of Unlawful Entry With Intent - Other Offences Conditioned by Year

B Observational Protocol

Crime in High rise Buildings on GC - Apartment Observation Checklist — 2012

Apartment Name: _____

Apartment Address: _____

Date: _____

Time – Beginning: _____ Time – Ending: _____

Street Block on which Apartment Complex Located

Street Block Facilities: (check all that apply)
❒ Apartment Complex ❒ Single Family Home ❒ Duplex (2 family)
❒ Retail Shop ❒ Store (convenience, grocery) ❒ Gas Station
❒ Restaurant ❒ Bar ❒ Nightclub ❒ Public Transportation Node
❒ Church ❒ Hospital ❒ School ❒ Warehouse/Industrial ❒ Offices
❒ Park/Green Space ❒ Parking Lot ❒ Empty Lot ❒ Abandoned Building ❒ Police Building
❒ Other_____

Activity Level

Pedestrian flow (per 3 minutes): _____

Flow of cyclists (per minutes): _____

Traffic flow (per minutes): _____

Apartment Complex

Territoriality:

# of Apartment Buildings Onsite_____

Retail Establishments below Complex: ❒ Yes ❒ No

Offices below Complex: ❒ Yes ❒ No

People loitering outside Complex: ❒ Yes ❒ No

Complex Access: (check all that apply)
❒ Inaccessible (no openings) ❒ Partially Enclosed
❒ Resident Only ❒ Completely Accessible

Complex Barrier: (check all that apply)
❒ No Barrier ❒ Wall ❒ Fence
❒ Shrubbery ❒ Gate ❒ Other _____

Barrier Height ❒ No barrier ❒ Low (comfortable sitting height, 2-3 ft.)
❒ Moderate (easy to see over, 4-5 feet)
❒ High (5-6 ft.) ❒ Fortressing (over 7 feet)

1

Odour: ❒ Neutral ❒ Unpleasant

Outdoor Seating: ❒ Yes ❒ No # Broken Seats_____

Landscaping: ❒ Yes ❒ No
(incl. flowerbeds/neat hedges)

Overgrown Grass/Weeds: ❒ Yes ❒ No ❒ No Green Space

Decorations: ❒ Yes ❒ No

Property signs/
Nameplates: ❒ Yes ❒ No

Type of Signage: ❒ Apartment Name ❒ Vacancy ❒ No Soliciting/Loitering ❒ No Trespassing
(check all that apply)
❒ Surveillance Warning ❒ Parking Rules ❒ Other_____

Belongings Left Outside: ❒ Yes ❒ No #_____
(eg. Bikes, towels etc)

Swimming Pool/Jacuzzi: ❒ Yes ❒ No Secured Entrance: ❒ Yes ❒ No ❒ Don't Know/NA
In Need of Maintenance: ❒ Yes ❒ No ❒ Don't Know/NA
Number of Units Overlooking:_____

Gym/Sauna: ❒ Yes ❒ No Secured Entrance: ❒ Yes ❒ No ❒ Don't Know/NA
In Need of Maintenance: ❒ Yes ❒ No ❒ Don't Know/NA
Number of Units Overlooking:_____

Picnic Area: ❒ Yes ❒ No Secured Entrance: ❒ Yes ❒ No ❒ Don't Know/NA
(incl. grills, picnic tables)
In Need of Maintenance: ❒ Yes ❒ No ❒ Don't Know/NA
Number of Units Overlooking:_____

Communal Trash Areas: ❒ Neat ❒ Overflowing/Untidy ❒ Don't Know/NA
Number of Units Overlooking:_____

Image/Maintenance:

Litter: ❒ Yes ❒ No # items_____
(size: palm of hand +)

Alcohol Containers: ❒ Yes ❒ No # items_____

Large Junk Items: ❒ Yes ❒ No # items_____
(eg. old tires, appliances)

Graffiti: ❒ Yes ❒ No
(size: palm of hand +)

Drug Paraphernalia: ❒ Yes ❒ No
(eg. syringes)

#Lighting Fixtures around Complex Perimeter:_____ #Broken_____

#Lighting Fixtures at Complex Entrance(s):_____ #Broken_____

#Potholes in Complex:_____

Parking:

Parking Type: ❒ No parking ❒ On lot ❒ On street ❒ Separated parking lot

❒ Other: _____

Parking Area(s) Secure: ❒ Yes ❒ No

Parking Bays:_____

Levels:_____

Security Cameras in Parking Areas: ❒ Yes ❒ No

Broken Glass in Parking Areas: ❒ Yes ❒ No

Litter in Parking Areas: ❒ Yes ❒ No
(size: palm of hand +)

Alcohol Containers: ❒ Yes ❒ No

Graffiti in Parking Areas: ❒ Yes ❒ No
(size: palm of hand +)

Drug Paraphernalia: ❒ Yes ❒ No
(eg. syringes)

# of Lighting Fixtures in Parking Areas_____ # Broken_____

Lights On: ❒ Yes ❒ No

Intensity of Place Management (in Apartment Building)

Apartment Manager's Office Onsite: ❒ Yes ❒ No

Apartment Manager Availability: ❒ Building Manager(s) Present ❒ Building Manager(s) Not Present

Apartment Manager Monitoring: ❒ Yes ❒ No ❒ N/A (Not Applicable)

CCTV Feed in Manager's Office: ❒ Yes ❒ No ❒ N/A (Not Applicable)

Sightlines: ❒ Clear ❒ Partially Obstructed ❒ Completely Obstructed ❒ N/A
(from Office to Semi-Private/Public Spaces)

Other Place Managers Present: ❒ Yes ❒ No

Type of (Other) Place Managers: ❒ Door-staff ❒ Receptionist ❒ Security ❒ Other: _____
(check all that apply)

Interaction with Managers: ❒ Yes ❒ No

Apartment Building - Exterior

# of Floors_____

Building Entrance(s): ❒ Not Secured ❒ Swipe card ❒ Key
(check all that apply) ❒ Call Box ❒ Attendant Station ❒ Attendant Present
❒ Identification Camera ❒ Other _____

#Lighting Fixtures on Building Exterior:_____ #Broken_____

#Lighting Fixtures at Building Entrance(s):_____ #Broken_____

Graffiti on Building: ❒ Yes ❒ No
(size: palm of hand +)

Level of Graffiti: ❒ Low ❒ Medium ❒ High

Chipped Paint: ❒ Yes ❒ No

Structural Problems: ❒ Yes ❒ No
(eg. Missing brick, stone, siding etc)

Broken Signs/Decorations: ❒ Yes ❒ No

ATM: ❒ Yes ❒ No

Vending Machines: ❒ Yes ❒ No

Approx # Windows:_____ # Broken:_____

Security bars: ❒ Yes ❒ No

#CCTV Cameras on Building Exterior:_____

#CCTV Cameras at Building Entrance:_____

Apartment Building – Interior (Lobby)

Access to Lobby: ❒ Swipe card ❒ Key ❒ Not Secured ❒ Other_____
(from (semi) public space)

Receptionist: ❒ Yes ❒ No

Security Guard(s): ❒ Yes ❒ No

CCTV Cameras: ❒ Yes ❒ No

Working Lights: ❒ Yes ❒ No

ATM: ❒ Yes ❒ No

Litter: ❒ Yes ❒ No
(size: palm of hand +)

Drug Paraphernalia: ❒ Yes ❒ No
(eg. syringes)

Property Damage: ❒ Yes ❒ No
(eg. Broken lights, windows, seating)

Elevator: ❒ Yes ❒ No

Access to Floors from Lobby: ❒ Swipe card ❒ Key ❒ Not Secured ❒ Other_____

Odour: ❒ Neutral ❒ Unpleasant

Décor: ❒ Sophisticated ❒ Neutral ❒ Unkempt/Shabby

Apartment Building – Interior (Stairwell)

Access to Floors from Stairwell:	❒ Swipe card	❒ Key	❒ Not Secured	❒ Other_____
Illegitimate Doorstops:	❒ Yes	❒ No		
Visibility:	❒ Clear	❒ Partially Obstructed	❒ Completely Obstructed	
CCTV Cameras:	❒ Yes	❒ No		
Working Lights:	❒ Yes	❒ No		
Unattended Belongings:	❒ Yes	❒ No		
Litter: (size: palm of hand +)	❒ Yes	❒ No		
Property Damage: (eg. Broken lights, windows, seating)	❒ Yes	❒ No		
Graffiti: (size: palm of hand +)	❒ Yes	❒ No		
Drug Paraphernalia: (eg. syringes)	❒ Yes	❒ No		
Alcohol Containers:	❒ Yes	❒ No		
Odour:	❒ Neutral	❒ Unpleasant		
Décor:	❒ Sophisticated	❒ Neutral	❒ Unkempt/Shabby	

Apartment Building – Interior (Corridor)

CCTV Cameras:	❒ Yes	❒ No		
Working Lights:	❒ Yes	❒ No		
Litter: (size: palm of hand +)	❒ Yes	❒ No		
Property Damage: (eg. Broken lights, windows, seating)	❒ Yes	❒ No		
Graffiti: (size: palm of hand +)	❒ Yes	❒ No		
Drug Paraphernalia: (eg. syringes)	❒ Yes	❒ No		
Odour:	❒ Neutral	❒ Unpleasant		
Décor:	❒ Sophisticated	❒ Neutral	❒ Unkempt/Shabby	

Apartment Units

# of Units_____

front door locks on each unit_____

Type of front door locks: ❒ Electronic/key ❒ Knob/key ❒ Deadbolt ❒ Other_____ ❒ Don't Know
(check all that apply) ❒ Strike Guard

windows per unit_____

Consistent: ❒ Yes ❒ No

Broken Windows: ❒ Yes ❒ No

Boarded up Windows: ❒ Yes ❒ No

Sightlines: ❒ Clear ❒ Partially Obstructed ❒ Completely Obstructed ❒ N/A
(from Units to Semi-Private/Public Spaces)

Units have: ❒ Peepholes ❒ Individual patios/balconies
(check all that apply)

Guardianship Intensity

Visibly Occupied Units_____

Units with Occupants Monitoring_____

Units with Occupants who Intervene_____

Other Comments

_____
_____
_____
_____
_____

6

C Apartment Complex Crime Control Indicator Scores

Table C.1: Apartment Complex Crime Control Indicator Scores

Apartment Name	Management	Guardianship	Image	Barriers	Signage	CCTV	Lighting
Madison Point	3	3	5	2	2	.27	.67
Seacrest	3	2	5	3	3	.71	1.57
Surf Regency	3	2	5	2	2	.14	.21
Trilogy	3	2	5	2	2	.10	.5
The Dorchester	3	2	5	4	3	.06	.47
Surfers Paradise Beach Units	3	2	5	2	2	.00	.17
Break Free Imperial Surf Resort	3	2	3	2	4	.05	1.15
Sunset Island Resort Apartments	3	2	2	3	2	.33	2.00
Tiki village	3	2	1	2	2	.44	4.11
The Beaches	3	1	5	1	3	.18	.46
Zenith Apartments	3	1	5	2	3	.14	.23
The Emerald Surfers Paradise	3	1	5	3	2	.13	.63
Capricorn One	3	1	5	2	2	.13	.21
International Beach Resort	3	1	5	2	2	.09	.55
One Beachfront Holiday Apartments	3	1	5	2	2	.06	.94
Peninsula	3	1	5	3	3	.04	1.53
Kupari Boutique Apartments	3	1	5	3	3	.00	1.00
Anchor Down Apartments	3	1	5	2	3	.00	1.33
Carlton Holiday Apartments	3	1	5	2	1	.00	2.14
Edgewater Gardens	3	1	3	3	3	.24	1.06
Grosvenor Apartments	3	1	3	2	3	.07	.33
Trickett Gardens	3	0	5	2	1	.67	3.00
The Shore Holiday Apartments	3	0	5	2	2	.27	.60
Watermark Hotel	3	0	5	3	3	.10	1.95

Continued on next page

Table C.1 – continued from previous page

Apartment Name	Management	Guardianship	Image	Barriers	Signage	CCTV	Lighting
Soul	3	0	5	1	1	.09	.34
Q2	3	0	5	1	3	.09	.96
Monte Carlo	3	0	5	0	1	.08	1.50
Surfers Century	3	0	5	2	1	.07	.21
Surfers Plaza Resort	3	0	5	2	3	.07	3.87
The Grand Chancellor	3	0	5	1	1	.06	.91
Q1	3	0	5	2	4	.03	.10
The Moroccan View Tower Resort	3	0	5	4	2	.02	.53
Surfers Mayfair	3	0	5	3	1	.00	
Vibe	3	0	3	3	3	.20	.25
Surfers International	3	0	3	2	1	.05	.00
Promenade Apartments	3	0	3	1	1	.00	
Pacific Plaza	3	0	3	4	2	.	9.00
Beach Lodge Beachfront Apartments	2	2	5	3	4	1.00	1.00
Sun Tower Holiday Apartments	2	2	5	3	3	.50	.50
Islander Resort Hotel	2	2	5	3	4	.08	1.58
Beachcomber Resort	2	2	5	2	3	.06	1.29
Le Chelsea	2	2	5	2	1	.00	.67
St Tropez	2	2	3	1	3	1.67	1.67
Bay Lodge Apartments	2	1	5	2	3	1.33	1.00
K Resort	2	1	5	4	3	.33	.33
Durham Court	2	1	5	2	1	.17	.83
Australis Sovereign	2	1	5	2	2	.11	1.67
Bahia	2	1	5	3	2	.08	.23

Continued on next page

Table C.1 – continued from previous page

Apartment Name	Management	Guardianship	Image	Barriers	Signage	CCTV	Lighting
Spectrum	2	1	5	3	3	.05	.60
Mantra Sun City Resort	2	1	5	2	3	.03	.56
Narrowneck Court	2	1	5	3	2	.00	.27
Surfers City Motel	2	1	5	1	2	.00	.25
The Sands	2	1	3	3	3	.80	2.20
Budds Beach Apartments	2	0	5	3	3	.67	2.00
Mantra Legends Hotel	2	0	5	2	2	.05	1.09
The Towers	2	0	5	3	2	.01	.40
Top of Mark Apartments	2	0	3	0	2	.10	.10
Panorama Towers	2	0	3	4	2	.06	.38
Avalon	2	2	4	4	2	.02	.20
The Golden Gate	1	2	5	3	3	.06	.16
Surfers Paradise Towers	1	2	3	2	4	.31	3.08
Wyndham Surfers Paradise	1	1	5	1	2	.00	.75
Olympus Apartments	1	1	3	3	2	.08	.85
Columbia Towers	1	1	2	3	3	.00	.36
Sunset Court Holiday Apartments	1	1	0	4	4	.00	.75
Aarons Holiday Inn	1	0	5	1	3	.67	2.00
Solaire	1	0	5	3	3	.19	1.69
President Holiday Apartments	1	0	5	3	2	.08	.50
Artique	1	0	5	2	2	.06	.84
Mantra	1	0	5	1	3	.03	
River Park	1	0	5	3	3	.00	.40
Hi Surf Luxury Apartments and Accommodation	1	0	5	3	3	.00	.04

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Table C.1 – continued from previous page

Apartment Name	Management	Guardianship	Image	Barriers	Signage	CCTV	Lighting
Quarterdeck Holiday Apartments	1	0	5	2	2	.00	.46
Pacific Point	1	0	5	2	1	.00	.00
Copacabana Apartments	1	0	5	1	1	.00	2.00
Hilton	1	.	5	1	0	.09	.33
Martinique	0	3	5	3	1	.00	1.00
Point Bennelong	0	2	5	3	1	.17	1.33
The Dolphins	0	2	5	3	3	.00	1.00
Narrowneck Lodge	0	2	5	2	1	.00	2.67
Mariner View	0	2	5	1	1	.00	.28
Mabrouka	0	2	5	2	0	.00	.75
Kinkabool	0	2	3	0	3	.11	.22
Impala	0	2	1	1	2	.00	.75
Cypress Avenue Apartments	0	1	5	2	1	1.67	3.00
The Lodge	0	1	5	2	2	.33	.33
Anglesea Court Beachfront	0	1	5	2	1	.33	.33
Aloha Holiday Apartments	0	1	5	2	3	.06	.81
Kurrawong	0	1	5	4	1	.00	.67
Holborow Place	0	1	5	3	1	.00	.50
Monaco	0	1	5	2	1	.00	.00
38 Cavill	0	1	5	1	1	.00	4.20
Riverbend Apartments	0	1	5	1	1	.00	.33
Reema	0	1	5	2	0	.00	.00
Surfers Del Ray	0	1	3	4	2	.33	2.33
Lima	0	1	3	2	2	.00	1.67
Majorca	0	1	3	1	1	.00	.25

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Table C.1 – continued from previous page

Apartment Name	Management	Guardianship	Image	Barriers	Signage	CCTV	Lighting
View Pacific	0	1	2	3	2	.00	.75
Villanella	0	1	2	3	2	.00	.00
Cupania	0	1	2	2	2	.00	1.00
Kooyong Place	0	1	2	1	2	.00	.67
Princess Plaza	0	1	2	4	1	.00	.45
Palm Court Apartments	0	1	2	2	1	.00	1.33
Nelson Place	0	1	1	4	1	.00	.33
Dorian Apartments	0	1	1	1	1	.00	2.67
AFG	0	1	1	2	2	.	
46 Cavill Ave	0	0	5	2	2	1.40	11.00
Beach Lodge Apartments	0	0	5	2	2	.50	.00
Oak Lodge	0	0	5	1	1	.20	1.60
Equinox Sun Resort	0	0	5	2	4	.00	1.00
Jade Surfers Paradise	0	0	5	2	2	.00	.24
Ultima Residences	0	0	5	4	1	.00	1.80
Eden on Sunset	0	0	5	4	1	.00	1.50
Majestic V	0	0	5	3	1	.00	2.33
Kuleena	0	0	5	3	1	.00	.57
Paringa	0	0	5	1	1	.00	.00
Valdara Court	0	0	5	2	0	.00	.00
.	0	0	3	2	0	.75	.50
Biscayne	0	0	2	2	5	.67	.33
The Cosmopolitan	0	0	.	0	1	.08	
Paradise Resort	.	2	5	2	2	.67	7.00
Marriott	.	2	5	2	3	.07	.29

Continued on next page

Table C.1 – continued from previous page

Apartment Name	Management	Guardianship	Image	Barriers	Signage	CCTV	Lighting
Aegean	.	1	5	2	2	.07	.87
50 Cavill Ave	.	1	3	1	4	.17	

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