Violence in Paradise:

The Physical, Social and Perceived Environments

in a Beachside Entertainment District

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ABSTRACT

The research presented in this thesis examines the features of the physical, social and perceived environments that facilitate or inhibit the occurrence of crime, violence, intoxication and injuries in nightclub districts, using Surfers Paradise, Queensland, Australia as a case study. Five primary research questions are addressed: (1) What are the environmental dynamics of alcohol-related violence and injuries in the Surfers Paradise district? (2) How do data contributions made by agencies other than police affect our understanding of the spatial and temporal dynamics of alcohol-related violence and injuries? (3) How has the introduction of the 3am lockout affected the spatial and temporal distribution of alcohol-related violence and injuries as reported by the agencies contributing to the database? (4) How do bar users perceive social and physical environmental cues in entertainment venues? And (5) do the perceptions of bar fight participants differ from those of non-participants? These questions have been addressed through two studies that are underpinned by a conceptual model that highlights key environmental factors suggested by environmental criminology and environmental psychology. Routine activity theory is the main theory that frames the research.

In Study A, Prais-Winsten regression analyses, hot spot analyses (police data only), and risky facilities analyses were carried out using Queensland Police Service data (July 2003 to June 2006) and Queensland Ambulance Service data (December 2003 to June 2006). The time series analyses tested the impact of seasons, special events and the introduction of the 3am lockout on crime and violence using police data. Ambulance data were analysed to assess the effects of these factors on overall incidents requiring assistance, as well as assaults, head and neck injuries and intoxication/overdose rates.

Results for both sets of analyses showed that special events was the only independent variable to have an impact on crime, violence, injury and intoxication rates over time. Hot spot analyses showed that hot spots for crime and violence in Surfers Paradise CBD are relatively stable. Risky facility analyses showed consistency between the top ten rankings according to both police and ambulance datasets. The risky venue typologies suggested five main explanations for violence: aggressive security staff, venue size,

proximity to other venues, club access, and competitive entertainment. Incidents from the police and ambulance datasets were matched to create an integrated database which revealed that only one in four assault victims treated by the Queensland Ambulance Service had a matching police report.

Study B examined male bar users' perceptions of social and physical environmental cues for crime and violence in a bar room setting. A 2 x 2 x 2 randomised independent groups factorial design with covariates was used to address research questions four and five. Bouncer friendliness, patron sex ratio, and room temperature were chosen as the three experimental variables. The experimental variables were manipulated in written hypothetical scenarios. A three part online-questionnaire directed at male Griffith University students who had visited a Surfers Paradise bar or club in the previous two years (n=681) recorded bar users' responses to questions on demographics, the experimental scenarios, their drinking and clubbing habits, and masculinity.

Study B results showed that participants generally rated perceived fear, likelihood and frequency of crime, and severity of injuries to be highest when the bouncer was unfriendly, the temperature was hot and sweaty, and the patrons were majority male. These results showed that variables with previously unclear associations with violence in a bar setting, based on observational and survey data, have a clear and strong perceptual effect when manipulated experimentally. Comparisons between bar fight participants and non-participants suggested that there were no significant differences between the groups' perceptions of environmental cues. However, responses to questions regarding personally attending such venues showed that bar fight participants were significantly less fearful of bar situations they perceived to be dangerous, and were more willing to drink in any hypothetical venue compared to non-fight participants. Study B also included a logistic regression, conducted to examine the relationship between four behavioural and attitudinal risk factors, and participating in bar fights. Results showed that fight participants who visited clubs frequently, drank heavily, and viewed bar fights as part of the night's entertainment were at high risk of being a fight participant. In addition, participants who visited risky facilities (hot spots) were no more likely to have been involved in a fight in the past two years than those that did not visit risky facilities.

These findings have significant implications for theory. Routine activity theory has traditionally been focused on the routine activities of individuals. The results of Study B support this traditional application, but also encourage a focus on the routine activity of places. The results of Study A provide further support for this broader application, highlighting the role that the routine activity of place has on the convergence of the motivated offender and the suitable target. Developing Neisser's cyclical model of perception, Study B suggests that experience in bar fights enhances fighters' perceptual models of violence in and around bars, leading them to seek not only expected features, but to target features that they associate with opportunities for fights. Non-fighters seek cues to reduce fear and increase feelings of safety, whilst fighters seek cues to opportunities for violence.

The social policy implications of this PhD research relate not only to problematic patrons, but to problematic places. Integrated datasets can be analysed to produce local crime profiles, and can enable the development of evidence based prevention strategies that address the social, temporal and spatial crime and injury patterns of Surfers Paradise, and in principle, any high-crime community. In addition, they have the potential to better inform responsive regulation and targeted policing efforts for the reduction of alcohol-related violence. Results highlight the need for the regulation of alcohol, particularly during special local events. They also emphasise the need for appropriate place management training to better control aggressive patrons and escalating situations, as well as the physical and social environmental risks within and around their venue.

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Dominique Murray

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This thesis is dedicated to my Grandfather Ron Altmann (aka Popeye), who passed away in the last seven months of this journey. His life story and fighting spirit were a daily inspiration.

CHAPTER 1

Introduction

It was just another Saturday night out in Surfers Paradise, observing the partygoers and soaking up the vibe of this famous entertainment district. I had agreed to meet with some employees from the state Department of Communities at 9.30pm and had driven the hour south from Brisbane. As I waited outside Hard Rock Café on the corner of the popular pedestrian strip Cavill Mall, the atmosphere was tense, almost intimidating for a 27 year old woman like myself. I seemed to be the oldest person in view…by a number of years. This was not really surprising considering the district's reputation as a party destination for school-leavers every year. A group of boys barely of drinking age staggered out of a car. One pushed his friend, shouting obscenities and laughing. The drunken boy stumbled into a curb side garden and after regaining his balance came back at his friend, swearing and punching his arm. The group found the spectacle hilarious. They wandered on down the mall, whistling at passing girls, even girls that were on the arm of their boyfriend. It seemed they enjoyed pushing the boundaries, a pastime that would become more dangerous as the night wore on.

The pedestrian mall is lined with two-storey buildings and a couple of high-rises that house restaurants, hotels, some bars as well as surf and tourist shops. The mall was quickly filling up with groups of young clubbers. Meeting spots appeared to be dotted through the mall, with one of the most prominent being McDonald's at the top of the mall, across from the beach entrance. The liquor store a few doors down from where I waited was busy at this time of night, with teenagers exiting with their bags of alcohol and heading down the mall towards the beach to have one last drink (or two or three), before heading into the clubs. Some boys sat on the bench beside me to drink their beers, apparently oblivious to the widely known law against drinking in public, and to the Police Beat only 100 metres away. What soon became evident was that most of the young people in Surfers Paradise that night were arriving in the area already tipsy or drunk. There was also a consistent type of partygoer arriving – the young, carefree, local surfer in his surf and skate brand clothing and the young beach girl in her beach dress or skirt and high heels or sandals. There were in addition, the young backpackers and tourists who seemed to embrace the casual attire and attitudes of the locals.

I met the group of four from the Department of Communities at 9.45pm. An employee from Liquor Licensing also joined us. I was clearly the youngest member of the group. We walked across the road to the corner of Orchid Avenue, a spot that was popular for people to meet before clubbing. Orchid Avenue is the main nightclub strip running perpendicular to Cavill Mall and parallel to the Esplanade that runs along the beach. It is a narrow street that has a hint of Las Vegas dazzle, with palm trees lining the sidewalks and many nightclubs and bars highlighted by flashing florescent lights and signs. The street has a variety of bars, clubs and strip joints as well as a few restaurants. Some buildings house as many as six clubs. On our walk down the street we passed a group of four police officers conducting a walking patrol. Further down we passed the Chill Out Zone caravan, a government supported, non-government operation, set up as part of a programme aimed at managing public intoxication. It was now 10pm. There were no clients in the Chill Out Zone and it was too early for nightclub queues, however many bars were quite busy with rowdy crowds.

In any other major city in Australia such as Brisbane or Sydney it is easy to find bars that market themselves towards an older crowd, but in Surfers Paradise we became awkwardly aware that we looked like a group of undercover police officers rather than average patrons. This feeling was reinforced when a young passer-by on Orchid Avenue snickered at the oldest member of our group 'you got ID mate?' His friends found this joke extremely amusing, high-fiving him for his wittiness. This type of cheeky banter is particularly characteristic of the young Queensland surfer, who epitomises the laid-back Australian man.

Just after midnight the first fight involving police erupted on Orchid Avenue. As two men were thrown out of Shooters Bar bleeding from numerous facial lacerations, they continued to punch each other on the steps, with bouncers attempting to mediate and restrain them. Police arrived, arresting them both and driving them away. Within 20 minutes another man was dragged out of the building across the road from Shooters, a building that houses three bars and clubs. Restrained on the ground by bouncers, his friends screamed for him to be let free and yelled at police as they walked him to the Police Beat. After watching these scenes unfold we went to McDonalds, a common place for people to go for an after or mid-clubbing snack. As we sat outside, another four police on foot patrol walked by along the Esplanade. A few tables down, a couple

of male teens walking past were harassing a group of four boys. After a heated argument, the two boys walked away. By about 1.30am the entrance to the mall and the beach were full of hundreds of local underage kids, captivated by the mayhem and magic, and attempting somehow to be a part of it.

We walked along the beachfront where many kids had gathered, noting the lack of lighting on the beach. When 2.30am came, we went for another walk down Orchid Avenue. By this stage the street was chaotic. Many clubs had queues of clubbers attempting to gain entry before they would be locked out at 3am. Small fast food pizza and kebab shops were busy with kids sprawled outside them, making a mess. A long queue of impatient, drunken clubbers had formed at one of the two taxi ranks in the district. As people along the line bickered with each other a young man close to the front of the line punched a tree in frustration. The Chill Out Zone now had its hands full with a girl no older than 19 vomiting into a bucket while her boyfriend held back her hair. A young male seemed to be passed out on a chair. Staffs were giving another young girl a cup of water. About 10 metres away, a girl had passed out on a curb bench with her head on her handbag. She swung wildly as walkers-by taunted her but quickly fell back to sleep. Staff from the Chill Out Zone eventually came and moved her to their van.

We walked on to Cavill Mall where an ambulance sat and headed away from the beach towards Cavill Avenue (the adjoining street). Outside Gilhooley's Irish pub, drunken clubbers were lining up for fast food take-away and for a taxi at the other main taxi rank in the district. A police paddy-wagon pulled up to the line as we passed to arrest a young man who had been acting aggressively whilst waiting. Further down the road, Melba's, one of the largest clubs in Surfers Paradise, was in the process of kicking a young male out. Across the road two males were urinating against a wall. In the small grassed area outside, a young couple were arguing while a girl stumbled into the public toilet screaming her friend's name. By 3.15am we had all had enough of the ironically named 'Surfers Paradise'.

In this study, the Surfers Paradise environment is used as a case study to investigate the enduring problem of crime, violence and injuries in nightclub districts. This chapter begins with a discussion on the night-time economy, reviewing in particular leisure zones – the users, the community and the consequent disorder and violence. This is followed by an overview of the research site, Surfers Paradise, and the methodology and outcomes of previous crime prevention projects in this entertainment district. Previous projects in Surfers Paradise (Homel *et al.*, 1994; Homel *et al.*, 1997) have shown promising results, but there have been numerous barriers to sustaining the effects of alcohol-related violence prevention initiatives, highlighting the need for an innovative approach to the problem. The concluding section of this chapter outlines the aims of this project and the design of the two major studies.

1.1 The Night-time Economy, Entertainment Districts and the Problem of Crime, Violence and Injuries

The problems experienced in one of Australia's most well-known entertainment districts are problems common to much of the western world, where the night-time economy is always evolving, powered by money and muscle (Hadfield, 2009). The phrase 'night-time economy' refers generally to 'all aspects of the leisure, retail and alcohol industries and related aspects of city economies' (Graham & Homel, 2008). Signs of this economy can be hard to identify during the daytime. 'At night, new rules of comportment are negotiated via the acceptability of varying levels of intoxication, of aggressive sexuality, and of a spatial demeanour alien to the business of daylight hours' (Hobbs *et al.*, 2000, 120).

Entertainment districts are a special part of the night-time economy, created by the clustering of bars, nightclubs, strip clubs, snooker halls and other late night places where groups of youths come to celebrate and party, and the consumption of alcohol is celebrated above all else. Understanding the social environment of such places involves understanding 'normal patterns of social interactions in licensed premises, including 'normal trouble'' (Graham & Homel, 2008, 17). Unfortunately, in such environments, 'trouble' consistently equates to violence (Hobbs *et al.*, 2003).

A single bar or club can act as a 'broken window,' promoting crime and violence through actively displaying disorder (Bennett *et al*., 1996, cited in Lipton & Gruenewald, 2002), and the crowding of bars and clubs into a particular neighbourhood can greatly amplify the problems. A high spatial concentration of bars and clubs is strongly related to high rates of assaults (Lipton & Gruenewald, 2002) and other personal and property crimes (Roncek & Maier, 1991), with recent research suggesting that the number of hotel (pub) licenses in a district has a non-linear accelerating effect on assault figures (Livingston, 2008a).

Residing in highly commercialised nightlife districts has become popular in recent years, illustrated by the transformed meat-packing district in New York and the red light district of Fortitude Valley in Brisbane. Entertainment districts can create significant quality of life problems for those living in the midst of the ensuing disorder (Gruenewald, Remer & Treno, 2009). Rowdy behaviour, violence, loud music, litter and vandalism in entertainment districts can all impact negatively on neighbourhood civility (Livingston, Chikritzhs & Room, 2007). These practical problems can have an obvious effect on local residents, but there are also implications for those living near such a district. As noted by Sherman, Gartin and Buerger, 'the routine activities of places produce important aesthetic and social consequences for the quality of life in adjoining places, including crime' (1989, 33).

Social consequences for those residing in and around nightlife districts include social exclusion. The seductive attraction of leisure zones to certain population groups inevitably encourages the growth of alcohol-related businesses in the night-time economy and excludes those who do not benefit from consumption of this commodity. Hadfield (2006) describes this as the honey-pot effect. 'This erosion of diversity serves to further sever the links between the area and its host community leading to an atrophy of informal social control' (138). As day turns into night, the demographic and atmospheric changes in leisure zones are amongst the most intimidating features of such spaces. Perceptions of night as being a time for crime and sin are culturally embedded (Hobbs *et al*., 2003) and result in entertainment districts luring a regular and often predictable crowd. These districts are dominated by youth with a taste for drinking and reckless fun, contributing to negative perceptions of such areas and fear of crime, particularly for the demographic groups effectively 'excluded'.

A consumer's self perception and public persona, and how this persona is received by others, are central to being socially included and culturally accepted in the clubbing environment (Hobbs *et al*., 2003). According to Malbon (1999, 20), entertainment districts are locations of 'experiential consuming'. They are locations where people not only consume alcohol, but they also consume nightclubs and other clubbers as aesthetic objects (Rigakos, 2008). Such consuming experiences within bars and clubs are frequently used as an avenue for youth to achieve psychosocial developmental goals. According to Jessor (1991, 598),

> smoking, drinking, illicit drug use, risky driving, or early sexual activity can be instrumental in gaining peer acceptance and respect; in establishing autonomy from parents; in repudiating the norms and values of conventional authority; in coping with anxiety, frustration, and anticipation of failure; or in affirming maturity and marking a transition out of childhood and toward a more adult status.

In essence, experiences offered by contemporary nightlife can become an important source of identification for youth (Malbon, 1999) and a developmental milestone.

In most cases of adolescent–onset offending, young people grow out of delinquent behaviour and return to law-abiding lifestyles in their mid- to late-20s. Nevertheless, risky behaviours such as substance abuse, drink driving and violence can jeopardise young males' successful development into adulthood (Jessor, 1991). Moffitt (2003) suggests that it is the associated 'snares' such as imprisonment, criminal records and addiction that can especially compromise this transition.

Burns (1980), in his discussion of the experiences of a group of young males on a night out, describes the difficulty that many face in their transition into adulthood. To achieve the desired adult identity young males tend to over-compensate with behaviour that exaggerates their masculinity. They also mould their behaviour to suit their particular drinking environment. 'When young males are together, their conversations are filled with references to street fighting, acting 'tough,' and 'being rowdy' – activities usually involving consumption of large amounts of beer' (Burns, 1980, 280). Unfortunately the consequences of exhibiting masculine behaviour in nightclubs and bars are not always positive. In a nightlife study by Anderson, Daly and Rapp (2009), young males who consistently displayed excessive masculine behaviour such as pursuing girls, being competitive and drinking heavily were more likely to be involved in nightclub crime.

Whilst women have found entertainment districts more attractive in recent times with the increased popularity of cocktails and dance floors, pubs and clubs are still dominated by males (Graham & Homel, 2008). In Australia, the pub is an iconic place where young males gather as part of their 'routine activity'. The concentration of men in licensed venues poses a great risk, with violence in and around nightclubs typically involving young males (Homel, Tomsen & Thommeny, 1992) who are strangers or near strangers (Pernanen, 1991). Furthermore, the concentration of young men invariably involves drinking with the expectation and intention of getting drunk (Homel, Tomsen & Thommeny, 1992), a phenomenon also seen in Britain (Engineer *et al*., 2003). Alcohol-related violence is strongly related to high levels of intoxication in bars (Graham *et al*., 1980; Graham *et al*., 2006; Leonard, Collins & Quigley, 2003; Pernanen, 1991; Homel & Clark, 1994; Chikritzhs & Stockwell, 2002).

According to English *et al.* (1995), 40% to 50% of aggressors and/or victims consume alcohol prior to being involved in a violent assault. For sexual assaults, this figure has been reported to be as high as 75% (Neame, 2003). The consumption of alcohol not only increases the risk of serious intentional injuries (Shepherd, Shapland & Leslie, 1988; Leonard, Collins & Quigley, 2003), but also increases the risk for accidental injuries with as little as two drinks (Vinson *et al*., 2003).

Evidently, high risk environments require tough licensing conditions, but recent Australian developments suggest that bar managers' duty of care obligations under the Liquor Act are being relaxed. A recent landmark ruling in the High Court on a negligence claim implies, at least without specific legislation from state parliaments, that patrons are accountable for their own actions and resulting injuries when under the influence of alcohol (Hurst, 2009). The ruling sends the mixed message that whilst antisocial and irresponsible behaviour in and around pubs will not be tolerated, the outcomes of such behaviour are not legally the pub's responsibility.

Such trends in legal obligations and licensing conditions give further leeway to bar managers and bouncers who are only loosely governed by police enforcement and legislation at the best of times. 'The police enforce the law, but the bouncer operates according to a highly ambiguous cocktail of law, occupational codes and personal discretion that is underpinned by an interpretation of what is good and what is bad for

business' (Hobbs *et al*., 2003, 15). In Lawrence and Leather's (2003) study on bar manager and bar user interpretations of bar environmental cues, there was a significant disparity between what both groups thought was 'good or bad for business'.

This disparity in perceptions may also be seen between bouncers and bar users. Whilst doormen in a previous era were perhaps accountable, friendly and concerned for the well-being of patrons, the contemporary climate is one of suspicion and confrontation. In bouncer interviews in the United Kingdom, Hobbs *et al.* (2003, 115) found bouncers blamed their attitude on a perceived change in client attitude. 'They take nice for being stupid, they think well-mannered is soft'. Bouncers reported that patrons of the current youth generation were cocky and lacked respect, an intolerable situation for a group of 'enforcers' (Graham & Homel, 2008, p. x) that is accruing more power in the globalised night-time economy (Hadfield, 2009).

In Australia, the nature of the night-time economy has resulted in the 'criminalisation of the most disreputable, disruptive and potentially threatening leisure time activities and space….alongside the development of socially sanctioned and commercially exploited leisure' (Measham, 2004, 337). The issues of public intoxication and subsequent violence and injuries have resulted in significant policing and licensing challenges and have generated broader health and social problems. That said, the night-time economy has its benefits. As in many countries, 'nightlife is a significant contributor to the national economy, attracting foreign investment and boosting tourism...'. (Hadfield, 2009, 4). This is particularly the case in Surfers Paradise, Australia, the research site for this study.

1.2 A Surfer's Paradise

The Gold Coast is a large region that lies 80 km south of Brisbane in South-East Queensland, on the east coast of Australia. With a population of just under half a million, the Gold Coast is the sixth largest city in Australia (Gold Coast City Council (GCCC), 2009a). According to the Australian Bureau of Statistics (ABS), the Gold Coast Local Government Area (LGA) recorded the largest population growth of all Australian LGAs between 2005 and 2006 (ABS, 2008, 31 March). Furthermore, this

growth is not expected to slow, with predictions that the Gold Coast's population will double in the next 20 years (GCCC, 2005).

A sub-tropical climate and 70 km of beaches make the Gold Coast one of Australia's top destinations for international tourists and Australian holidaymakers. 'The Gold Coast as a tourist destination has been trading on the image of youth, sex and partying since the 1950s' (Scott, 2006, 55). In the 2007/2008 financial year, the Gold Coast region had approximately 9.6 million visitors (Gold Coast Tourism, 2011a). With the beaches being the city's biggest asset, the Gold Coast is a world renowned surfing destination, hosting one of the ten events of the Association of Surfing Professionals (ASP) World Tour every year. Moreover, the surfing industry has been estimated to contribute as much as $2 billion per year to the Gold Coast economy with considerable flow-on-effects (GCCC, 2009b).

In the heart of the Gold Coast lies Surfers Paradise. Surfers Paradise has had a reputation as a beachside holiday destination since the 1920s when a local hotelier named Jim Cavill owned much of the land in the area then known as Elston. He was committed to changing the image of Elston, and was the owner of the main holiday hotel called Surfers Paradise Hotel. After much lobbying Elston was renamed Surfers Paradise (GCCC, 2008). Jim Cavill's significant influence on the area is reflected in the naming of the main strip - Cavill Avenue and Cavill Mall.

These days Surfers Paradise is not only one of the most famous beaches in Australia, it is the entertainment hub of the Gold Coast. In 2004, Surfers Paradise underwent a physical make-over which included street scaping, the completion of the Chevron Renaissance shopping centre and apartment block as well as the introduction of many high end shops along Cavill Avenue and Surfers Paradise Boulevard.

Surfers Paradise generates approximately 27% of the Gold Coast regional economy (De Bono, 2000). It is therefore not surprising that there were (as at July 2006) 117 liquor licenses held within Surfers Paradise, with approximately 40 of those being pubs and clubs with a combined maximum capacity of 22,000 (Surfers Paradise Management, 2006). Surfers Paradise accommodated over one million visitors during the 2008/2009 financial year (Tourism Research Australia, 2010). Surfers Paradise accounts for 41%

of all accommodation available in the Gold Coast (Gold Coast Tourism, 2011b). Consequently, hospitality is one of Surfers Paradise's leading industries.

Figure 1.1: *Twilight at Surfers Paradise as seen from the Q1 Building*

This bustling district can be seen in Figure 1.1, a photo taken from the observation deck of the Q1 building in Surfers Paradise, currently the tallest building in Australia. This photo shows the CBD area of Surfers Paradise, which is the research site used for this study (see also Figure 1.2 and 1.3). This catchment area is bordered by the beach to the east and by the river to the west. The northern border is Elkhorn Avenue, which becomes Thomas Drive as it runs west and over the bridge to Chevron Island. The southern border is Clifford Street, which is located one street north of the Q1 Building. The Gold Coast Highway runs vertically up the middle of the photo. The red Hard Rock Café guitar sign halfway up the street, on the corner with Cavill Mall, has been highlighted in this photo with a pink circle.

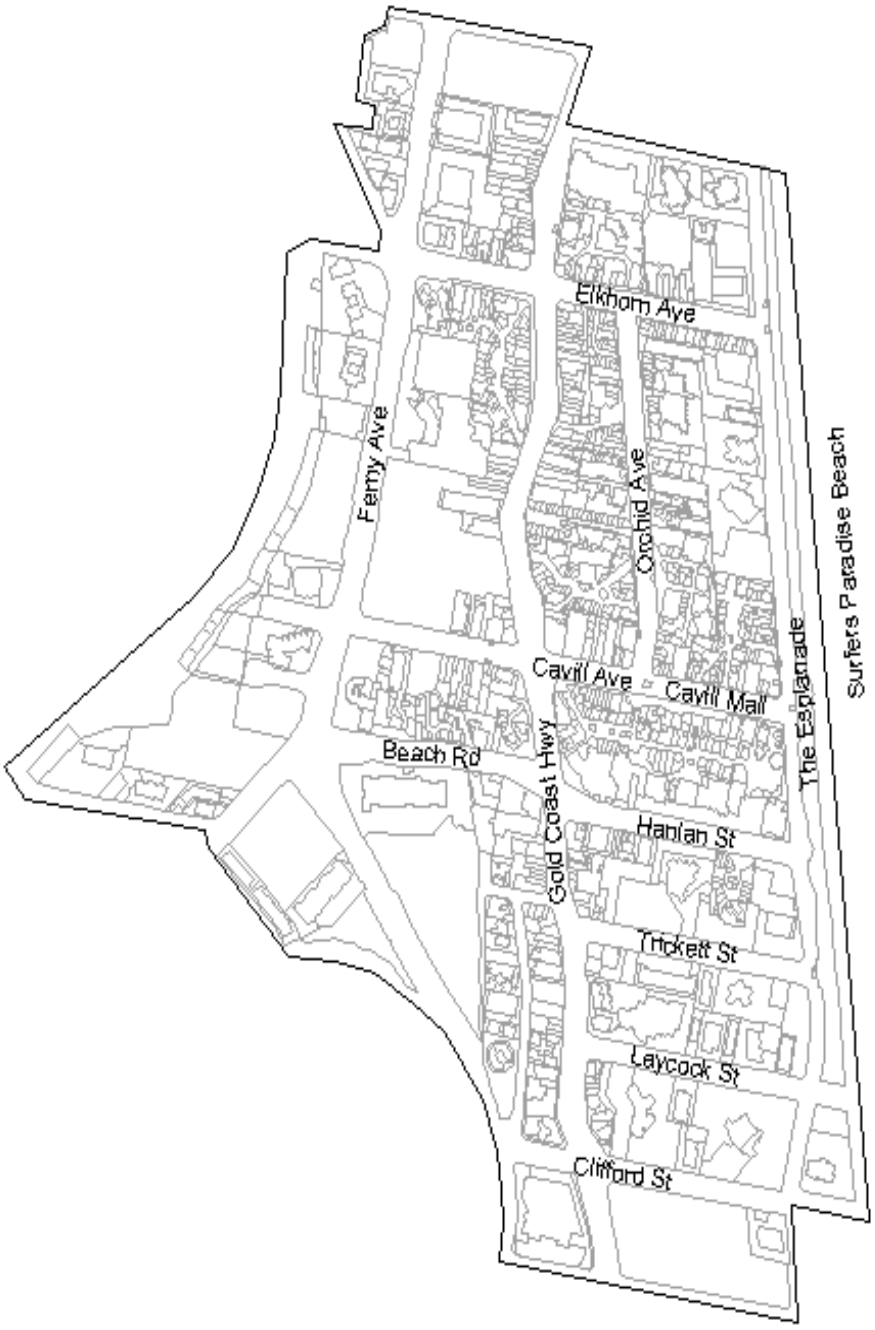


*Figure 1.2***:** *Cadastral map of Surfers Paradise catchment area*

Figure 1.2 is a 2004 cadastral map of Surfers Paradise on which major street names have been overlayed. A cadastral map is a map created by a surveyor, accurately recording land parcel details such as owner, boundaries, and size, as well as use or zoning. Figure 1.3 is the same cadastral map showing the use of each of these land parcels in 2004.

Many of these land parcels are used for a variety of purposes across the different floor levels built above and below ground. Land parcels on which major bars and nightclubs are located (between an underground level and two levels above ground), have been coloured red. All other land parcels without bars or nightclubs have been coloured to represent the business that occupies the space at ground level. In some cases, large hotels and resorts with large capacity bars or nightclubs underneath or at ground level have been coloured red. Moreover, McDonald's and Hungry Jack's at the eastern end of Cavill Mall are coloured red due to having large bars and clubs on level one above them.

Yellow land parcels symbolise accommodation (some of which have small bars), and cafes and restaurants, many of which have a liquor license. Blue land parcels represent take-away food stores and grocery stores, many of which stay open until the early hours of the morning on weekends. Peach coloured properties are retail shops that sell personal or household goods, such as clothing or duty free items. Two taxi ranks on Orchid Avenue and Cavill Avenue are symbolised with turquoise polygons. Dark grey land parcels represent car parks whilst light grey represents construction sites.

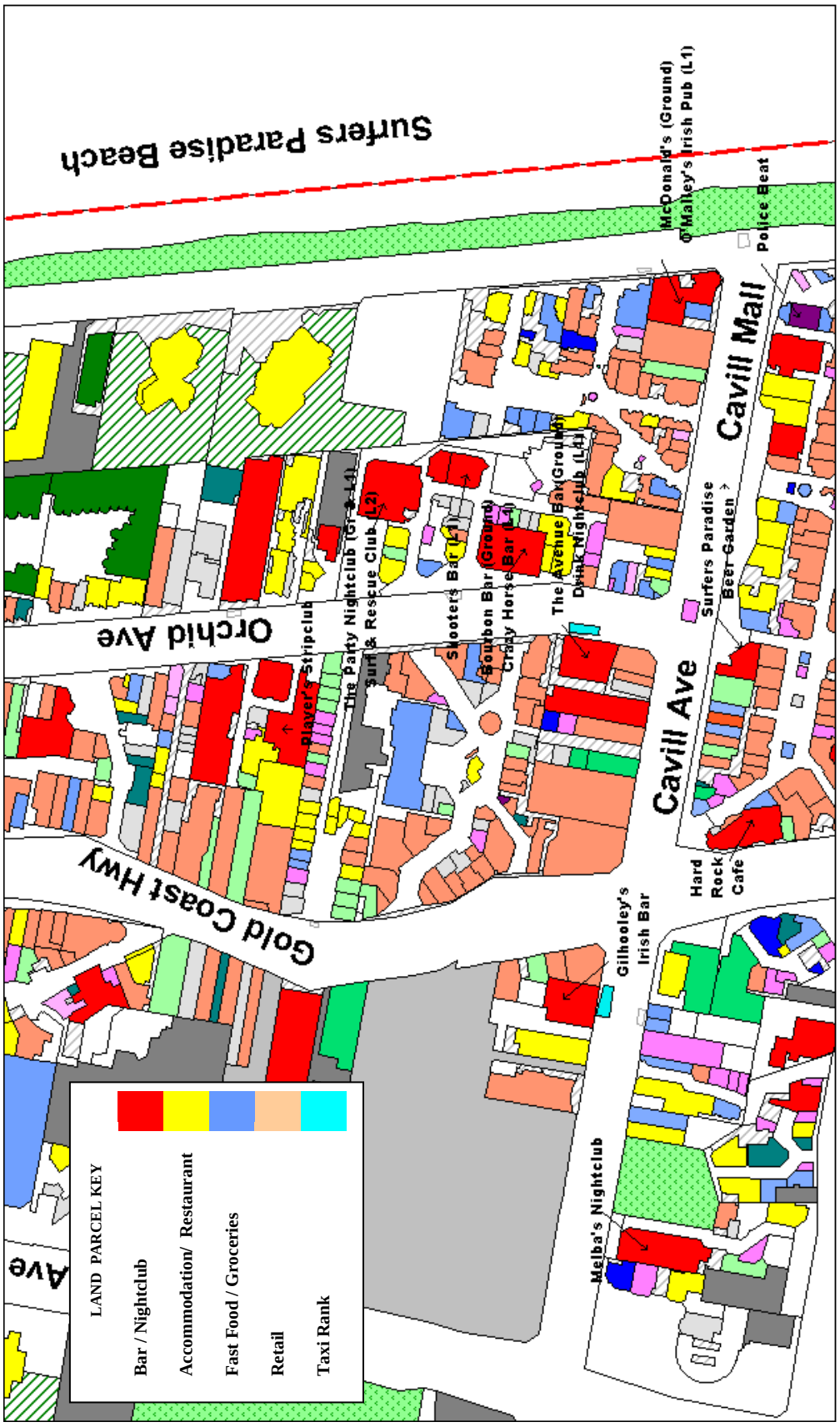


Figure 1.3: *Cadastral map of nightclub neighbourhood in Surfers Paradise catchment area, highlighting land parcel use.*

Surfers Paradise has a residential population of approximately 20,000 (ABS, 2008). In 2006, 45% of the residential population over 15 years of age had never been married, with the comparable figure for Australia being 33% (ABS, 2007). Furthermore, 20% of residents were in the 15 to 24 age bracket, compared to only 14% of Australian residents falling within that category in Australia (ABS, 2007). These figures suggest that the local population is made up of a high proportion of young people. Furthermore, considering the high percentage of non-Australian citizens (40%) and the international student schools in the area, it is likely that a large international student population resides within Surfers Paradise.

Surfers Paradise is a well-known location for many annual leisure and sporting events that occur during the spring and summer months. At these times, Surfers Paradise reaches full capacity, which places a significant strain on police, ambulance and other local agencies. Such events include Nikon Indy 300 supercar racing, national surf life saving carnivals and 'Schoolies'. According to Scott (2006), the Schoolies festival developed spontaneously after a series of teenage school leaver parties in the late 1970s, and is considered 'one of the few 'rites of passage' for Australian teenagers' (55).

During the summer holiday period, approximately 35,000 school leavers converge on Surfers Paradise for the official Schoolies week starting the third Saturday of November (Department of Communities, 2009). School leavers from some other states such as New South Wales and Victoria also frequent the Gold Coast the following week. However, as the official Schoolies week is over at this time, the state government organised entertainment, activities and support services are not available. The lack of supervision for this week seems of less concern to the Government partially due to the likelihood that most interstate school leavers are a year older than Queensland school leavers, and are therefore of legal drinking age. Figure 1.4 shows the crowded Esplanade and beach in Surfers Paradise during Schoolies.

Figure 1.4: *Schoolies week. Photo taken from McDonald's, looking out to The Esplanade with the famous Surfers Paradise sign at the entrance to the beach.*

There are a number of Australian seaside locations that host the school graduation festival, but Surfers Paradise is one of the most popular and long-standing locations. According to Scott (2006, 56) the Gold Coast was likely to become the primary location for Schoolies week not only because of its history as a holiday destination, but because of its association with 'sexual freedom'. 'The Gold Coast has a history of association with marginal sexual behaviour,' having a reputation in the 1950s for hotel pyjama parties and bikinis on the beach, and some years later, topless sunbaking.

These days, sexual promiscuity is a major social ingredient of the festival. Figure 1.5 shows female school leavers' provocative T-shirts at Schoolies week in 2006. Annabelle McDonald from 'The Australian' newspaper reports on the surrounding boys' reactions to these two girls. 'With outstretched hands trying to touch the young girls' breasts and bottoms, the mottos the boys wore on their T-shirts - such as 'Plastered' and 'Good Evening Bitches' - were perhaps a fairer representation of their true intentions' (2006, 3). At Schoolies week 2008, a sexually charged theme song dominated the streets, with boys and girls chanting with the rhythm of a high school war-cry 'tits out for the boys.' (Dillaway, 2009, 14).

Figure 1.5: Two school leavers wearing provocative T-shirts at Schoolies week, November 2006 in Surfers Paradise.

The celebration traditionally involves inexperienced and often under-age teenagers drinking excessively and being unable to handle their new-found freedom. Whilst the majority of Schoolies consume alcohol during Schoolies week, an estimated one in five binge drink and take illicit drugs. A similar number have unprotected sex during the festival week (Molloy, 2008). Incidents of violence such as that illustrated in Figure 1.6, as well as sexual predation, are common. Most of those arrested for such crimes are 'Toolies', a colloquial term used to describe older men who take advantage of the Schoolies week festival and the vulnerable targets it attracts (Scott, 2006).

Figure 1.6: A group of female school leavers fighting on Surfers Paradise beach during Schoolies week, November 2009.

In the late 1990s, the Gold Coast City Council became involved in the organisation and management of the festival in an attempt to control the disorder. A Schoolies week Officer was appointed and entertainment was provided (Scott, 2006). As Figure 1.7 illustrates, Schoolies week has now developed into a highly commercialised festival, with Australian bands and DJs playing at nightly concerts situated on Surfers Paradise beach.

However, formal organisation of the festival does not seem to have reduced the levels of crime and disorder. Local police deemed the class of 2009 to be the 'worst ever Schoolies' (Stolz & Heger, 2009, 7). Local residents and business owners have called for the government to ban the festival at the Gold Coast. The State Premier's response highlights the difficulties in regulating such an event. 'Unfortunately it is not government that decides to send schoolies to the Gold Coast – they turn up there in their droves and accommodation owners make the bookings' (Stolz & Heger, 2009, 7).

Figure 1.7: School leavers at one of the organised Schoolies week beach concerts at Surfers Paradise.

1.3 Surfers Paradise Revisited

Alcohol consumption and the issues that stem from it such as fear of crime, drink driving, public disorder, violence and a poor local image have been topics of concern in Surfers Paradise for many years. For almost two decades, Surfers Paradise has been the target of a number of projects aimed at addressing these issues. It would be expected therefore, that this entertainment precinct would have some of the best initiatives available, and as a result, would have seen a significant reduction in violence in the entertainment district. However, this is certainly not the case.

The Surfers Paradise Community Action Project (Homel, Hauritz, Wortley, Clark & Carvolth, 1994) was one of the first major projects run in Surfers Paradise and had many good outcomes. The project took an inter-agency approach. A community forum was established to develop an intervention proposal. Smaller groups were then created to implement various parts of this strategy.

One such group was the venue management task group. Risk assessments were conducted in each venue, following health department protocols. Venue managers

created a code of practice and formed an association, which signalled the licensee's commitment to enforcing the code of practice, and in essence, demonstrated their abilities to self regulate. Pressure from the task forces and the public forum created momentum for the association. Informal regulation of venue managers was undertaken by a Community-based Monitoring Committee. Formal regulation was however conducted by police as part of their usual role as enforcers. Police appeared to be committed to the project after its initial success, although their involvement was not always positive and was always episodic.

At the follow-up one year later, rates of all types of aggressive behaviour had dramatically decreased. However, funding to implement recommendations and continue evaluating outcomes was limited. The Project Manager was withdrawn from the project and police took over the role of informally (and formally) regulating venue management. At an evaluation in 1996, figures for physical assaults were similar to pre-intervention levels and the figures for non-physical aggression were actually worse than pre-intervention (Lincoln & Homel, 2001).

In 1998, 16 CCTV (closed-circuit television) cameras were installed in Surfers Paradise 'following pressure from local businesses concerned that the image of Surfers Paradise as a family friendly tourist resort was being undermined by alcohol-related violence' (Wilson & Sutton, 2003, 31). The following year saw another evaluation of the Surfers Paradise Safety Action Plan, some years after its initial introduction. The analysis of 17 clubs in the entertainment district revealed the highest rate yet of verbal aggressiveness recorded from the four evaluations. However, there was a decrease in physical aggression compared to the 1996 observations. Nevertheless, rates were higher than they were in the initial 1994 follow-up one year after the implementation of the Safety Action Plan (Lincoln & Homel, 2001).

Table 1.1: Observed rates of aggression and violence per 100 hours of observation (adapted from Lincoln & Homel, 2001, 51)

Year of observation	**1993**	**1994**	**1996**	**1999**
Number of clubs observed	18	18	17	17
Total number of visits	56	43	48	57
Type of aggression				
Verbal abuse	12. 5	2. 3	8. 3	13. 2
Arguments	7. 2	2. 3	13. 5	11. 4
Challenges/threats	1. 8	0. 0	9. 4	14
Total non-physical	21. 4	4. 7	31. 3	38. 6
Physical assaults	9. 8	4. 7	8. 3	6. 14

The overall results of these evaluations show that whilst the initiatives introduced through the Safety Action Plan were effective in reducing alcohol-related crime and disorder in Surfers Paradise, the long-term sustainability of these initiatives has been problematic, predominantly due to the inability of community representatives and officials to drive the project without leadership from researchers. Moreover, appropriate funding to keep the project going was unavailable, resulting in the withdrawal of the Project Manager. This withdrawal led to the collapse of the Community Monitoring Committee. Consequently, local bars and clubs no longer had an informal regulatory body with which they could discuss real issues such as drug dealing or other inappropriate practices without 'a fear of retribution' (Homel *et al.*, 1997, 81). Further problems included the lack of enforcement of the Liquor Act by the Liquor Licensing Division, an inability of licensees to identify problems that needed to be addressed immediately and to maintain the momentum of change (Homel *et al.*, 1997). Lang *et al*. (1998) struck similar problems in their attempts to train bar staff in Perth, Australia, in responsible serving practices. They concluded that without major incentives, bars owners and staff were highly unlikely to change their ways and support responsible policies and practices.

A further study of crime and violence in Surfers Paradise was carried out in 2004 with the 'Keeping Surfers Safe Project' (McIlwain, 2004). Secondary data analysis was

performed on datasets provided by various agencies in Surfers Paradise such as the Queensland Police Service and the Gold Coast Hospital. A survey was also conducted to gather information on local residents' perceptions of crime and safety in the area. Survey findings indicated a lack of trust in the abilities of local police to make Surfers Paradise a safer place. Furthermore, local residents believed alcohol misuse to be a major contributor to crime. Results suggested that much alcohol consumption was occurring outside of Surfers Paradise, with many party-goers arriving in the area already intoxicated. Recreational drug use had apparently increased over the years and was now presenting as a serious problem in the entertainment district (McIlwain, 2004).

Many of the issues identified years earlier remained problematic, such as lack of public toilets, lack of public transport, and police tolerance for violence and disorder. Over the 2000 to 2003 period, Surfers Paradise remained a hot spot for crime in the Gold Coast, whilst Orchid Avenue and Cavill Avenue/Mall were the hot spots within Surfers Paradise (McIlwain, 2004). All types of assaults made up approximately 10% of reported crime over this period with theft being the most frequently reported crime (McIlwain, 2004). However this figure can be misleading. According to Bryant and Williams (2000), 70% of alcohol-related violence victims in Australia do not report the assault to police, suggesting that assaults make up a much greater proportion of crime occurring in Surfers Paradise than police figures suggest.

Adding to the complex history of crime prevention initiatives in Surfers Paradise was the introduction of the '3am lockout' in 2004. The Centre for Health Research and Practice defines the lockout as 'venues agreeing not to allow entry or re-entry to patrons at a particular time before the end of their approved trading hours' (2004, 12). Patrons inside the venue at the lockout time are free to leave any time before close or remain there until close. This message has been poorly relayed to bar users in Surfers Paradise with confusing street signs placed above eye-line level that state 'If you don't leave, you can party until 5am. But at 3am, if you're not already in, you're out'. In smaller print below it states 'At 3am a lockout applies to all nightclubs. Entry or re-entry in any nightclub after 3am is prohibited'.

The aim of the lockout is to address alcohol-related violence and disorder in and around bars and clubs by inhibiting late night migration between clubs. The initiative has been

introduced into numerous Australian cities and towns in the past decade, with limited evaluation. In many places, the lockout has been introduced in conjunction with a number of other strategies, often aimed at reducing alcohol availability (Centre for Health Research and Practice, 2004; Kypri *et al*., 2011; Moffatt *et al*., 2009). This makes the evaluation of the lockout as a stand-alone strategy unfeasible. The only solid evaluation of the lockout to date (as a stand-alone strategy) has been at the Gold Coast, with results showing limited support for the initiative (Palk, Davey & Freeman, 2010). Findings showed that in the five weeks following the lockout introduction, crime incidents more than doubled compared to the four weeks prior. Whilst there did appear to be a reduction of alcohol-related incidents as a proportion of total incidents, this reduction was not significant.

In July 2009, the Surfers Paradise Inter-venue Radio Communication Network was formed and run by the Surfers Paradise Licensed Venues Association (GCCC, 2009). The project is trialling a crime/potential crime response system with the support of local police and the Gold Coast City Council. Radios connect 12 clubs in the area who have volunteered to be involved in the project. The digital radios allow bouncers in various clubs to communicate with each other, police and council CCTV operators. The main aim of the scheme is to flag aggressive and intoxicated individuals to each venue and improve responses from all agencies to these problematic individuals. If deemed successful, the scheme will be implemented throughout Australia, although the evaluation process for this scheme is not yet known.

The most recent crime prevention programme to be trialled in Surfers Paradise is the 'Drink Safe Precinct' (Lappeman, 2010), introduced in December 2010. The pilot programme being trialled in three Queensland cities aims to increase police presence and create a safe zone for partygoers. The programme includes increasing police numbers, spending $660,000 on a safe zone for those feeling unwell or unsafe (despite the Chill Out Zone already in place that addresses these issues), new police powers to ban problem patrons from the area, and identification (ID) scanners in bar and club entrances (which aim to flag aggressive patrons by creating a banned patron list to be shared with police and other venues).

These approaches are similar to those used in the 'Operation Nightlife 2' initiative used by Victorian Police since 2009. This initiative includes increased police visibility, ID scanners, additional fines for disorderly behaviour and a patron ban list. Miller, Sonderlund and Palmer's (2010) recent evaluation of the initiative in the city of Geelong, Australia, reported that 'none of these interventions were systematically derived from the available evidence, nor have any of them been empirically evaluated since implementation'. Results showed that the ID scanner strategy coincided with a statistically significant increase in alcohol-related injury rates (according to local hospital admissions) and suggest that the scanners may displace violence from venues to the streets.

Limited research has been conducted on alcohol-related injuries in Surfers Paradise. One recent study on Gold Coast emergency room presentations suggested that the consumption of alcohol significantly increased the risk of injury (Watt, Purdie, Roche & McClure, 2006). The study also revealed that intentional injuries and injuries resulting from being struck by or against something occur more frequently in licensed areas in comparison to other causes of injury. However, it is often the case that those injured in events of alcohol-related violence in and around bars and clubs do not present at Accident and Emergency Departments (Shepherd, Shapland & Scully, 1989). Possible reasons for not seeking treatment include fear of apprehension, an inability to assess the seriousness of the situation at the time, or just not wanting others involved.

1. 4 Study Aims and Research Design

This thesis aims to research the physical, social and perceived environments of violence and intentional and accidental injuries in entertainment districts, with Surfers Paradise as the case study area. Study A concentrates on the physical and social environmental problems that play a role in alcohol-related crime, violence and injuries through analysis of official data and hot spot mapping, whilst Study B addresses the same issues through the eyes of area users, taking an experimental approach.

Study A addresses two of the five data collection recommendations made in the Australian National Alcohol Strategy 2006-2011[1] (Department of Health & Ageing, 2006, 31):

- Develop an understanding of the extent of alcohol-related harm by supporting better collection and integration of data from a range of sources.
- Explore opportunities for the collection of local data related to alcohol for use in targeted interventions and policy.

The 'Keeping Surfers Safe Project' (McIlwain, 2004) also recommended the development of an integrated alcohol-related violence and injuries database. The findings of the project highlighted the need for the sharing of data across agencies that deal with violence and injuries, so as to increase understanding of these issues at a local level. Study A involved the creation and analysis of a police dataset, an ambulance dataset and an integrated agency crime and injuries dataset for Surfers Paradise.

The benefits of data sharing between agencies include more accurately targeted policing and ambulance services. Whilst many assaults may not be captured in police figures, it is likely that many of the missing assaults are being recorded by other agencies. In particular, it is expected that a number of alcohol-related injuries, intentional or accidental, will be reported to the Queensland Ambulance Service and not the Queensland Police Service, and vice versa. The integrated agency crime and injuries dataset will facilitate a more complete representation of the temporal and spatial patterns of violence and injuries in Surfers Paradise.

Much past research has focused on identifying what physical and social environmental features of bars and clubs and management practices contribute to alcohol-related violence, through observation and the examination of environmental hot spots (Graham & Homel, 2008). This study provides a broader examination of the problem of violence as well as intentional and accidental injuries in this nightlife district, by constructing and analysing longitudinal datasets that capture incidents not only inside clubs, but also on surrounding streets.

[1] In April 2009, the Ministerial Council on Drug Strategy approved an extension of the 2006-2009 strategy until 2011.

In addition to hot spot analyses, time-series analyses of violence and injuries in Surfers Paradise have been conducted as part of Study A. The style of analysis accounts for the seasonality of crime, which is of particular importance when studying an area with a transient population that is heavily influenced by seasonal trends and special events.
To date, evaluations of nightclub lock-outs in Australia have based their findings on police data and interviews. As part of Study A, the effectiveness of the 3am lockout on rates of violence and crime in Surfers Paradise has been examined using the police data, ambulance data and the integrated data series. A spatial analysis as well as a time series analysis have been conducted, giving a depth to the analysis that cannot be provided by a simple pre-post design (Palk, Davey & Freeman, 2010). The various components of Study A show the potential role that integrated agency data can play in revealing a more realistic picture of violence and injuries in city centres and the effectiveness of interventions such as the lockout.

Study B investigates the perceived environment, since it is ultimately the environment as perceived by the user that determines whether or not an incident will occur. A randomised experimental design has been used, inspired by the work of Leather and Lawrence (1995). Study B involves the manipulation of specific social and physical environment factors in a written vignette presented online. These factors were carefully chosen to meet three criteria: 1) limited or ambiguous evidence in the literature over their role in bar violence; 2) policy relevance and; 3) they were discussed by users in focus groups or interviews as risk factors for bar violence or crime. Study B also investigates an under-researched area in bar violence research, comparing bar fight participants and non-participants' perceptions of the bar environment.

Chapter two presents the theoretical and empirical research that underpins both studies. Throughout chapter two, segments of a hypothesised model are discussed, showing how the elements of the physical, social and perceived environments interact to generate incidents of crime and violence. The model draws on the field of environmental psychology, applying Neisser's (1976) cyclical model of perception to explain the psychological processes and the resulting behaviour of consumers oflicensed environments. Key environmental criminology concepts are also applied, including Brantingham and Brantingham's (1993b) activity nodes, travel pathways, edges and

awareness space. These ideas complement the theoretical foundation of the model, routine activity theory (Cohen & Felson, 1979).

CHAPTER 2

Places with problems: The physical, social and perceived environments of entertainment districts

'Australian Doujon Zammit remains on life support after suffering horrific head injuries after allegedly being bashed by nightclub bouncers on the Greek island of Mykonos. ' (Herald Sun, 1 August 2008).

'A 21-year-old man was left with a severed artery and five others were left with minor stab wounds, after the assault in the Liquid club in Wigan' (BBC News,16 May 2007).

' Mr Tararo, 21, died after being kicked, punched and choked by the bouncers outside Fisherman's Wharf Tavern at Main Beach on May 18, 2008' (Trenwith, 9 June 2010).

Such scenarios make all too familiar headlines in international news, particularly with the rapid expansion of the night-time economy in recent years (Tierney & Hobbs, 2003; Hadfield, 2009). Youths in nightclubs searching for a liberating consumer experience can quickly find themselves in risky situations, as they partake in an event where the aim is to 'loosen sensibilities and abandon oneself to behaviour which would otherwise be contained' (Hobbs *et al*., 2003, 37). Such behaviour often involves 'normal trouble' (Graham & Homel, 2008, 23), comprising dancing, singing, being drunk and kissing strangers, being irrational, and sometimes aggressive. So what is it about the environment of an entertainment district that encourages aggressive and violent behaviour?

As illustrated in the above stories, many factors that contribute to violence and disorder in clubs and pubs are place specific, at the level of country, city, entertainment district or venue. For example, the use of a gun in bar violence can reflect the national and/or state stance on gun regulation, district problems such as a culture of gun use, and venue problems such as poor club management and venue security screening. However, there are some commonalities in the above scenarios and in the international literature on

contributing factors to bar violence. Venue policies as well as poor bar and security staff training are factors associated with some of the above incidents and with violence in pubs and clubs in general (Homel, McIlwain & Carvolth, 2001). According to Graham and Homel (2008), one clear commonality amongst licensed venues is the central activity of consuming alcohol. Furthermore, as illustrated in the incidents, participants in violence in and around nightclubs are often young males (Homel, Tomsen & Thommeny, 1992) who are strangers to each other (Pernanen, 1991). Some of the physical and social environmental factors associated with the occurrence of crime and violence will be discussed in more detail throughout this chapter.

This chapter is structured around a hypothesised model (Figure 2.1). The model is an organising schema, highlighting links between key concepts within studies A and B, as well as between these studies. Routine activity theory is at the heart of the model because it lends itself well to explaining why crime and violence occur between particular individuals in particular licensed environments (Graham & Homel, 2008). The application of routine activity theory to place, specifically Surfers Paradise, is the left side of the model, representing the theoretical foundation for Study A. Related environmental criminology concepts such as Brantingham and Brantingham's (1993b) activity nodes, travel pathways and edges are discussed. Empirical research on seasonality, bar density and hot spot formation is also reviewed. The right side of the model demonstrates the application of routine activity theory to the individual, the focus for Study B. Whilst the individual's routine is an essential factor in the occurrence of crime, it relies heavily on motivations as well as on patrons' perceptions of the physical and social environments, and how they perceive their targets and their suitability. The right side of the model explores these links, also highlighting Brantingham and Brantingham's (1993b) concept of awareness space and the impact of clubbing and drinking behaviour on routine and perception. The impact of alcohol and its accessibility is also discussed. Chapter two concludes with a discussion of four research questions to be addressed by Study A and Study B.

Figure 2.1: A hypothesised model of theoretical & empirical research concepts explaining violence and injuries in Surfers Paradise

2.1 Environmental Criminology

Much of the empirical research and most of the theoretical perspectives presented in the hypothesised model and reviewed in this chapter have been developed from the principles of environmental criminology. This field concentrates on the multi-faceted nature of crime and its relationship with place, time and spatial characteristics (Davidson, 1993). Environmental criminology argues that 'each criminal event is an opportune cross-product of law, offender, motivation and target characteristics arrayed on an environmental backcloth at a particular point in space-time' (Brantingham & Brantingham, 1993a, 259). Three of the most influential theories to come from the field of environmental criminology are routine activity theory, rational choice theory and crime pattern theory, all discussed in this chapter.

2.1.1 Environmental Backcloth

The 'environmental backcloth' concept may explain why some places are more attractive crime locations than others. This working backcloth is 'an ever-changing set of socio-cultural, economic, legal, structural and physical factors that include, among other things, the activities of individuals, of groups and of organisations' (Brantingham & Brantingham, 1993a, 265). The environmental backcloth emphasises the importance of the elements of place (including an individual's surroundings) and how these elements are interpreted. These surroundings emit cues, perceived and acted upon by the potential offender. When considering night-time leisure environments, the backcloth 'calls attention to the political, social, cultural and economic forces that drive the night-time economy and that create the specific environments within which crime and violence occur' (Graham & Homel, 2008, 189).

2.1.2 Crime and Place

Research supports the idea that crime may be highly concentrated in few places (Eck, 1997). According to Sherman (1995), the crime-place relationship is stronger than the crime-person relationship. 'Future crime is six times more predictable by address of the occurrence than by the identity of the offender' (Sherman, 1995, 36). Routine activity theory builds on some of the key features of environmental criminology, explaining the occurrence of crime by highlighting the importance of place rather than individual.

2.2 Routine Activity Theory

In essence, routine activity theory proposes that the likelihood of crime clustering in certain places and certain times is a 'function of the convergence of likely offenders and suitable targets in the absence of capable guardians' (Cohen & Felson, 1979, 590). Cohen and Felson's (1979) consideration of Hawley's (1950) human ecological theory is evident in their conception of routine activity theory, with perfect timing required for the 'coordination of an offender's rhythms with those of the victim' (Cohen & Felson, 1979, 590). The frequency of this convergence, and thus of crime events, is a reflection of the everyday patterns of social interaction and activities (Hobbs *et al*., 2003). At the macro level, this convergence and indeed, crime opportunity is affected by changes in the routines of society caused by, for example, changes in the rate of unemployment. At the micro level, this coordination is affected by the routines of individuals.

Suitable targets (or victims) are essentially vulnerable objects or individuals who are significantly more likely to be desired by an offender than other objects or persons (Cohen & Felson, 1979). The decision of whether or not a target is suitable is complex in that it depends on a multitude of factors such as the surrounding environment, prior offender experiences and offender perceptions (Brantingham & Brantingham, 1984). Felson (1986) later added intimate handlers to the equation. Whilst a guardian is one who protects the suitable target (e.g. car park attendant, body guard or friends), an intimate handler's role is to mind the likely or motivated offender and influence them against committing a crime (Felson, 1986). Typically, an intimate handler is a person who is close to the motivated offender such as a friend or parent. A further contribution to the theory was made by Eck (1994), who highlighted the importance of informal social control with the addition of a third crime controller, place managers. Whilst their primary role is to ensure the efficient operation of the place, their activities and decision-making can influence the occurrence of criminal activity (Madensen & Eck, 2008).

The application of routine activity theory to the study of violence in bars and clubs demonstrates its explanatory power on a micro level. Research suggests that people who attend bars and clubs as part of their usual routine are more likely to be victims of assault than those who do not engage in these activities (Clarke *et al*., 1985; Miethe,

Stafford & Long, 1987; Kennedy & Forde, 1990; Budd, 2003). For motivated offenders of bar crimes, the status of a nightclub or bar patron as a 'potential target' can quickly change to the more suitable status of 'vulnerable target,' as the effects of alcohol take hold and reduce the patron's ability to escape perpetrators, or defend themselves or others. Vulnerable targets of bar violence in particular, are often individuals that are more intoxicated and physically smaller than the perpetrator, being of similar or younger age (Homel & Tomsen, 1993).

In holiday destinations such as Surfers Paradise, tourists are typically the most vulnerable target group with few friends or family with them to play the roles of guardian or handler. According to Chesney-Lind and Lind (1986, cited in Kelly, 1993, 8), tourists are considered vulnerable because they are:

> not known in the local community; they are often highly visible because of their appearance and behaviour; they may unwittingly visit places which local community members consider risky; and they may indulge in risk-taking activities such as drug purchases or accepting the company of strangers, a practice possibly contributing to the high rates of rape victimisation amongst tourists.

Nevertheless, research suggests that tourists would gain little from having friends present in the case of bar violence, as they rarely play the role of guardian or handler (Felson, 1987; Graham & Wells, 2003; Felson, 1993; Felson, Ribner & Siegel, 1984). According to Felson (1987), the likely scenario involves motivated offenders venturing to bars and taverns without responsible intimate handlers, although a 'designated driver' may play this role. Further research suggests that friends of those involved in bar violence often become involved themselves or encourage the violence (Graham & Wells, 2003; Felson, 1993). Similar observations were also made by Felson, Ribner and Siegel (1984), who found that through their encouragement, third parties can influence the severity of violence.

Bar violence offenders are motivated for a number of reasons. Graham and Wells (2003) offer four main explanations: 1) honour or making an impression; 2) dispute-related, established through a past or present grievance with the target; 3) emotional or impulsive response; and 4) entertainment. In their interviews with bar room fighters, the two most frequently cited explanations were fighting for honour/making an impression and for entertainment, fun and excitement. More recently, Graham *et al*. (2010) have

added compliance (in the form of coercion) as an explanation for bar violence. These findings build on Richard Felson's[2] social interactionist approach, which suggests that aggressive actions are motivated by a desire 'to compel and deter others, to achieve a favourable social identity, and to obtain justice, as defined by the actor' (Felson, 1993, 104). These motives make it difficult or unlikely for friends and those socialising with the victims and offenders to play the role of informal regulator.

According to Felson (1993), third parties often fail to act as guardians or handlers in situations of dispute-related violence because they view the violence as a valid means to an end, and by encouraging the violence, they also encourage the upkeep of a tough social image. Furthermore, friends typically support violence in bars because people often associate with others who have similar beliefs and expectations. However, Levine (2002) suggests that whilst in most cases friends will view the violence as justified, there are some exceptions. Friends are prone to adopt the handler role when the violence is likely to embarrass or tarnish the reputation of the group. Also, intervention in violence or escalating behaviour is dependent on how warranted friends believe the violence to be. Roncek and Maier (1991) findings suggest that third parties can fail to act as guardians or handlers simply due to poor internal social controls that are largely affected by crowding. When aggression escalates, crowding may result in what is often described in the psychology literature as the bystander effect (Latane & Darley, 1968). In a crowded nightclub or bar, a friend's feelings of obligation to intervene can be diminished due to the assumption that other bystanders will intervene.

In addition to friends, bar staff can act as handlers in a bar setting. In fact, they are in the unique position of being able to act in all three crime controller roles (Graham *et al*., 2005). Bar staff act as representatives of the place or as duty managers of the bar, enforcing house rules and legislation. Like bouncers, they can take the role of protecting the victim by acting as a guardian, or they can act as handlers in the case of well known 'regulars,' for example.

[2] Unless specified, all other 'Felson' references refer to Marcus Felson.

2. 3 Routine Activity of Place

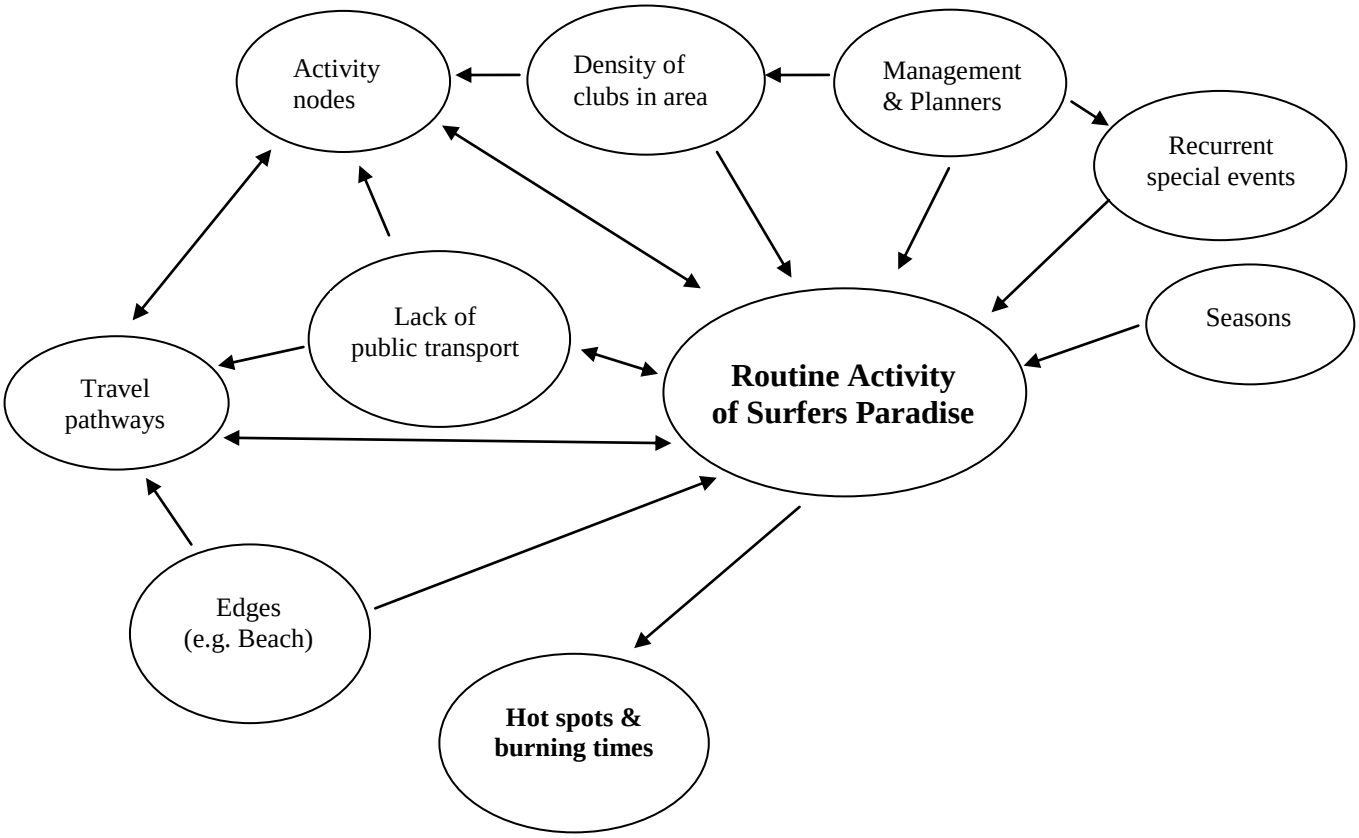


Figure 2.2: *Hypothesised model for Study A focusing on routine activity of place*

Segment one of the hypothesised model represents the interactions between the key factors to be addressed in Study A. Using place as the unit of analysis when applying routine activities theory is not a new approach. According to Sherman, Gertin and Beurger (1989) the importance of place is frequently underestimated, particularly in relation to predatory stranger crimes such as bar violence. 'Places, like persons, can be seen to have routine activities subject to both formal and informal regulation' (Sherman *et al*., 1989, 33). The routine activity of place can, but does not necessarily, result from the cumulative routine activities of individuals.

Routine in the entertainment district of Surfers Paradise is generated by seasonal characteristics, local events, licensing regulations, local government initiatives (e.g. the 3am lockout) and urban planning. These factors influence club and bar closing hours, the location of public amenities and taxi ranks, the flow of consumers through the area,

and peak tourist seasons. They also influence (and are influenced by) the availability of formal guardians and handlers in the area, a factor that significantly affects the ability of the area to host social events such as 'Schoolies' (discussed in chapter one). Local and State Government Planners and the Liquor Licensing Division can influence the density of clubs in a given area, alcohol availability, how public and private spaces are used, and how formal guardians and handlers respond to crime and violence opportunities. All of these factors influence the likelihood of specific spaces and places becoming hot spots, and create burning times when violence and disorder peak.

2. 3. 1 Activity Nodes, Travel Pathways and Edges

One concept that is pertinent to understanding crime and violence in Surfers Paradise is Brantingham and Brantingham's (1993b) notion of activity nodes. Activity nodes are within a person's awareness space (to be discussed later in this chapter) and are places that are at the centre of high levels of activity (i.e. people congregating). These nodes are frequently a part of daily activity patterns. Brantingham and Brantingham (2003b) suggest that offenders search for suitable targets within their own routine activity nodes and along their main travel pathways.

The ebb and flow of revellers can impact on public transport and the length of taxi queues, as can nightclub closing times. The concentration of individuals at certain places and times can create nodes of social activity, adding to the complexity of an area's routine. Whilst the use of major pathways adds to this routine, they can also play a role in generating activity nodes and vice versa. These pathways and nodes are inter-related with the issue of transport and are frequently affected by the edges of an area, be that natural (e.g. beach) or artificial (e.g. highway).

2. 3. 2 Hot Spots and Burning Times

When crime clusters in space and time it creates what are commonly known as crime 'hot spots' (Brantingham & Brantingham, 1999). Sherman describes hot spots as 'small places in which the occurrence of crime is so frequent that it is highly predictable' (1995, 36). Routine activity theory is often adopted to explain the creation of hot spots, by describing the components necessary for crime to occur, with particular attention paid to the important role of those that discourage and control crime.

Bars themselves can be deemed hot spots as in Sherman, Schmidt and Velke's (1992) study, in which over half of the violent bar incidents in Milwaukee were concentrated in only 12% of the city's bars. Their study of Kansas City produced similar results with 10% of city taverns accounting for over half of the city's violent tavern incidents. In Sydney, Australia; Homel and Clarke (1994) reported similar findings, with approximately 20% of the 46 bars studied accounting for over three quarters of the violent incidents that occurred. Last drinks data collected by Newcastle police in Australia has also provided insight into the concentration of violence in a minority of clubs and pubs (Considine *et al*., 1998). Results showed that from over 400 licensed venues, four premises accounted for a large majority of alcohol-related incidents (not all specifically violent). Eck, Clarke & Guerette (2007) suggest that as a general rule, 20% of facilities are responsible for 80% of crime.

Hot spot mapping of alcohol-related incidents and harms in entertainment districts can improve the ability to target problematic venues (Doherty & Roche, 2003; Wiggers, 2007), a process recently proven effective when applied across the state of New South Wales (NSW) (to be discussed later in this chapter). According to the U.S. National Research Council Committee to Review Research on Police Policy and Practices (2004, 35), 'a strong body of evidence suggests that taking a focused geographic approach to crime problems can increase the effectiveness of policing'. Part of the effectiveness of hot spot targeting can be attributed to the strong stability of crime at certain places over time (Weisburd, Telep & Braga, 2010).

The stability of hot spots over time suggests that there is something about the physical and/or social environment of those hot spots that causes crime to concentrate. Eck, Clarke and Guerette (2007) have advanced the concept of hot spots by explaining why some places or types of place are hot spots, or risky facilities. They suggest five considerations when attempting to understand risky facilities:

- Random variation: the distribution of crime is by chance, resulting in hot spot instability over time. Therefore, stability of the ordering of locations over time in a risky facilities analysis indicates hot spots are not due to random variation.

- Reporting processes: the distribution of crime across space can be impacted by the methods that place management use to detect crime, and their willingness to report it. Police descriptive reports can give an indication of place managements' willingness to detect crime, detain offenders and contact police. Police reports also provide information on the involvement staff (e.g. bouncers) in crime.
- Targets: Venues with more targets are more likely to generate crime than venues with fewer targets. This may be due to the size of the venue (larger places with have more targets), the quality of the targets, and the risk of repeat victimisation.
- Offenders: Venues that attract more offenders or highly active offenders are more likely to experience crime. Proximity to other high crime locations can also put a venue at risk.
- Place management: Management have a direct influence over various aspects of the physical and social environment. They can influence bouncer behaviour and management of problematic patrons, the service of alcohol, and the entertainment. High risk facilities may have ignorant place managers, face high crime prevention costs, have owners or staff that profit from criminal activity in the venue (eg. drug dealing), and have low accountability.

A consideration of these factors can lead to risky venues being categorised as either crime generators or crime attractors. Crime generators are specific places that attract people for non-criminal reasons, but create opportunities for crime through the social environment (Brantingham & Brantingham, 1999). Examples of crime generators include bars and entertainment districts. On the other hand, crime attractors are places that have features that attract offenders specifically for the purpose of committing crime (Brantingham & Brantingham, 1999). Bars and entertainment districts can also be crime attractors, but only if they have a reputation for being so (Graham & Homel, 2008).

When crime clusters around particular times of day and days of the week due to the routine activities of place, 'burning times' are created. For example, research shows that arrests in entertainment districts peak directly after closing times (Briscoe & Donnelly, 2001; Marsh & Kibby, 1992). 'Disorder is directly related to the sudden increase in

density of (mainly) young people in the streets and public areas at these times' (Marsh & Kibby, 1992, 155). At closing times, it is inevitable that the routine activities of bars and bar users will cause a time-based convergence of potential targets and motivated offenders. Lingering has been shown to be associated with aggression frequency and severity (Berkley & Theyer, 2000), particularly after closing (Graham *et al*., 2004) which may result in burning times. Factors that encourage closing-time crowds to linger are a lack of public transport together with sidewalk seating and late-night food outlets (Berkley & Theyer, 2000).

Studies in Australia have shown mixed results in the effects of public transport availability in entertainment districts on the likelihood of aggression (Homel & Clark 1994; Hauritz *et al.,* 1998). However anecdotal evidence suggests that a lack of public transport can encourage other illegal and risky behaviours. There have been a number of anecdotal reports in Surfers Paradise of illegal taxis run by motorists in their own private cars, a problem also experienced in the beachside entertainment district in Newcastle (Page, 2009).

The term 'burning times' can also apply to months of the year that experience high levels of crime. For Surfers Paradise, these months are likely to be summer months, when temperatures peak and highly publicised local events occur. Dexter's 1904 study on the effects of weather on monthly assault and battery rates analysed close to 40,000 cases in New York City. Findings showed a clear association between monthly assault rates and average monthly temperature. Dexter concluded that 'temperature, more than any other condition, affects the emotional states which are conducive to fighting' (143). More recent research by Anderson, Bushman and Groom (1997) supports this conclusion, suggesting that rates of violence are highest in summer months. Moreover, the number of hot days (over 90° F or 32° C) is directly related to the magnitude of this summer effect. These findings are of particular relevance to a beachside district such as Surfers Paradise, where the climate is sub-tropical. According to the Australian Government Bureau of Meteorology (2010), between 1992 and 2009, the temperature at the Gold Coast reached over 30 degrees celsius an average seven days per summer month (December, January and February).

During these months the Gold Coast, particularly in beachside suburbs such as Surfers Paradise, is inundated with local and international tourists and beachgoers. It is also during and around these summer months that major special events occur (such as Schoolies, Indy Grand Prix, National Surf Life-Saving Competitions and World Pro Surfing Competitions), filling certain beachside suburbs to their capacity. Routine activity theory suggests that the attraction of the beach and special events at the Gold Coast (particularly Surfers Paradise) during the summer season increases the numbers of motivated offenders and vulnerable targets without the presence of responsible handlers and guardians, thereby creating opportunities for victimisation.

2. 3. 3 Density of Clubs in Area

Block and Block (1995) through geospatial mapping were able to demonstrate that whilst isolated venues can be considered hot spots for assaults, so too can neighbourhoods with a high concentration of clubs and liquor outlets. Findings from Lipton and Gruenewald's (2002) study on the spatial dynamics of violence and bars suggest that neighbourhoods with high concentrations of bars also have high levels of assaults. Similarly, Roncek and Maier (1991) found a strong correlation between the number of bars and taverns per city block and crime rates for various types of personal and property crime. More recently, Pridemore and Grubesic (2010) found positive relationships between the spatial density of assaults and the density of off-premise outlets, bars and restaurants (with alcohol outlet types tested in separate models).

Results of Livingston's (2008a) longitudinal study on liquor outlets in Melbourne, Australia suggest that over time, the number of liquor outlets in the city play a significant role in the number of recorded assaults. More specifically, the study found the number of licensed outlets to have a non-linear accelerating effect on assaults, with the increase in licenses between 1996 and 2005 resulting in as many as 690 extra alcohol-related assaults per year. These results suggest that when bars and clubs are clustered together in highly populated public spaces, this can result in the entertainment district itself being viewed as a hot spot for violence and disorder. This is particularly the case in Surfers Paradise Central Business District (CBD).

2. 4 Routine Activity of Individuals

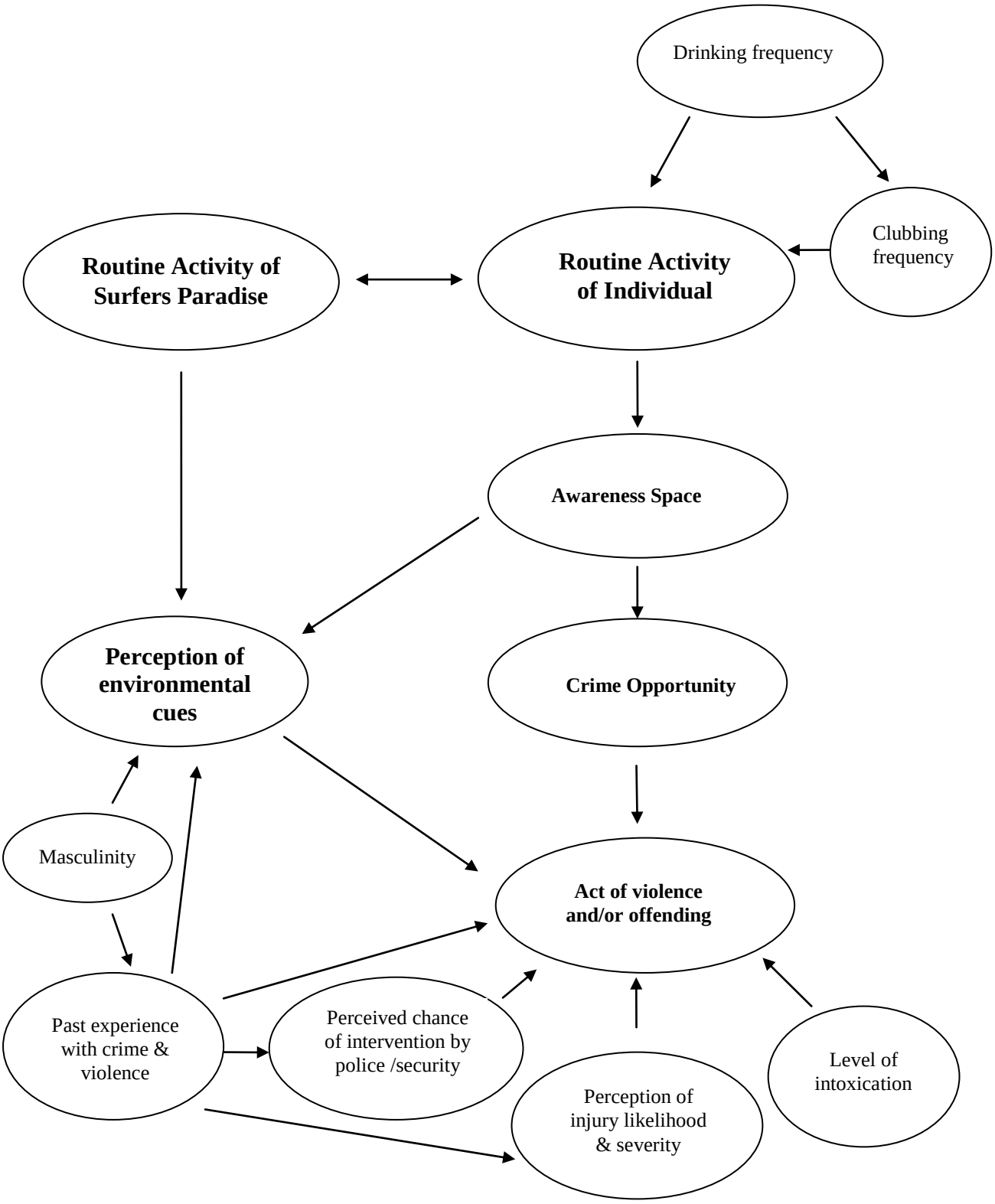


Figure 2.3: *Hypothesised model for Study B focusing on routine activity of individuals*

Segment two of the model (Figure 2.3) represents the interactions between the key factors associated with the routine activity of individuals, the focus of Study B. The idea that the routine activity of everyday life creates opportunities for crime is applicable to many crimes, particularly those of a predatory nature. When applying routine activity theory to bar violence, the routine of the individual is strongly influenced by how frequently they go clubbing as well as how frequently they consume alcohol. An individual's routine activity in turn dictates their awareness space. Their awareness space then determines the opportunities for committing crime or violence. How an individual uses and interacts within an awareness space, as well as how famliar they are with the space influences how they perceive the environments within that space.

The routine activity of places and individuals both directly or indirectly influence how users perceive the licensed environment. Little is known about how environmental cues are interpreted by an individual, leading them to crime or violence. 'In a behavioural setting, the discriminative stimuli will include aspects of the physical environment and aspects of the social environment, but will also extend to non-visible aspects in terms of the behavioural rules which we have learned through our socialization' (Cassidy, 1997, 47). Of relevance to this area of research are those alcohol-violence relationship theories that help us understand how individuals perceive the physical and social bar environment, and how these perceptions affect their decision making.

When a crime opportunity presents itself, the individual must make a choice. According to routine activity theory, this decision is made rationally. This decision however is influenced by a number of factors such as one's past experience with crime and violence, the perceived chance of apprehension by the police and/or security, the perception of injury likelihood and severity, as well as the consumption (and availability) of alcohol.

2. 4. 1 Awareness Space and Crime Opportunity

An individual's own travel routes and the activity nodes they visit, including home, work, or other places as part of their routine activity, make up their activity space. According to Brantingham and Brantingham (1993b, 10), an awareness space is a space of familiarity, that 'builds upon the activity space and its associated places'. Within an offender's awareness spaces are spaces of opportunity, spaces where they are likely to

converge with what they perceive to be suitable targets, without effective guardianship, handler or place manager.

An awareness space varies by individual as well as various demographic groups. Those individuals with a more detailed and broader spanning awareness space in a particular area are more likely to offend than those with limited awareness spaces (Brantingham & Brantingham, 1993b). This is related not only to an offender's confidence in their knowledge of an area but also the increased number of crime opportunities they will be presented with. Crime pattern theory suggests that crime is most likely to occur in locations where one's awareness space and opportunity spaces overlap (Brantingham & Brantingham, 1993a), and offenders are supplied with potential targets. In essence, the theory suggests that the physical environment has a significant influence on an individual's crime patterns. Research by Cromwell, Olson and Avery (1991) found that this is particularly the case with robberies.

2. 4. 2 Clubbing Frequency

Broad awareness spaces may not only be associated with increased likelihood of offending but are also likely to be associated with increased risk of victimisation. This is particularly the case with nightclub or bar violence, as research shows that individuals that frequently go clubbing as part of their routine (potentially expanding their awareness space in doing so), are also more likely to be victims of assault than those who go clubbing less frequently (Clarke, Ekblom, Hough & Mayhew, 1985; Miethe, Stafford & Long, 1987; Kennedy & Forde, 1990; Budd, 2003).

2. 4. 3 Act of Violence and/or Offending

Once there is opportunity to commit a crime such an assault, a number of factors can contribute to a criminal act. Alcohol-related aggression is due to a combination of: 1) the effects of alcohol; 2) individual characteristics or expectations that influence the willingness to be aggressive whilst drinking; 3) a drinking environment that favours aggressive behaviour, and 4) a broader cultural environment that tolerates alcohol-induced aggressive behaviour (Graham, Wells & West, 1997; Graham & Homel, 2008).

As stated above, individual characteristics play a role in a person's willingness to be involved in incidents of an aggressive nature. According to Cornish and Clarke (2003),

different types of offenders react to or seek opportunity to offend in different manners. Those involved in bar fights would most likely be classified as a provoked or situational offender, whose offending is not pre-meditated, but is a reaction to provocation, irritation or impulse (Graham & Homel, 2008). Whilst not as likely, evidence suggests that Cornish and Clarke's (2003) two other types of offenders are also present in licensed environments (Graham & Homel, 2008). In a bar setting, antisocial predators are those individuals who would create their own opportunities for pre-meditated violence whilst mundane or opportunistic offenders would be considered those individuals who take any opportunity or excuse to start a fight.

2. 4. 4 Environmental Cues in Bars and Nightclubs

According to Wortley (2002, 57), there are four general ways in which situations can precipitate behaviour. Situational cues can: i) prompt antisocial behaviour; ii) exert social pressure to misbehave; iii) reduce self-control and permit behaviour that individuals would otherwise self-censure; and iv) produce emotional arousal that provokes violent behaviour.

Situational cues typically associated with aggression and crime in nightclubs include poor bar design and layout (Marsh & Fox-Kibby, 1992), bar untidiness (Graham *et al.*, 1980; Homel & Clark, 1994), discomfort due to crowding and poor ventilation (Homel, Tomsen & Thommeny, 1992; Geen, 1990; MacIntyre & Homel, 1997; Quilgey, Kenneth & Collins, 2003; Graham *et al*., 2004), queuing (Graham & Wells, 2001; Graham *et al.*, 2004), extreme bar staff, management and bouncer attitudes, including permissive or authoritarian (Homel & Tomsen, 1993; Graham & Wells, 2003), heavy drinking (Graham & Homel, 2008), and young males (Homel, Tomsen & Thommeny, 1992) who are strangers or near strangers (Pernanen, 1991). Some of these environmental factors will now be explored.

Bar Design

The physical attractiveness of a bar can suggest appropriate dress, beverages one should consume (e.g. wine or cocktails versus mixers or spirits) and rate of beverage consumption. 'Walk into any pub and immediately you sense an 'atmosphere' of the place – the kind of people who use it, the patterns of behaviour and social interaction which you expect to take place inside – even if the pub is empty' (Marsh & Fox-Kibby,

1992). According to Marsh and Fox-Kibby (1992), bar design accounts for approximately 15% to 20% of all violence in bars. The major design issues thought to contribute to violence include layout (which can affect surveillance), restriction of flow, décor and colour schemes that are too multi-faceted and complex, unsuitable lighting and designs that encourage discomfort due to noise, heat or furnishings.

Furthermore, bars that are clean and tastefully decorated are significantly less likely to experience violence when compared to dirty, cheaply decorated bars (Graham *et al*,. 1980; Homel & Clark, 1994). Leather and Lawrence (1995) also found untidy bars to influence people's perceptions of bar violence. Like 'broken windows', physical signs of decay can send strong messages that an area goes unmonitored and is uncared for, encouraging further disorder (Wilson & Kelling, 1982). In the case of bars, this further disorder may be heavy drinking, rowdy behaviour and possibly violence.

Queuing, Crowding and Temperature

Crowding, invasion of personal space and ventilation are other features that have been found to significantly affect bar aggression and are directly related to the comfort of patrons (Homel, Tomsen & Thommeny, 1992; Geen, 1990; MacIntyre & Homel, 1997; Quilgey, Kenneth & Collins, 2003). In Toronto, peak crowding in the bar was found to be directly related to the frequency of aggression (Graham *et al*., 2004), whilst in Glasgow, it was not associated with frequency of aggression but severity (Forsyth, Cloonan & Barr, 2005). Entry queues are also common places for aggression to occur (Graham & Wells, 2001; Graham *et al*., 2004) with severity of aggression found to be related to queues (Graham *et al*., 2004).

As discussed earlier in the chapter, research shows a positive linear relationship between temperature and aggression. Negative affect theory (Berkowitz, 1983) suggests that this relationship is true, even when all other factors such as time of day are controlled for (Bushman, Wang & Anderson, 2005). Rising body temperatures on the dance floor and in crowded areas, can cause room temperatures in nightclubs to rise. There is limited research specific to aggression in a bar or club environment, but findings of those that have studied warm temperatures suggest a relationship between warm temperatures inside bars and aggression (Homel *et al*., 1997; Hauritz *et al*., 1998; Quigley, Leonard & Collins, 2003; Roberts, 2007).

Bar Staff, Bouncers and Management

The attitudes of staff and management towards heavy drinking (e.g. promotions to encourage drinking, responsible service of alcohol), drink pricing as well as the behaviour of bouncers and bar staff play an important role in situations of alcohol-related violence (Homel & Tomsen, 1993). As stated by Graham *et al.* (2004, 31), 'bars can be risky places, due partly to untrained or violent bar staff'. Permissiveness by bar staff can also contribute to an atmosphere that encourages violence (Graham & Wells, 2003). Furthermore, bar staff are often offenders themselves, particularly when they are facing those patrons that are either non-aggressive, or patrons at the other end of the spectrum, who are acting in a highly aggressive manner (Graham *et al*., 2005).

In Roberts' (2006) study on aggression in New Jersey bars, the absence of security staff was found to be the number one predictor of violence. Security staff can use their position to demonstrate house rules or their own personal level of tolerance, to make beneficial rather than costly decisions. It is this high level of personal discretion often combined with poor training and an aggressive nature that can lead to bouncers being involved in or instigating fights with patrons (Homel & Tomsen, 1993). This is not surprising considering that 'many security staff do not behave in a manner that discourages aggression or sets up nonviolent norms' (Wells, Graham & West, 1988, 829).

Support for the idea that the presence of bouncers is positively associated with aggression can also be found in observational research conducted in Sydney, Australia (Homel & Clark, 1994), Surfers Paradise, Australia (Homel *et al*., 1997), North Queensland, Australia (Hauritz *et al*., 1998), Buffalo, United States (Quigley, Leonard & Collins, 2003) and Toronto, Canada (Graham *et al*., 2004). Fox and Sobol (2000) found effective bouncers were also effective guardians, with their presence being associated with lower levels of sexual predation and disorder in bars. However, the relationship between bouncer friendliness and the likelihood of aggression is more ambiguous. While research in Sydney (Homel & Clarke, 1994) and Surfers Paradise (Homel *et al*., 1997) suggest there is no correlation, Hauritz *et al.* (1998) found there was a positive relationship between unfriendly bouncers and physical aggression in their North Queensland intervention studies.

Research does suggest that slight differences in a bouncer's image can create considerable differences in how they are perceived. 'There are both crude and subtle differences in manner, style and dress between what might be described, colloquially, as the two 'schools of thought' on 'running the door', i.e. 'meet and greet' versus 'smash and bash'' (Leather & Lawrence, 1995, 397). In their study on perceptions of bar violence, photos of male bouncers on the door of a pub were perceived by university students (participants) as making the environment 'unfriendly,' 'tense,' 'threatening' and 'unwelcoming' (400).

'Safer Bars' is a three hour training programme developed by Graham and colleagues aimed at providing bar staff, manager and bouncers with the knowledge and communication tools to effectively indetify and manage situations of aggression. A pre-post evaluation found a significant reduction in severe and moderate aggression (Graham *et al*., 2004).

Entertainment

Good entertainment can often slow the rate of drinking and create atmosphere. Choice of music can also aid in creating a certain atmosphere. As stated by Malbon (1998, 271), music has the ability to 'create atmosphere (an emotionally charged space) which is of crucial importance, for it is largely this atmosphere that the clubbers consume'. A dance floor offers youth similar freedoms. Dancing is one way to release one's self from social restrictions and norms that apply to everyday social spaces. However, whilst dancing offers these opportunities, it is also a risk factor to violence (Quilgey, Kenneth & Collins, 2003). The dance floor is a place where violence can easily be provoked by bumping into others and sexual competition.

Competitive activities such as pool playing are also associated with violence (R. Felson *et al*,. 1986; Graham & West, 2001; Quilgey, Kenneth & Collins, 2003) In fact, pool playing alone is estimated to be the source of approximately 20% of violence in bars (Marsh & Fox-Kibby, 1992), spurred by unclear rules of turn-taking and the game itself, as well as other patrons walking through or interrupting the game.

Patron Characteristics

As expected, it is the young age bracket that has now become a crucial predictor of bar violence (Marsh & Kibby, 1992; Forsyth, 2006; Graham *et al*, 2004; Felson, Baccaglini & Gmelch, 1986; Homel, Tomsen & Thommeny, 1992). Further studies have shown participants in bar aggression to be single males (Borges, Cherpitel & Rosovsky, 1998; Brismar & Bergman, 1998; Homel, Tomsen & Thommeny, 1992) who are often strangers or near strangers (Pernanen, 1991). In addition, intoxication of both parties involved is often a pivotal factor in alcohol-related violence (Graham & Homel, 1997).

Most international studies that have examined the proportion of male patrons and female patrons in bars have found there to be no relationship with aggression (Quigley, Leonard & Collins, 2003; Graham *et al*., 2004; Roberts, 2007; Forsyth, Cloonan & Barr, 2005). Nevertheless, research in Glasgow found a significant relationship between a high proportion of female patrons and the severity of injuries from incidents of violence (Forsyth, 2006). A high proportion of female patrons was also found to be associated with more police intervention (Forsyth, 2006). Conversely, Homel and Clarke (1994) found a greater proportion of male patrons to be significantly related to higher rates of aggression.

Furthermore, research suggests that the presence of women can be a violence prevention measure in bars. Women can act as a moderator with regards to the amount of alcohol consumed by males (Homel & Tomsen, 1993). Women in mixed groups or with their male partners often act as pacifiers in comparison to male associates, who are less inclined to become involved in disputes (Homel & Tomsen, 1993).

2. 4. 5 Perceptions of Environmental Cues

According to Cassidy (1997, 13), environmental perception refers to ‘how we actually perceive the context in which we live with its rich interplay of social and physical elements’. The process of developing perceptions of the environment is explored in Neisser’s (1976) cyclical model of perception, which shows both ‘bottom-up’ and ‘top-down’ processes (Figure 2.4). ‘Bottom-up’ refers to those theories which focus on how the environment directly influences our perceptions, whilst ‘top-down’ refers to those theories which focus on how past experiences influence our perceptions. These ‘bottom-up’ and ‘top-down’ processes are important in understanding the relationship between

perception, cognition and behaviour, an area that according to Brantingham and Brantingham, (1993b, 11) is ‘under researched in environmental criminology’.

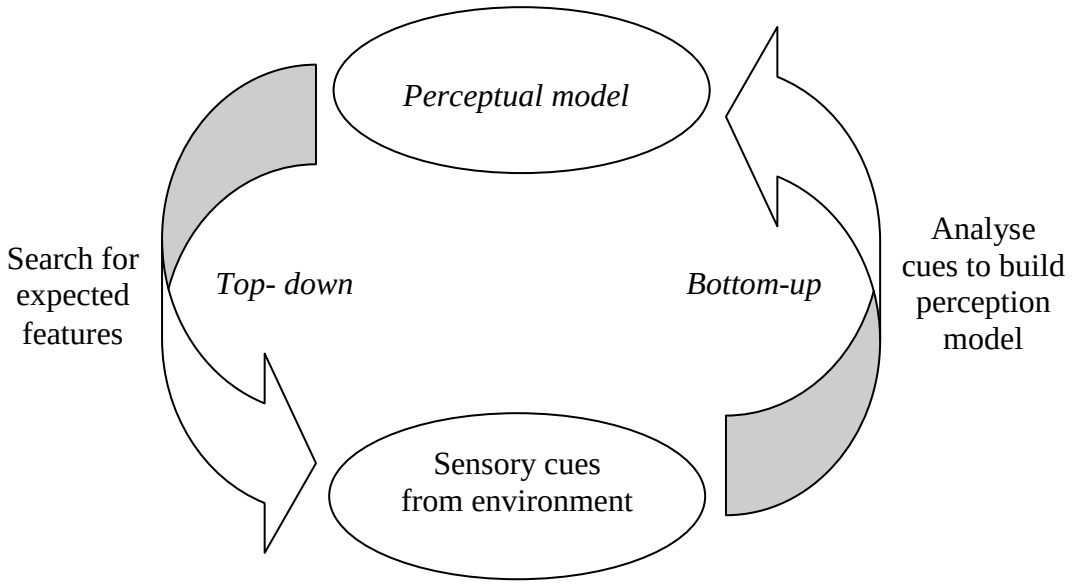


Figure 2.4: Neisser’s (1976) cyclical model of perception.

This relationship in a bar room context has been explored in the current project’s hypothesised model (Figure 2.1). It is suspected that in entertainment districts such as Surfers Paradise, there are several factors that may influence one’s involvement in violence or offending, including the perceived likelihood of intervention by police and/or security and the individual’s perception of how likely it is that they will be injured and if so, the severity of the injury. According to Neisser’s (1976) cyclical model of perception, these perceptions are shaped by the immediate situation in conjunction with past experiences within any nightclub or entertainment district setting. For example, understanding the role that prior fight experience plays in perceptions of the bar environment, employs the top-down approach. In a bar setting, one ‘may hunt for or produce cues that make a crime more or less likely to occur’ (Brantingham & Brantingham, 1993b, 6-7).

Some noteworthy studies on the topic of perceptions in bar environments are those of Leather and Lawrence (1995; 2003). In their 1995 study, vignettes with photos and scene descriptions were used to manipulate three factors in the scenario: the presence of

bouncers, the tidiness of the bar and the intervention strategy used by the place manager in the event of the escalation of aggression. Findings suggested that one's opinions of a bar and the likelihood of violence there, is strongly influenced by perceptions of the social and physical bar environment. Participants viewed bouncers as a symbol of violence and anticipated violence when they were present. Furthermore, place managers that employ bouncers were also viewed as more aggressive than those that did not, even when they kept a tidy club. The presence of bouncers had a significant negative effect on the overall atmosphere of the bar, making unruly behaviour such as queue jumping more accepted by users, particularly in an untidy bar.

Bar untidiness was also seen to create a 'broken windows' effect, increasing the expectation of violence, creating an unfriendly atmosphere and reflecting negatively on the perceptions of the place manager. It was not until the bar was untidy and bouncers were present, that users preferred the place manager to use the physical intervention strategy. A general relationship was established between the presence of bouncers, an untidy bar and the use of a physical intervention strategy by place managers in an incidence of violence. In particular, a combination of these features was found to lead to negative perceptions of the place manager and the pub, the assault against the place manager by a patron and a general expectancy to see violence at that pub.

In their 2003 study, Lawrence and Leather highlighted the need for the perceptions of those creating and managing the bar space to complement the perceptions of the users of the bar space. Using the same methodology that they had used in 1995, Lawrence and Leather arrived at some interesting findings that demonstrated the clear differences between user and place manager perceptions. Whilst bouncers had a negative impact on users' perceptions of the bar and the atmosphere, place managers viewed bouncers in a positive light. Moreover, possibly due to their experience in such situations and 'insider's knowledge' the place managers were more likely to view the incident of violence as preventable. Bar users preferred place managers to 'fight fire with fire' in a negative environment (Lawrence and Leather, 2003, 1811). Place managers on the other hand always preferred the non-physical intervention strategy, possibly in an attempt to show that place managers should always stay calm and in control. Overall, the disparity between user and place manager expectations of when violence should be used has

ramifications for how place managers are perceived by users, particularly with regard to their ability to effectively manage heated situations and deal with problematic patrons.

According to Henshel and Silverman (1975), the decision to commit a criminal act is based on one's situational perceptions, suggesting that criminals and non-criminals interpret environments and cues differently. The work of Wright, Logie and Decker (1995) demonstrated that burglars (compared to non-burglars) are significantly more attentive to environmental cues that are directly related to successfully robbing a house. This finding supports the rational choice perspective.

Rational Choice Perspective

The rational choice perspective focuses on what motivates and deters an offender and the decision-making process that they undertake when considering committing a criminal act. A potential offender is considered to think strategically, making a rational decision after weighing up the risks and benefits (Cornish & Clarke, 1986). Offenders primarily make their decision on the basis of how achievable the goal is in a given situation. Research on the decision making of street criminals for example, demonstrated that street criminals were significantly more realistic than non-criminals in their assessment of an area and its likelihood of being a crime target (Carter & Hill, 1978). Moreover, street criminals were more likely than non-criminals to make rational choices regarding crime targets.

Whilst this perspective has had a strong following, it has also had a number of critics. Tunnell's (1990) work found that criminals rarely assess situations realistically or rationally, seldom thinking about the risks. 'They simply believed they would not get caught and refused to think beyond that point' (681). In their assessment of street robbers, De Haan and Vos (2003) found that the rational choice perspective failed to accommodate many of the subjective emotions that were experienced, such as impulsiveness, moral questioning and shame. The work of Graham and Wells (2003) on bar violence found that alcohol consumption was often reported by young male interviewees as contributing to their own impulsive behaviour.

Furthermore, risk-taking is often associated with drinking establishments (Graham & Wells, 2003). In essence, the words 'risk-taking' suggest that risks and benefits have not

been fully considered, or their consideration has not resulted in a rational decision. As stated by Graham and Homel (2008, 34), 'the assumption that intoxicated offenders are 'rational'. . . is often questionable'. Participants of Graham and Wells' (2003) study were often unable to properly assess, when initiating bar violence, the potential disadvantages such as injuries or retribution. Immediate rewards such as heroism and long-term rewards such as the ability to retell fighting stories were frequently overemphasised. 'Many respondents clearly enjoyed telling their 'war stories' and often the stories were actually amusing…due to their level of intoxication' (Graham & Wells, 2003, 560). Steele and Josephs (1990) describe this near-sightedness as 'alcohol myopia.' They argue that an intoxicated individual's behaviour is due to an interaction between this myopia and situational cues. Such findings support the argument that alcohol impairs cognitive functioning, leading to a breakdown of the rational decision making process.

2. 4. 6 Masculinity

A number of studies indicate that masculinity plays a role in bar aggression (Tomsen, 1997; Graham & Wells, 2003; Anderson, Daly & Rapp, 2009). According to Graham and Wells (2003), the desire to show masculinity (also associated with saving face) is a key motivation for bar aggression. Anderson, Daly and Rapp's (2009) study confirmed that young males often use nightclubs and bars as an avenue to exhibit masculine behaviours. Furthermore, young males who exhibit their masculinity through the pursuit of girls, being competitive and heavy drinking are more likely to be regularly involved in nightclub crime (Anderson, Daly & Rapp, 2009).

2. 4. 7 Drinking Frequency and Intoxication Levels

The consumption of alcohol and the effects it has on cognitive functioning is one of the key contributors to aggression in bars (Graham, Wells & West, 1997). In a recent English study (Hughes *et al*., 2008), youths were surveyed on their drinking and fighting experiences when out in an entertainment district in the 12 months prior. The results showed that those considered heavy drinkers (reported drinking over 20 standard drinks on a usual night out) were 2.5 times more likely to have been involved in a fight during this time period. A US study by Greenfield *et al*. (2010) found that the risk of being involved in a bar fight increases significantly when drinking ten or more standard drinks in one session. These results have direct implications for countries with a similar

drinking culture such as Australia, where the visitation of bars and clubs is embedded in many young people's routines, particularly working class men (Homel & Tomsen, 1993). In fact, Australian statistics suggest that alcohol consumption by young adults is on the rise. Moreover, between 1995 and 2005, alcohol consumption at risky or high risk levels for young adults aged 18 to 24 increased significantly (ABS, 2006). According to Livingston's study (2008b), much of the recent increase in presentations to hospital for 16 to 24 year olds is due to an increase in the number of cases with acute intoxication.

Alcohol-related Injuries and Injury Perception

One of the most common problems stemming from the consumption of alcohol in bars and clubs is that of preventable intentional and accidental injuries (Shepherd & Brickley, 1996; Stockwell *et al*., 2002; Watt, Purdie, Roche & McClure, 2006). The consumption of alcohol significantly increases the risk of injury (Stockwell *et al*., 2002; Watt, Purdie, Roche & McClure, 2006), with this risk increasing with as little as two drinks (Vinson, Maclure, Reidinger & Smith, 2003). This is particularly the case for those aged 18 to 25, which is the group that consumes the highest level of alcohol and consists of individuals who are most likely to experience alcohol-related injuries (National Health and Medical Research Council, 2009).

Heavy drinking in bars and clubs is significantly related to the likelihood of being injured in episodes of violence (Shepherd & Brickley, 1996; Stockwell, Lang & Rydon, 1993) and increases the severity of injuries (Shepherd, Shapland & Leslie, 1988; Leonard, Collins & Quigley, 2003). Research shows that head and facial injuries are the most prevalent injuries resulting from alcohol-related bar violence (Shepherd & Brickley, 1996). Furthermore, intentional injuries and injuries resulting from being struck by or against something, are means of injury found to be significantly related to licensed areas in comparison to other means of injury (Watt *et al*., 2006).

In Perth, Australia, presentation to an emergency room was found to be strongly related to drinking in bars, with assault rates dramatically increasing after the introduction of extended trading hours for licensed premises (Young *et al*., 2004). Emergency room presentations related to alcohol showed common trends, such as presentation between 12am and 4.59am on weekends with those injured often being young, unmarried males

(Young *et al*., 2004, 605). It is frequently the case however, that those injured in events of alcohol-related violence in and around bars and clubs do not present at Accident and Emergency Departments (Shepherd, Shapland & Scully, 1989), possibly due to a fear of apprehension or an inability to assess the seriousness of the situation at the time.

Whilst injuries may be trivialised at the time of acquisition, Graham and Wells (2003) suggest that fight injuries are often also trivialised long after the event. Results of their qualitative study suggest bar fight participants often perceived fight injuries to be a minor consequence of fights and in some ways, rewarding. Many participants reported that injuries added to their tough reputation and enhanced their fight tales. Their injuries were something to boast about, a medal of bravery.

2. 4. 8 Controlling Alcohol Availability

A number of the aformentioned findings on the relationship between alcohol consumption and assault and injury rates support Single's availability theory (1998). Availability theory suggests that as alcohol becomes more available in a community, consumption increases, leading to an increase in heavy drinkers, which in turn leads to an increase in alcohol-related health and social problems. The availability of alcohol can be regulated through two main avenues: physical availability and economic availability (National Drug Research Institute, 2007).

Volumetric Taxation

According to Stockwell *et al.* (1998), the consumption of beverages with high alcohol content sold at low prices is related to high levels of assault and injury. In a meta-analysis of 112 studies, Wagenaar, Solois and Komro (2009) confirmed a significant relationship between alcohol prices and taxes, and levels of consumption. A recent World Health Organisation (WHO) report by international experts on alcohol-related problems, concluded that young people's consumption levels are particularly affected by pricing, especially those that are considered heavy drinkers (WHO, 2007). Whilst the current alcohol taxation policy in Australia encourages cheap wine binge drinking (Stockwell & Crosbie, 2001), recent developments have led to the introduction of the alcopops tax, a tax on pre-mixed beverages aimed at curbing alcohol consumption by young people. An evaluation by Chikritzhs *et al.* (2009) suggests that the tax has had a

significant impact, decreasing overall sales with limited consumption displacement to beer and spirits.

Increasing alcohol taxes based on alcohol volume appears to be the best way to increase alcohol prices, with research suggesting it to be a good investment. Doran *et al*. (2008) have shown that volumetric taxation is the most cost-effective alcohol-related harm intervention when compared to a range of interventions such as increasing the local drinking age to 21. Summarising conclusions drawn by Babor *et al.* (2010), the National Alliance for Action on Alcohol (2010, 2) states that 'alcohol taxation, as a means of increasing the price of alcohol, is one of the most effective policy interventions to reduce the level of alcohol consumption and related problems, including mortality rates, crime and traffic accidents'.

Responsible Service of Alcohol Training

The responsible service of alcohol has been a widespread method used to reduce alcohol accessibility in Australia and overseas (Stockwell, 2001). As of January 2009, responsible service of alcohol training has been mandatory in Queensland for licensees and staff responsible for the supply and service of alcohol on licensed premises (Department of Employment, Economic Development and Innovation, 2010). Early evaluation studies on the effectiveness of responsible service of alcohol training suggest that such training can lead to a reduction in patron intoxication levels (Saltz, 1987; Russ & Geller, 1987). Such results have significant implications for alcohol-related violence, injuries and drink driving in and around bars. More recently, studies evaluating the responsible service of alcohol training have concluded that the training is most effective when combined with effective law enforcement (Stockwell, 2001; McKnight & Streff, 1994; Putnam, Rockett & Campbell, 1993; Lang *et al*., 1998; Warpenius, Holmila & Mustonen, 2010). One of the most successful examples of the effectiveness of reponsible service of alcohol training in reducing incidents of reported violence is the Stockholm Prevents Alcohol and Drugs Project (Wallin, Lindewald & Andréasson, 2004). Using two nearby districts, with one serving as a control area, the project involved a two-day course for bar staff, security and owners in responsible service and conflict management combined with new types of enforcement.

Restricted Operating Hours

Time-based crime prevention initiatives around the world have been trialled and implemented to combat burning times in and around nightclubs and entertainment districts. In Holland, free-closing experiments were conducted whereby licensed premises were given permission to trade at any time they desired (Marsh & Kibby, 1992), resulting in staggered closing times. Police, local officials, patrons and bar managers were all enthusiastic about the impact of the experiment. In Scotland, Iceland, and Ireland, the deregulation of licensing laws led to a number of negative consequences including higher rates of intoxication, alcohol related disorder, violence and injuries (Ellmers, 2003; Plant & Plant, 1995).

In 2005, changes to the 2003 Licensing Acts of England and Wales came into effect. These changes allowed for flexible trading hours, potentially 24 hours a day, 7 days a week. An evaluation by Hough and Hunter (2008) found that while most pubs extended their trading hours, most extensions were minimal. Contrary to expectation, there were limited changes to rates of violence and disorder, and alcohol consumption levels showed a small decline. However, the findings did suggest temporal displacement of crime and disorder.

In Perth, Australia, the extension of trading hours in some local pubs resulted in a significant increase in alcohol consumption and violence (Chikritzhs & Stockwell, 2002). Australian local governments have been using fixed closing times as a time-based intervention for the past decade. Commonly known as 'lockouts,' they 'involve local venues agreeing not to allow entry or re-entry to patrons at a particular time before the end of their approved trading hours' (Centre for Health Research and Practice, 2004, 12). Lockout patrons inside the venue at the lockout time are free to leave anytime before close or remain there until close. The lockout aims to:

> discourage patron migration ('pub crawls') and the excessive consumption of alcohol that results; prevent patrons ejected from one venue for rowdy behaviour from entering another; and control the movement of people, enabling police to target trouble hotspots at key times.
>
> (Arditi, 2008, 4)

The late 1990s saw the first major accords, goodwill agreements made between local licensees and local authorities. These accords were introduced in small towns and cities to specifically include a lockout. Queensland led the way, with localised lockouts occurring in small coastal towns and cities such as Mooloolaba and Mackay. Dubbo, a small rural town in the state of NSW also established a liquor accord that introduced a club entry curfew. (Centre for Health Research and Practice, 2004).

Since then, the lockout has been introduced in a number of jurisdictions across Australia with mixed results. In South Australia, licensees adhere to the lockout on a voluntary basis, which has resulted in limited employment of the initiative. In Melbourne, Victoria, a compulsory lockout was trialled in mid 2008. The trial faced a large anti-lockout campaign, with concern for the economic impact that such an initiative would have on smaller establishments, and the argument that lockouts 'unduly infringe on civil liberties by denying individuals a choice on the time they choose to enter a premises and their ability to drink freely' (Arditi, 2008, 4). The Victorian Government abandoned the policy after the three month trial.

One of the more successful initiatives that included a lockout was in the small city of Ballarat. The 'Operation Link: Be Safe Late Program' (OLBSL) was introduced in August 2003 and is one of only two evaluations of lockout programmes in Australia. After the first 12 months of implementation, the programme showed a 40% decrease in recorded assaults and a 47% decrease in recorded property damage for residential properties. During this time period recorded property damage to licensed premises increased by 25% (Centre for Health Research and Practice, 2004).

Overall the programme appeared to be very successful, but there were many limitations. The intervention not only included the lockout, but also involved increased lighting around the venues and increased police resources and presence through a 'Target Patrol Group' (Centre for Health Research and Practice, 2004). It is difficult therefore to make a direct connection between the lockout and the reduction in assaults. This link is also difficult to establish when there is no control site without the lockout to compare the outcomes. In addition, a time series analysis indicated that offence rates started to decrease six months prior to the implementation of the program. A survey of key stakeholders revealed a frequent opinion, particularly amongst club owners, that the

lockout played a limited role in decreasing violence and that the programme overall had little impact on crime rates (Centre for Health Research and Practice, 2004). Taxi drivers reported frequent dealings with angry, intoxicated individuals after lockout time (Centre for Health Research and Practice, 2004). This suggests that the lockout had produced a new burning time, lockout time.

In Newcastle, a beachside industrial city of comparable population size to the Gold Coast, public pressure to reduce alcohol-related violence, property damage and disorderly behaviour led the NSW police to lodge a complaint to the Liquor Administration Board in mid 2007 (Jones *et al*., 2009). The board responded by restricting the operating hours of 14 pubs in the CBD and introducing a 1am lockout. Licensees were also subject to a number of other conditions aimed at reducing alcohol accessibility. These included adopting a plan of management, undergoing independent compliance audits and having a responsible service of alcohol officer on duty from 11pm until close. Licensees had to agree to being part of a radio network with security and management of the other pubs. Furthermore, from 10pm onwards limits were placed on the types and amount of alcohol beverages patrons could be served. These limitations included: no serving of shots, no serving of mixed drinks containing more than 30mls of alcohol, no serving of pre-mixed drinks stronger than 5% alcohol by volume, no sale of more than four drinks per patron, no sale of alcohol 30 minutes prior to close, and in addition, water had to be readily available on the bar. Licensees were also responsible for ensuring patrons did not stockpile drinks (Jones *et al*., 2009).

Using a comparable control location, Kypri *et al.* (2011) evaluated the effectiveness of these liquor licensing restrictions, and showed a reduction of 37% in the number of assaults in the Newcastle CBD. As with the Ballarat programme, it is difficult to attribute the success of the initiative to the lockout considering all the other strategies that restricted alcohol accessibility and improved self-regulation and liquor licensing law enforcement.

Whilst the Newcastle intervention is a good example of effective responsive regulation, the success of the intervention came at a devastating financial price for many of the local hoteliers. According to an online ABC news report, nine of the 14 hotels went into receivership within two years of the intervention being introduced and the combined

value of these hotels reduced by approximately $22 million. Furthermore, the intervention resulted in a 25% reduction in the combined workforce of the hotels (ABC, 15 March 2010).

Around the same time that the Newcastle intervention came into effect, the top 100 licensed hot spots for assaults in NSW were identified in a publication by the NSW Bureau of Crime Statistics and Research (BOCSAR). Following extensive publicity, the State's Premier imposed license restrictions on the top 48 venues. Similar to the Newcastle intervention, these license restrictions included a 2am lockout. Other strategies aimed at reducing injury risk and alcohol accessibility were also introduced. These strategies included the cessation of alcohol 30 minutes prior to closing, and a number of restrictions that came into effect at midnight, namely the use of plastic or polycarbonate glasses for the service of beer, no sale of shots, drink purchase limits and ten minute alcohol sale time outs every hour (Moffatt *et al.*, 2009).

An evaluation by Moffatt *et al.* (2009) concluded that targeting problematic venues was an effective approach to reducing rates of violence. However, declines in violence occurred across not only across the 48 venues with restrictions but across all 100 publically listed premises, and appeared to have started when the top 100 list was made public, and not when the licence restrictions were imposed (nine months later). Again, the introduction of numerous strategies at the same time makes it difficult to isolate the impact of the lockout itself. Interestingly, these results suggest that publicly 'naming and shaming' problematic licensed premises, a tactic discussed by Graham and Homel (2008), can be a powerful strategy in triggering the self-regulation of licensees.

The Gold Coast lockout evaluation (Palk, Davey & Freeman, 2010) is the only evaluation to date, which examines the effects of the lockout as a stand-alone strategy. Using a pre-post design, the researchers found that in the five weeks following the lockout introduction, crime incidents more than doubled compared to the four weeks prior. However, there did appear to be a non-significant reduction in alcohol-related incidents as a proportion of total incidents. This evaluation had many limitations including the simplistic analyses, the lack of a control area as well as inclusion of the long Easter weekend (a peak time for local tourism in the Gold Coast).

2. 5 Thesis Outline

Methods and results of Study A will be presented in chapters three, four, five and six, and aim to answer the following research questions:

1. What are the environmental dynamics of alcohol-related violence and injuries in the Surfers Paradise entertainment district?

a) Is alcohol-related violence clustered at certain times and places to create hot and cold spots?

b) How do these hot spots relate to known features of the physical and social environments?

2. How do data contributions made by agencies other than police affect our understanding of the spatial and temporal dynamics of alcohol-related violence and injuries?

3. How has the introduction of the 3am lockout affected the spatial and temporal distribution of alcohol-related violence and injuries as reported by the agencies contributing to the database?

The literature presented in this chapter has included a review of time-based situational crime prevention initiatives such as a lockout or staggered closing times. The review demonstrates the limited evidence available regarding the impact of the lockout and the benefits it may provide to Australian entertainment districts. Chapter three presents the methods for the temporal and spatial analyses of crime and violence in the Surfers Paradise catchment area. Thirty-six months (July 2003 until June 2006) of Queensland Police data (n=5655) are used in the analyses. Hot spot maps are used to represent spatial changes in crime and violence distribution over time in and around nightclubs and bars in Surfers Paradise. Modified hot spot maps representing a stable three month period each year are used to demonstrate spatial changes in hot spots before and after the lockout introduction. Time series analyses are used to investigate the likelihood that seasons, special events and the introduction of the 3am lockout are significant predictors of variation in total crime rates on weekdays and weekends and total violence rates on weekdays and weekends.

Chapter four presents the results of the Queensland Police spatial and temporal data analyses. Temporal and spatial crime and violence patterns are explained by drawing on knowledge of the Surfers Paradise physical and social environment, as well as the literature. A risky facilities analysis and typology is conducted.

Chapter five presents the methods for the Queensland Ambulance data analysis (also Study A). Thirty-one months of data (n=1733) from December 2003 until June 2006 are studied. Time series analyses are used to investigate the likelihood that seasons, special events and the introduction of the 3am lockout are significant predictors of variation in rates of total calls for assistance, head and neck injuries, assaults and intoxication on weekdays and weekends.

Chapter six presents the results of the time-series analyses for Queensland Ambulance data and the integrated dataset. The impact that the 3am lockout has had on the need for Ambulance services will be discussed as well as the differences in temporal patterns in recorded assaults across agencies. Times at which people call for assistance, and assault, injury and intoxication patterns are explained by drawing on knowledge of the Surfers Paradise physical and social environment, as well as the literature presented in the chapter on the persistent contributors to violence and injuries. A risky facilities analysis is again conducted. A descriptive analysis of the integrated police and ambulance assault dataset provides an indication of the cross-over between the agencies and the potential benefits of data sharing.

Study B aims to answer the following research questions:

4. How do bar users perceive social and physical environmental cues in entertainment venues?

5. Do the perceptions of bar fight participants differ from those of non-participants?

Chapter seven presents the methodology to answer these questions, drawing on methodology used in Leather and Lawrence's studies (1995;2003) on bar user and management perceptions. Study B identifies the influence that three experimental variables (bouncer friendliness, patron sex composition and room temperature) have on young male bar users' (n=681) perceptions of the likelihood, frequency and fear of

crime in hypothetical bar room settings, as well as the user's willingness to drink in such a venue and the perceived severity of injuries if an assault were to occur. Study B also identifies the role that prior bar fight participation and masculinity play in how bar users perceive the three environmental cues and the hypothetical bar room setting in general. Information on participants' clubbing and drinking habits is included in the analysis.

Chapter eight presents the results of Study B. Participant responses to questions on demographics, the experiment, their drinking and clubbing habits and the Snell Masculinity Scale are discussed. Results of a 2 x 2 x 2 randomised independent groups factorial design with covariates are presented. This design shows whether the mean ratings for the perceived fear of crime, likelihood of crime, frequency of crime, willingness to drink in hypothesised bar and perceived severity of injuries for each scenario group were different after accounting for prior bar fight participation and masculinity. Results of a binary logistic regression showing the behavioural and attitudinal risk factors for fight participation are also presented.

The final chapter presents a discussion of the research findings. This discussion is presented in the context of the project's research questions. Explanations of research findings draw on theoretical and empircal research presented in this chapter as well as local knowledge of the Surfers Paradise physical and social environments.

CHAPTER 3

Methodology: The Temporal and Spatial Patterns of Police-Recorded Crime and Violence in Surfers Paradise

This chapter discusses the methods used to study the impact that the routine activity of Surfers Paradise has on the spatial and temporal patterns of crime and violence, according to Queensland Police data. Segment one of the hypothesised model (Figure 2.1) presents a number of key empirical and theoretical concepts that have been considered.

The methodology includes time series regression and hot spot mapping, allowing for a comprehensive understanding of the relationship between the complex environment of an entertainment district and crime in the area over time. The time series regression uses month as the unit of analysis. It examines the influence of three independent variables on weekend and weekday crime and violence rates. These three independent variables are key concepts from the hypothesised model that influence the routine activity of Surfers Paradise and therefore theoretically, may influence patterns of crime and violence. These three variables are seasons, special events and the lockout introduction.

Advantages of a time series regression over simple pre-post comparisons include its ability to take into account changes over time that are naturally occurring, whilst also taking into account regression effects. Furthermore, because it incorporates a series of data pre- and post-intervention, it allows for a more statistically valid and powerful analysis of the impact of interventions such as the 3am lockout, in comparison to other pre-post design options.

Hot spot mapping is used to display spatial patterns of crime in Surfers Paradise CBD over the three years. Hot spots maps have been chosen as part of the analysis because they 'allow for easier interpretation of crime clusters and reflect accurately the location and spatial distribution of crime hot spots' (Eck *et al.*, 2005, 28). Place and time-based displacement of crime can be recognised in hot spot maps. A risky facilities analysis (Clarke & Eck, 2007) is also conducted to add context to hot spot locations and to relate their risk to the physical and social environments. In later chapters the patterns of crime,

violence and location as well as patterns of displacement are explained, drawing on the key empirical and theoretical concepts in segment one of the hypothesised model.

3.1 Research Questions to be Addressed

This chapter will present the methodology used to address research question one and its sub-questions as well as research question three:

1. What are the environmental dynamics of alcohol-related crime, violence and injuries in the Surfers Paradise entertainment district?

a) Is alcohol-related violence clustered at certain times and places to create hot and cold spots?

b) How do these hot spots relate to known features of the physical and social environments?

3. How has the introduction of the 3am lockout affected the spatial and temporal distribution of alcohol-related violence and injuries as reported by the agencies contributing to the database?

The results of this study are presented in chapter four. With the omission of question one's sub-questions, these same questions are also addressed in chapters five and six through the analysis of ambulance data and the integrated dataset.

3.2 Procedure

3.2.1 Approval

Ethics approval was obtained from the Griffith University Human Ethics Committee for obtaining, using and storing the police data. Approval for data acquisition was then requested and received from the Queensland Police Commissioner. Meetings were held with Queensland's Assistant Police Commissioner and a Police Data Analyst to discuss the nature of the study and data required.

3.2.2 Data Collection

The dataset received from the Queensland Police Service consisted of 7201 recorded offences (or alleged offences) committed between 1st July 2003 and 30th June 2006. Only specific classes of offences that occurred within the chosen catchment area were requested and included in the dataset received. The catchment area was the same as that identified in the 'Keeping Surfers Safe Project' (McIlwain 2004) as the Central Business District of Surfers Paradise. As discussed in chapter one, specific boundaries were Ferny Avenue/Remembrance Drive, The Esplanade (the beach), Clifford Street and Elkhorn Avenue.

The following classes of offences were included in the dataset (summarised in Table 3.1): good order, offence against justice, assault, liquor offence, use of force (police use of oleoresin capsicum spray on offender), robbery, rape/sex offence, weapons offence, other against person, drugs and homicide. The database included all notifications of these offences, including offences for which police had charged offenders, or offences reported by witnesses or victims for which charges were dropped or no charges laid due to lack of evidence or withdrawal of statements. The status for each offence was therefore listed as one of the following: cancelled, solved, unsolved, not substantiated or withdrawn. Whilst many of the good order offences and offences against justice were solved due to being witnessed by police, offences such as assaults, robberies and sexual assaults were often unsolved. Assaults as well as reports of indecent assault or rape were also frequently withdrawn. The charge categories presented in Table 3.1 will be discussed in more detail in chapter four.

*Table 3.1***:** *Lists of charges and counts from QPS data (July 03 – June 06)*

Overall Category	Class	Count
Good Order	Disorderly behaviour	801
	Indecent behaviour	228
	Obscene, insulting, offensive, etc., language	179
	Offences against good order (other)	13
	Public Nuisance Offences	2623
	Good Order total	**3844**
Offence Against Justice	Bail Act (breach)/fail to appear	3
	Disobey a move on direction	324
	Escape lawful custody	2
	Police Service Administration Act offences (other)	1
	Resist arrest, incite, hinder, obstruct	1565
	Offence Against Justice total	**1895**
Assault	Assault, police (Police Powers Responsibilities Act)	246
	Assault occasioning bodily harm	436
	Assault, common	139
	Assault, minor (other)	6
	Assault, serious (other)	79
	Assault occasioning grievous bodily harm	37
	Driving causing grievous bodily harm	1
	Wounding	20
	Assault total	**964**
Liquor Offence	Consume liquor in public place	24
	Liquor Act offences/other liquor offences	163
	Offences by licensed victuallers	1
	Underage persons found on licensed premises	1
	Liquor Offence total	**189**
Use of Force (OCS)	Police Use of Force (oleoresin capsicum spray)	99
	Use of Force (OCS) total	**99**
Robbery	Assault with intent to steal	1
	Demand property with menaces with intent to steal	1
	Robbery, armed	22
	Robbery, unarmed	30
	Robbery, unarmed, in company	40
	Robbery total	**94**

Rape/Sex Offence	Assault with intent to commit rape	2
	Att. Rape	2
	Indecent assaults on adults	15
	Indecent treatment of children	1
	Rape	39
	Sexual assaults (other)	2
	Sexual offences - consent proscribed (other)	1
	Sexual offences (other)	2
	Unlawful carnal knowledge	1
	Wilful obscene exposure	14
	Rape/Sex Offence total	**79**
Weapons Offence	Possession/use of dangerous article, other weapon	23
	Weapons Act offences (other)	1
	Weapons Offence total	**24**
Other Against Person	Armed so as to cause fear or alarm	6
	Other Against Person total	**6**
Drugs	Drugs offences (other)	1
	Possess and/or use dangerous drug	2
	Possess things for use, or used in the administration, consumption smoking of a dangerous drug	1
	Drugs total	**4**
Homicide	Att. Murder	1
	Conspiracy to Murder	1
	Murder	1
	Homicide total	**3**
Total Charges		**7201**

Good order offences represented approximately half of all offences. The majority of these good order offences were classed as disorderly behaviour or public nuisance offences, the later being the most common class category. Offence descriptions suggest that charges falling under both these class categories are often the result of problematic alcohol-fuelled behaviour. Resisting arrest was the second most common class category, present in one in four incidents. This is not surprising, considering that resisting arrest is highly related to arrestee intoxication and the presence of other forms of arrestee

violence (Kavanagh, 1997). Police descriptions of incidents support these findings, showing the charge to be a common secondary charge when the offender was intoxicated, resisting arrest for a charge of violent behaviour and/or disorderly conduct. Further, it was not uncommon for intoxicated friends of those being arrested to attempt to reason with police or help their friend escape arrest, rendering them offenders through obstruction of justice.

Table 3.1 shows only one charge over the three years for 'offences by licensed victuallers' and one charge of 'underage persons found on licensed premises, possess and/or consume liquor on licensed premises'. With approximately three quarters of all crime incidents involving alcohol and such a minimal number of liquor offence charges against licensees, there appears to be an alcohol management problem in Surfers Paradise for which licensees are rarely held accountable. These figures support the previously discussed findings of Lang, Stockwell, Rydon and Beel (1998), who concluded that without major incentives, bars owners and staff are highly unlikely to value and demonstrate responsible serving practices after responsible service of alcohol training. In the case of Surfers Paradise, it appears that the same outcome is likely when there are no major disincentives or deterrents such as the application of the law against licensees.

Table 3.1 shows only four drugs charges over the three years, however police report descriptions in the dataset discuss the possession of drugs in over 71 cases. In many of these cases individuals were charged with public nuisance and/or obstruction of justice. Drugs (often marijuana) were found on the individual whilst processing them for one or both of these offences. The lack of drugs use/possession charges has done little to deter drug use in the late-night district, which according to McIlwain (2004), has become a serious problem in Surfers Paradise. Figures in Table 3.1 also suggest that there were relatively few rape or sex offences. However, unlike many of the other crimes in the dataset, most recorded rapes rely on the victim reporting to the police. According to Taylor (2006), more than half of all rapes are not reported. Considering this finding and the 39 reported rapes over the three year period, it is possible that rape incidents in Surfers Paradise CBD actually occur as frequently as once per fortnight.

Further, all of the 'indecent assault on adult' charges were described as incidents of groping or overt fondling in the police descriptions. Research suggests that whilst this type of behaviour is seen as harassment in other environments, uninvited groping and grinding against strangers is behaviour often engaged in by men and experienced by women, particularly in singles bars (Huber & Herold, 2006). This type of behaviour is a common occurrence in nightlife districts, but the low number of indecent assault on adult charges suggests that it is an accepted feature of such environments. Huber and Herold's surveys of young female bar users (2006) found that whilst most women did not see these overt sexual behaviours as acceptable, they did not view them as harassment, which suggests that most women in this unique environment view men behaving illegally as just men behaving badly.

In addition to obtained police data, a cadastral map of Surfers Paradise was sourced from Gold Coast City Council. Hot spot mapping requires a cadastral map of some form. Cadastral maps provide graphical indices of land parcels in a given region, showing the relative location of parcels on a scale that generally ranges from 1:500 to 1:10,000:

> Large scale diagrams or maps showing more precise parcel dimensions and features (e.g. buildings, irrigation units, etc.) are often prepared by cadastral surveys for each parcel based on ground surveys and aerial photography. Information in the textual or attribute files of the cadastre, such as land value, ownership, or use, can be accessed by these unique parcel codes shown on the cadastral map, thus creating a complete cadastre.
>
> (Williamson & Enemark, 1996, 39).

Cadastral maps serve different purposes in different jurisdictions. For example, whilst in many European countries cadastral systems were originally used for land taxation purposes, in Australia, they were designed to assist the land market and support the rights of individual land owners (Williamson & Enemark, 1996). These local demands have resulted in 'a cadastral system that is basically a title registration system supported by isolated cadastral surveys of individual parcels' (45).

3.2.3 Data Preparation

Data was prepared for three types of analyses: time series regression, hot spot mapping and risky facilities analyses. It is important to note that the database was a list of offences and not incidents (events). It was decided that the data would be better

represented as the latter. This is because the factors surrounding events such as serious assaults are diverse, resulting in varying numbers of offenders involved and in turn, varying numbers of charges or reports made. For example, one serious assault at the Surfers Paradise Tavern may involve three offenders assaulting one victim, with all offenders being charged for assault causing bodily harm, two offenders being charged with resisting arrest and two onlooking friends being charged with obstruction of justice. In effect, a total of seven recorded charges would be made in relation to one incident. Meanwhile, another serious assault at Surfers Paradise Surf Lifesaving Club may result in the same injuries caused by one offender who is charged with assault causing bodily harm. Therefore, this hypothetical incident would result in one recorded charge. Consequently an analysis of these two offences would result in Surfers Paradise Tavern appearing to be more dangerous than Surfers Paradise Surf Lifesaving Club, particularly when represented as a hot spot map. Whilst this would be suitable for projects interested in the likelihood of offenders offending at particular places, it is not appropriate for this project which is using hot spot mapping to show the likelihood of a crime event occurring at a particular place. The data reduction process is explained in more detail below.

Time Series Regression

Data preparation for time series analyses involved the cleaning, matching and coding of data. Initially, the offence-based Excel dataset was cleaned. Four charges under the 'bail act (breach)/fail to appear' and 'indecent treatment of children' classes were removed as they were not directly related to disorder or crime in and around nightclubs. A small number of offences were also removed because their location was outside of the catchment area. Further, uniform names for offence locations were created due to frequent misspellings or abbreviations used in street names and specific locations such as shops and nightclubs.

The offence-based Excel dataset was then converted to an incident-based SPSS database. This involved matching offences to the same offender for the one incident and matching various offenders to the same incident. Specific criteria used to merge various charges into one incident included at least three of the following: time of incident, place of incident, incident description, name of arresting officer(s). Overall, this process reduced the database from 7201 charge listings to 5655 distinct crime incidents. This

dramatic reduction suggests that a single incident may include a number of offences and possibly more than one offender.

Extensive coding of qualitative descriptive reports on each incident (sometimes an agglomeration of various offence reports) was then conducted. These reports were coded into a number of new variables, created to make best use of the valuable information. During this recoding process all charges that fell under the classes 'public nuisance offences' or 'disorderly behaviour' were recoded as 'general public nuisance' (for cases with no further descriptive information), 'disorderly conduct' (such as intoxication or sleeping on a street bench), 'obscene language' (a pre-existing category in the police dataset), 'urinating in public,' 'littering,' 'assault' or 'aggressive behaviour'.

A new assault variable included recoded disorderly behaviour and public nuisance charges, as well as police charges of affray, common or serious assault, wounding, assault occasioning bodily harm, grievous bodily harm and assault against a police officer. Furthermore, two injury variables were created from the police descriptions. The first injury variable was related to the location of the injury on the body. The second injury variable recorded the level of seriousness of the injury. Levels were ranked from most serious to least serious, including death, major injury (such as loss of consciousness, loss of teeth, broken bones), minor injury (such as abrasions and bruising), as well as unknown. These two variables were repeated in the database to gather extra information on injuries in the case of multiple injuries or more than one injured party. Information on the most serious injuries in each incident was always listed in the first set of injury variables. The creation of these injury variables required a considerable amount of information to be given in the police reports. It is therefore likely that the number of assault incidents that resulted in injuries is an underestimate.

If enough information was given in the descriptive report, liquor act offences were also frequently recoded as 'assault' or 'aggressive behaviour'. Aggressive behaviour was a recoding variable used for offences in which the description of the incident suggested that the individual(s) was involved in some type of brawl or was at high risk of being involved in an assault by talking or acting aggressively in public or acting in a threatening manner with intent to provoke fear. The 'assault' variable was used for more

definitive cases. Table 3.2 below presents two examples from the police dataset of typical cases that required recoding as an assault or as aggressive behaviour.

Table 3.2: Example offence category recodes from police data

Case 1 – Assault recode

Recorded charge: public nuisance offence

Police description:
'Behave in violent manner, obstruct police. Offender was seen from Gold Coast camera room to be one of three males attacking another male in the street (no assault complaint forthcoming). The offender then decamped and was later picked up by police. During the arrest process the offender obstructed police by struggling and trying to walk away. The offender had to be restrained and transported to the police post'.

Recode: One incident involving three cases of assault and one case of obstruction of justice.

Case 2 – Aggressive behaviour recode

Recorded charge: disorderly behaviour

Police description:
'Police observed the male person in a violent and agitated state punching a phone booth. Actions were observed by several other witnesses who originally informed police of the offender's aggression level'.

Recode: One incident involving one case of aggressive behaviour.

A violence index was created to identify incidents in which violent or aggressive behaviour was displayed. Incidents involving violence or aggression were coded '1' and the remaining non-violent incidents were coded '0'. Violent crime incidents were defined as those which included at least one charge of: an assault against a police officer, assault occasioning bodily harm, common assault, minor assault, serious assault, assault occasioning grievous bodily harm, wounding, armed robbery, assault with intent to steal, assault with intent to commit rape, indecent assault on adults, rape, sexual assault, possession or use of dangerous article (other weapon), armed so as to cause fear or alarm, murder and attempted murder. It also included the new variables 'assault' and 'aggressive behaviour'. Table 3.3 shows the process of creating the violence index whilst preserving recoded categories and initial police charge categories.

Table 3.3: Police charge and recoded variables included in the violence index

Police charge	Recoded variable	Index
Assault against police officer Assault occasioning bodily harm Common assault Minor assault Serious assault Wounding Assault with intent to steal Assault with intent to commit rape *Relevant* disorderly behaviour *Relevant* public nuisance *Relevant* liquor act offence	Assault	Violence Index
Relevant disorderly behaviour *Relevant* public nuisance	Aggressive behaviour	
Assault occasioning grievous bodily harm	Assault occasioning GBH	
Armed robbery	Armed robbery	
Indecent assault on adults Rape Sexual assault	Rape / sexual offence	
Possession or use of dangerous article, other weapon Armed so as to cause fear or alarm	Possession and/or use of weapon in public	
Attempted murder	Attempted murder	
Murder	Murder	

Unfortunately it is still likely that even after such a thorough recoding process, the number of incidents involving violent behaviour is an underestimate due to a lack of information in the police dataset descriptive reports. For example, there were many descriptive reports to the effect of 'disorderly on licensed premises'. Whilst it is likely that these cases were in fact incidents of violence, they are inconsistently recorded by police as liquor act offences or disorderly behaviour. Due to a lack of further information in such cases, the offence has been recoded as per the original charge.

Hot Spot Mapping

To prepare data for hot spot mapping, all incident locations gathered from the police data were geocoded to match the location names in the Gold Coast City Council

cadastral map of Surfers Paradise. For the geocoding and subsequent mapping to be successful, it was essential that spelling including the capitalisations of locations on both the cadastral map and the Queensland Police database was identical. Confusion between two major street names and counterpart names was addressed. Firstly, police had frequently mis-coded crime incidents on Remembrance Drive as occurring on Ferny Avenue (as the north end of Remembrance Drive becomes Ferny Avenue). Since Remembrance Drive runs for approximately 100 metres (within the catchment area) before becoming Ferny Avenue, all cases for Remembrance Drive were coded as Ferny Avenue, and changes were made to the cadastral map. Secondly, the section of the Gold Coast Highway that runs through Surfers Paradise is also known as Surfers Paradise Boulevard. Throughout the police data, this road was referred to as The Gold Coast Highway or Surfers Paradise Boulevard. Since the cadastral map listed the road as the Gold Coast Highway, all police database incidents occurring on Surfers Paradise Boulevard were recoded as occurring on the Gold Coast Highway.

Four other frequent and consequently time-consuming coding and spelling problems were identified: 1) the misspelling of locations in the police database and cadastral map; 2) some nightclub spaces on the cadastral map were listed as other clubs with the same owner; 3) franchises such as the convenience store 7-Eleven had numerous stores within the catchment area listed as the same name on the cadastral map; 4) street information listed per block of the street on the cadastral map, resulting in variations in the spelling, abbreviation and capitalisation of street names per block (e.g. Ferny Ave versus Ferney Ave versus Ferny Avenue).

Prior to rectifying these four problems, the option for automatic geocoding in the MapInfo programme was used. This process revealed the extent of manual geocoding that was required, as only 856 of the 5655 (15.1%) incidents were automatically matched between the two datasets. Each address in the police dataset that was not automatically geocoded was altered to match an address in the cadastral map. Changes were also made to the cadastral map to properly identify nightclubs and to individualise franchise stores. For example the three 7-Eleven stores were changed from having the same address of ‘7-Eleven’ to be listed as ‘7-Eleven Convenience Store 1’, ‘7-Eleven Convenience Store 2’ and ‘7-Eleven Convenience Store 3’.

After automatic and manual geocoding, there were 1384 (24.5%) incidents over the three years that had enough location specific information to be pin-pointed on a map and geocoded to 267 unique addresses. These incidents were predominantly incidents that related to the nightclub environment and included charges that related to violent behaviour, the consumption of alcohol, disorderly conduct, public nuisance and the obstruction of justice.

The 267 unique addresses included not only specific locations such as shops and clubs, but also street intersections and locations represented by polygons. These polygons were rectangles created on the cadastral map at specific locations, which were not recognised on the cadastral map by landmark or building but where crime had occurred according to the police dataset. This process essentially created specific points to which crime could mapped. For example, the main entrance to Surfers Paradise Beach (depicted in Figure 1.4) is a popular landmark for people to meet, and is therefore a major activity node, but is not identified on the cadastral map. By creating a polygon at that location on the map, incidents could be geocoded to that specific site and mapped.

A number of street addresses for nightclubs and bars were multi-level, with a maximum of four levels. For example, in the Mark Building on Orchid Avenue, the underground level housed many nightclub or bars including ‘The Party’. Directly above ‘The Party’ on ground level was ‘Cocktails and Dreams’, a two-level nightclub. Residing above these locations is the ‘Surf and Rescue Club’. Another multi-level building housing bars and clubs is located almost directly across the road from the Mark Building. This building accommodates ‘The Avenue’ bar and restaurant, ‘The Drink’ nightclub, and the ‘The Ruby Tramp’ (previously Bad Girls gentleman’s club) across three floors. Crime incidents in bars and clubs on different levels were geocoded to one location at their geographical coordinates to eliminate the complexity of mapping to more than one cadastral map. The risky facilities analysis (discussed in this chapter), allows for the identification of problematic venues(s) within multi-level buildings.

To utilise all incidents, the remaining cases (4271) with no specific address except for a street name, were geocoded to street segments producing 74 unique non-specific crime locations. To make use of data recorded for incidents occurring on Surfers Paradise

Beach, the beach was defined as a special location, represented as an elongated polygon along the beach, terminating at the catchment area borders.

Risky Facilities Analysis

In addition to hot spot mapping, a risky facilities analysis was conducted in accordance with the method suggested by Clarke and Eck (2007). This analysis involves ranking licensed venues with respect to the risk of violence. For the purpose of the analysis a licensed venue is defined as a location where either the sale of alcohol is an essential part of business (e.g. nightclubs and bar), the restaurant environment encourages the purchasing of alcohol (e.g. bar restaurants), or where beverages are sold other than beer and wine that have a high alcohol content (such as cocktails and spirits). These venues were determined not only by looking through police records, but also by conducting site visits of the Surfers Paradise CBD during the afternoon and evening. Furthermore, any venues on the Surfers Paradise cadastral map that may have been categorised as one of the above types of venues were investigated. This process resulted in 50 venues being looked into, four of which changed management and name during the three years.

3am lockout

No additional work was required to prepare data for the additional 3am lockout analyses. Data cleaned and recoded for the other three analyses was used. The 'start time' to the incident as recorded by police was used for temporal analysis.

3.3 Research Design

3.3.1 Analysis 1 - Time Series of Crime and Violence by Month

A preliminary graph of crime incidents using the police data was created (Figure 3.1). This graph suggests a number of considerations for a time series analysis and the selection of dependent and independent variables. A strong seasonal trend was evident for all crime incidents over the three years of data. It is highly likely that large peaks from October through to January each year were due to an influx of tourists for high profile events such as the Indy Grand Prix, Schoolies weeks, Christmas holidays and New Years Eve. In addition, between October and April a large numbers of tourists, holidaymakers and South East Queensland residents are drawn to the district to take advantage of the summer beach weather.

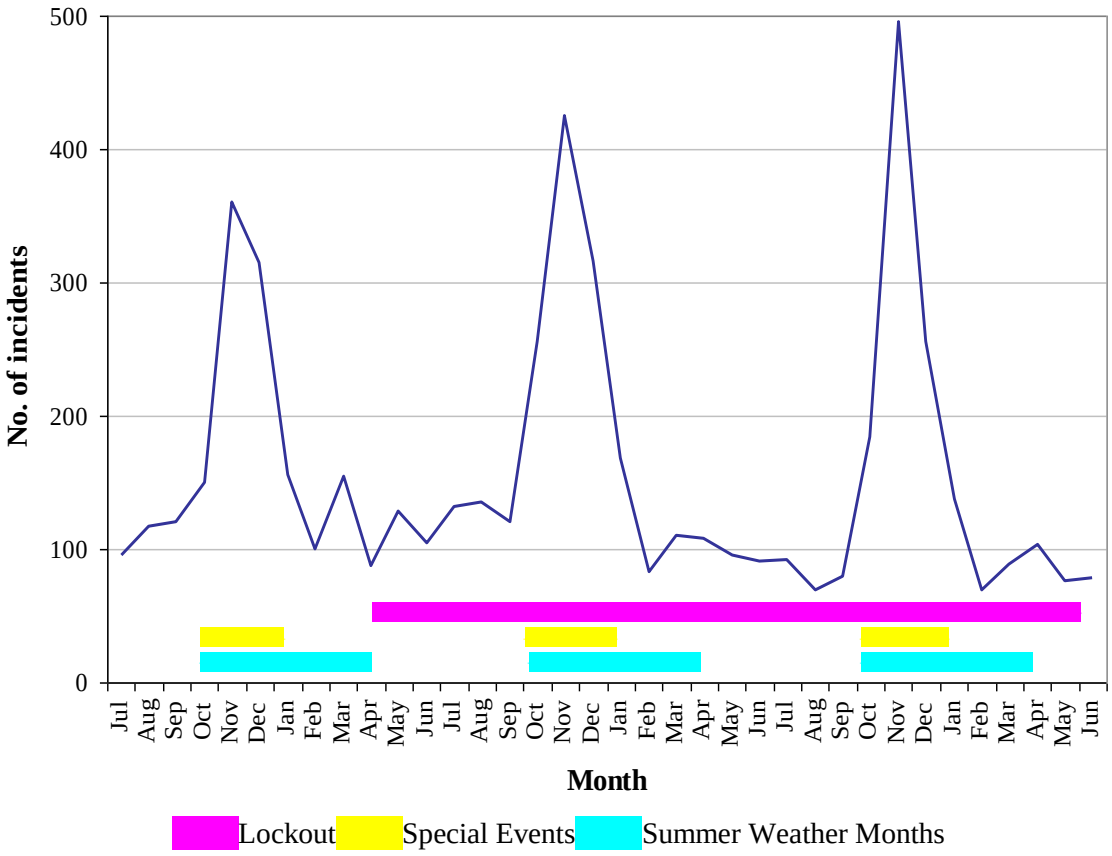


Figure 3.1: All crime incidents in Surfers Paradise CBD occurring from July 2003 to June 2006, indicating the introduction of the 3am lockout.

A time series analysis of the three years of data was conducted using STATA, with month being the unit of analysis. Due to the relatively small sample size of 36 months, a Prais-Winsten regression was performed. The Prais-Winsten test compared to others such as the Cochrane-Orchutt test, has the significant advantage of preserving all observations. A Durbin-Watson test statistic was calculated for each model to detect residual auto-correlation, which is suspected when the statistic falls under 1.60. A figure close to 2 indicates no auto-correlation.

One set of analyses was run for overall crime rates and another for violent crime rates. Each set of analyses included two time series - one for weekday (12 am Monday to 11.59 pm Thursday) and one for weekend (12 am Friday to 11.59 pm Sunday).Weekday versus weekend crime was used in an attempt to introduce a control (weekday periods).

Dependent Variables

Two dependent variables were examined: the rate of total crime incidents (5655 incidents), and the rate of total violent incidents (963 incidents) identified using the violence index. Rates were created to take into account the variation in the number of days per month and in particular, the variation in the number of weekends (Friday, Saturday and Sunday) per month (Appendix 1 and 2). Due to the two analyses, four sets of rates were created: 1) total crime incidents on a weekday divided by the number of weekdays in the month (WDTC); 2) total violent crime incidents on a weekday divided by the number of weekdays in the month (WDVC); 3) sum of the number of total crime incidents on a day classified as a weekend divided by the number of days on weekends in the month (WETC); and 4) total violent crime incidents on a day classified as a weekend divided by the number of days on weekends in the month (WEVC). These rates are summarised in Table 3.4.

Table 3.4: Rate calculations for four time series models – Police data

Divided by total	**Sum of**	
	Total crime	**Violence**
Weekday	Total crime/ Weekday	Violent crime/ Weekday
Weekend	Total crime/ Weekend	Violent crime/ Weekend

Independent Variables

Lockout

The first independent variable included in the analysis was a 'lockout' variable. The 3am lockout was introduced on 1 April 2004. Therefore, the months of July 2003 to

March 2004 represent ‘before lockout’ and were coded ‘0’, whilst April 2004 to June 2006 represent ‘after lockout’ and were coded ‘1’.

Special events

The second of the three independent variables was ‘special events,’ created to address the pronounced spikes observed in Figure 3.1. Those months in which a high profile event occurred were coded ‘1’. The remaining months of February through to September were coded ‘0’. High profile events include Indy Grand Prix racing in October, Schoolies in late November to early December as well as the Christmas holidays and New Years Eve in December and January.

Seasons

The third of the independent variables was ‘seasons’. Being a beachside district, the daily population in Surfers Paradise is strongly affected by the weather. In particular, the district experiences large influxes of tourists and South East Queensland locals during summer weather, which lasts from October through to April. Summer weather months were coded ‘1’ whilst the winter weather months of May through to September were coded ‘0’.

3.3.2 Analysis 2 - Hot Spot Mapping

CRIMESTAT III was used to analyse crime incident locations through the creation of hot spots maps. CRIMSTAT III is a spatial statistics programme that inputs crime incident locations using projected x and y coordinates and creates kernel density plots that are graphical data representations on a grid. Ratcliffe’s methodology for creating appropriate grid cell size (1999, cited in Chainey, 2005) was 150 columns across the shortest side of the minimum bounding rectangle. This methodology was used in this study, with the grid spanning a width of 918.9 metres. Using 150 columns equated to each grid cell covering 6.13 metres in width or 37.53 square metres. These figures seem appropriate for the current crime mapping application, which was a micro analysis of an entertainment district.

Once the kernel estimates had been calculated, the grid was interfaced with MapInfo, one of a number of suitable mapping programmes. In this case, it was overlayed on the

Surfers Paradise cadastral map, aligning both maps by using the x and y coordinates (Figure 3.2).

Figure 3.2: Cadastral map of the nightclub neighbourhood with 150 column grid overlayed.

The kernel density plots were produced using a number of different parameters including the method of interpolation, bandwidth and the number of grid columns. According to Chainey (2005, 26) 'interpolation aggregates points within a specified search radius and creates a smooth, continuous surface that represents the density or volume of crime events distributed across the area'. A quartic method of interpolation was chosen as its ability to create smooth results contributed to it providing the most visually appealing crime maps (Chainey, 2005).

Chainey, Reid and Stuart (2002) recommend a number of steps to creating statistically robust crime maps. These steps were followed as closely as possible in this study. The steps include applying the nearest neighbour analysis for clustering. Standard distances between points were calculated to provide a relative measure of dispersion. A nearest neighbour test was conducted for each point's 20 nearest neighbours, providing test selection guidance for continuous surface smoothing. A continuous surface map was

then created, following the recommendation to use the quartic kernel density estimation method. The K order mean nearest neighbour distances (calculated in the nearest neighbour test) were used for guidance in choosing appropriate parameters for the crime mapping application. The incremental mean approach was also used to set the grid cell thematic thresholds. As an advanced option, Chainey, Reid and Stuart (2002) advise the use of Gi*LISA statistic analysis, specifically for quartic kernel density, which adds definition to the surface of the map.

Moran's I test for clustering (spatial auto-correlation) could not be run as this test requires aggregate counts of point crime data, but the nearest neighbour analysis for clustering suggested that clustering was present. As a true boundary area was not an available option in the CrimeStat III programme, a bounding rectangle was used for the analysis. Nearest neighbour analysis results for all crime and all years as well as violent crime (according to the violence index) for all years are presented in Table 3.5.

Table 3.5: Nearest neighbour analysis results for all crime and violent crime in 2003-2004, 2004-2005 and 2005-2006.

Crime type and year	Nearest Neighbour Index	Z-score
All crime		
2003-2004	0.22	-28.35
2004-2005	0.18	-34.95
2005-2006	0.23	-29.08
Violent crime		
2003-2004	0.30	-.17.39
2004-2005	0.22	-22.30
2005-2006	0.35	-15.08

Nearest Neighbour Index has a range of 0 to 2.15. A nearest neighbour index of approximately one is indicative of random distribution, whilst values significantly greater than one are associated with a uniform pattern. Values substantively less than one indicate clustering. All nearest neighbour index values presented in Table 3.10 are

clearly below one, indicating clustering. The z-scores suggest that the nearest neighbour index scores are reliably different from zero, hence a very minimal chance that the point distributions are random. Based on searching for 20 points per cluster within a 10 metre radius, 9, 10 and 11 clusters were found for all crimes in 2003, 2004 and 2005 respectively, with a 10% likelihood that the grouping of pairs of points was by chance.

The bandwidth has the biggest impact on the visual representation of the data. The choice of the bandwidth should be based on what the crime mapping application aims to achieve. Smaller bandwidths result in a spiky hot spot appearance and larger bandwidths result in a smoother hot spot appearance. The most suitable bandwidth for this particular crime mapping application is one that will enhance the smoothing effect and reduce the appearance of spikes whilst still realistically representing the data.

Williamson *et al.* (1999, 3) suggests selecting a bandwidth by using the k-nearest neighbour approach, an approach based on 'the spacing of points rather than the size of the study area, or the number of points'. The approach, also suggested by Chainey (2005), involves selecting a bandwidth that is one of the nearest neighbour distances for orders of k. Table 3.6 below presents the results for the nearest neighbour tests for each point's 20 nearest neighbours in the 2003-2004, 2004-2005 and 2005-2006 all crime maps.

The mean nearest neighbour distance chosen as the bandwidth is order five for the year 2003-2004, 20.33 metres. It is believed that this relatively conservative value gives the desired outcome with limited crime misrepresentation from the interpolation. As the parameters need to be the same across the three different yearly maps for them to be comparable, 20.33 metres was also the bandwidth used for the 2004-2005 and 2005-2006 maps. Table 3.6 shows this value highlighted in dark orange. Similar bandwidths for 2004-2005 and 2005-2006, orders nine and six respectively are highlighted in light orange. The same bandwidth was used for maps representing only violent crime, but the thresholds for thematic crime representations were based on the mean threshold method.

Maps for each year were also created using 2003-2004's order nine bandwidth of 30.69 metres to demonstrate the influence that a larger bandwidth has on the visual representation of the data. The bandwidth and the closest bandwidths for these years have been highlighted in light red in Table 3.6. A grid cell count map was the third map

created for each year that showcased the same data in a different way. This method overlays a grid with the same cell dimensions used to create grids using the kernel density method. They show the count of incidents per grid cell without the interference of interpolation.

Table 3.6: Mean nearest neighbour distances (m) for each point's 20 nearest neighbours in the 2003-2004, 2004-2005 and 2005-2006 all crime maps.

Order	2003-2004	2004-2005	2005-2006
1	4.11	2.87	4.11
2	8.76	5.50	7.02
3	11.84	7.77	10.31
4	16.03	10.92	13.05
5	20.33	13.25	17.77
6	23.72	14.92	20.26
7	26.61	16.00	22.69
8	28.70	18.22	24.01
9	30.69	19.55	25.13
10	33.18	22.29	27.17
11	36.15	23.32	28.29
12	37.87	24.20	29.12
13	40.28	24.80	29.88
14	42.16	25.38	31.20
15	44.25	26.22	32.84
16	45.57	27.20	33.91
17	47.87	27.50	35.97
18	49.00	29.65	38.37
19	50.16	31.11	41.04
20	51.48	32.96	43.97

Once the grid was overlayed, a thematic map was created, representing the intensity of crime per cell in the grid. The incremental mean threshold approach (Chainey, Reid & Stuart, 2002) is a highly appealing method used to help standardise the thematic thresholds. These thematic thresholds are set by calculating the grid cells' mean after excluding all values of zero. The thresholds are then calculated as increments of the mean (e.g. > mean, mean to 2 mean, 2 mean to 3 mean, 3 mean to 4 mean, 4 mean to 5 mean, > 5 mean). The grid cell means for each year's map are different but the same

thematic thresholds need to be used for all maps to be comparable. Therefore the thresholds calculated for the year map with the most incidents, 2004, were the thresholds used for all years.

The Gi*LISA analysis tests whether or not the hot spots created are statistically significantly hotter than other locations. This test was not performed, however hot spot status was presumed once the criteria of three multiples of the mean in the thematic legend thresholds was met. 'This defining threshold visually fits with a LISA statistical output of 99.9% significance' (Chainey, Reid & Stuart, 2002, 34).

Colour used to represent each thematic threshold was a shade of red or pink, with the darkest red representing cells with high crime intensity and the lightest pink representing cells with low crime intensity. In the final stage of creating the map, grid lines were removed to reveal only the colour allocated to each cell, merging with its neighbouring cell to create the visual effect of hot (or cold) spots.

To map data for which there was only street information, the total number of crimes or violent incidents per street was divided by the number of metres of the street or section of the street included in the catchment area. To represent the varying rates of crime per street on the maps, a thematic colour scheme was also used. The darkest red lines were used to indicate hot streets, whilst the lightest pink lines represented cold streets. For the map illustrating the three years of data, red represented a crime occurring every one metre or less, whilst the lightest pink represented a crime occurring every 50 metres or more.

3.3.3 Analysis 3 – Risky Facilities Analysis

The risky facilities analysis involved, in this instance, assessing the risk of violence by location. The analysis included computing the number of violent incidents (according to the violence index) that occurred in the 50 licensed facilities that met the criteria to be included in the assessment (discussed in section 3.2.3). For each year of the data collected and for the three years overall, venues were ranked from most risky to least risky, based on the number of reported violent incidents. It is expected that when graphed, this data will represent a reclining J curve, with approximately 20% of risky facilities representing 80% of crime (Eck, Clarke & Guerette, 2007). It is also expected

that this type of analysis will clearly show the venues that are hot spots for crime. However, as stated by Eck, Clarke and Guerette (2007) a risky facilities analysis aims to go beyond what is established by hot spot analysis. A risky facilities analysis examines the major differences and similarities between places, to identify characteristics that may explain why certain places, and certain types of places experience more crime and are therefore more risky than others. Such focused explanations can allow for more targeted and holistic policing initiatives.

As discussed in chapter two, Eck, Clarke and Guerette (2007) suggest five causes of risk at risky facilities: random variation, reporting processes, targets, offenders and place management. These five explanations were considered when explaining the high risk of violence in the top ten ranking facilities over the three years. Causes beyond Eck, Clarke and Guerette's considerations were also explored by completing descriptions of locations based on field research and police descriptions. This resulted in risky facility typologies being created and applied to the top ten risky venues over the three years.

3.3.4 Analysis 4 – 3am Lockout

Further lockout analyses have been conducted in addition to the lockout independent variable included in the times series analysis by month. These analyses include the hot spot mapping and time series analysis of three stable months of police data for Surfers Paradise crime incidents from July to September for 2003, 2004 and 2005. The aim of mapping the data was to identify hot spots and monitor any spatial displacement. The hot spot mapping included a total of 974 specific crime incidents that occurred from July to September 2003, 2004 and 2005, at 106 specific crime addresses and 22 non-specific crime locations. Violent incidents represented approximately one third of all crime incidents during each time period (Table 3.7). For street level data, red was used to signify streets with one crime every 10 metres or less over the three months, whilst the lightest pink represented one crime every 100 metres or more. Ranges were developed using the incremental mean threshold approach previously discussed (Chainey, Reid & Stuart 2002).

Table 3.7: Number of incidents of violence and crime for the time period of July to September for 2003, 2004 and 2005.

Time Period	No. of crime incidents	No of violence incidents
Jul-Sep 2003	336	111
Jul-Sep 2004	396	109
Jul-Sep 2005	242	89

These 974 crime incidents were also graphed by the time of the incident across 24 hours to show time displacement of crime incidents following the introduction of the lockout. A further analysis using Oriana software allowed for the representation of the 24 hour data in circular graphs (representing a 24 hour clock). A rose plot design was chosen, and the frequency of incidents at times across 24 hours was represented by the distance of the radius (from the edge to the centre of the plot). A Watson's U^2 test was used to show any significant change in the distribution of incidents over 24 hours between the three time periods studied.

CHAPTER 4

Results: The Temporal and Spatial Patterns of Police-Recorded Crime and Violence in Surfers Paradise

'The complainant has entered the male toilets of the Sugar Shack Nightclub. At this time the unknown offender has demanded the complainant's wallet, at which time the complainant stated 'I don't have any money'. The offender has then struck the complainant several times to the head causing bruising and lumps to the back of the complainant's head. The complainant has then given his wallet to the offender. The offender has then gone through the wallet and said 'this is shit, you've got no money,' and continued to strike the complainant with closed fists. The complainant has then managed to escape through the toilet entrance. The offender has kept possession of the complainant's wallet. The complainant has then approached staff at which time the bouncers have followed the complainant in to the toilets where the complainant has identified the offender to security staff. The security staff stated 'it wouldn't have been him, he's head of security'.

(Queensland Police Service, 2004).

This chapter provides an in-depth examination of crime and particularly violence in the Surfers Paradise nightclub district, using incident descriptions such as above to contextualise the results of the spatial, temporal and risky facilities analyses. Prais-Winsten regressions have been run to analyse the temporal patterns of all crimes on the cleaned and recoded dataset, with a separate analysis being run just for crimes of a violent nature (using the violence index). The unit of analysis was month, resulting in 36 months of data, spanning from July 2003 to June 2006. The independent variables were the lockout, special events and seasons. The dependent variables were mean daily crime and violence rates. The weekdays Monday through to Thursday have been used as a control against weekend Friday through to Sunday, resulting in two models for all crime and two models for violent crime.

Hot spot mapping through CRIMSTAT III was interfaced with MapInfo to show the spatial patterns of all crimes and violent crimes for each year of data and the three years taken together. Results indicate that regardless of the time of week analysed, the only predictor of violent crime or in fact, any crime (included in the dataset) in Surfers

Paradise CBD is special events. Hot spot maps show bars and nightclubs, late night fast food venues and the Cavill Mall Police Beat to be the main hot spots over the three years, with certain nightclubs being consistent hot spots over time and the most prominent nightclub hot spots intensifying after the 3am lockout introduction. The risky facilities analysis supports these findings, suggesting that many nightclub/bar venues are consistently risky with violence becoming more concentrated in and around most of these hot spots.

4.1 Descriptive Statistics

4.1.1 All Crime Incidents

Following the recoding of public nuisance and disorderly behaviour charges into more specific categories, disorderly conduct was present in 38% of the 5655 incidents, general public nuisance in 8%, indecent behaviour, including public nudity and sexual activities in 9%, urinating in public in 3% and obscene language in 7%. After recoding, one in four incidents included an obstruction of justice charge and 17% (963) of all crime incidents over the three years included assault where some use of force or attempt to injure someone had occurred.

Of these assault incidents, 47% (455) resulted in at least one moderate to serious injury (e.g. major bruising and swelling, dislocation of limbs, broken bones, concussion and loss of teeth). Moderate to serious injuries were recorded in 71% of all incidents of assault resulting in injuries. In 58% of all assault incidents, at least one injury was to the face and/or neck. Face or neck injuries were recorded in 84% of all incidents of assault resulting in face/neck injuries.

Lockout

Weekday and weekend mean crime rates dropped following the introduction of the lockout. As shown in Table 4.1, the mean crime rate on a weekday prior to the introduction of the lockout (July 2003 to March 2004) was 3.51, decreasing after the lockout introduction (April 2004 to June 2006) to 2.51. Weekend rates decreased only slightly post-lockout, from 8.67 crime incidents per weekend day to 8.23.

Table 4.1: Total crime rates for lockout variable

Time Period	Weekday	Weekend
Pre-lockout	3.51	8.67
Post-lockout	2.51	8.23

A fairer comparison can be made by looking at the mean daily rates for a stable period of time each year, that being July to September. This successive block of three months was considered suitable for the following reasons: it was the only time period for which three years of data was available; at least one of these time periods was prior to the lockout introduction; and the months were not included in the special event months when minor changes to police management strategies can have a major impact on crime rates and can therefore influence conclusions regarding the impact of the lockout.

Table 4.2 shows the averages of these figures over weekdays and weekends. In 2003, there was an average of 1.97 crime incidents per weekday for July, August and September, dropping only marginally to 1.90 for the same time period in 2004. By July to September 2005, the rate had halved, with an average of only 0.97 crime incidents per day. However, weekend crime rates show a peak in 2004, from the 2003 rate of 5.78 to 7.32. By 2005 there was a significant drop from the 2003 and 2004 rates to only 4.68 crimes per weekend day.

Table 4.2: Total crime rates for lockout variable (July-September 03, 04 & 05)

Time Period	Weekday	Weekend
July – Sept 2003 (Pre-lockout)	1.97	5.78
July – Sept 2004	1.90	7.32
July – Sept 2005	0.97	4.68
Overall rate	1.61	5.92

Special events

Descriptive statistics show that the daily weekday total crime rate during the months in which special events were held was 5.12 (Table 4.3). On the weekends of these particular months, the total crime rate was more than double this, at 13.56 crime incidents per day. As expected, those months with no special events experienced far fewer crime incidents, with an average of only 1.57 crime incidents per day on weekdays and 5.73 crime incidents at the weekend. In general, total crime rates on weekdays decreased over the three years, but weekend crime rates peaked in the second year of data (2004-2005). This pattern was particularly evident in the special event months, when the daily rates for total crime rose 32% in the second year of data.

Table 4.3: Total crime rates for special events variable

Year	**Non-Special Event Months**		**Special Events Months**	
	Weekdays	**Weekend**	**Weekdays**	**Weekend**
2003-2004	1.86	6.25	5.33	11.50
2004-2005	1.61	6.33	5.16	15.17
2005-2006	1.25	4.59	4.86	14.02
Overall rate	1.57	5.73	5.12	13.56

Seasons

The descriptive results presented in Table 4.4 show that Surfers Paradise experiences much higher total crime rates in the summer months in comparison to the winter months. This is particularly true on weekends, where the crime rate almost triples in the summer. In the winter months, there were on average 1.59 crime incidents per weekday and 3.59 crime incidents per day on a weekend. The crime rate for winter months almost halved over the three year period, dropping from 1.93 in 2003-2004 to 1.73 in 2004-2005 and to 1.10 by 2005-2006.

The summer months saw an average of 5.69 crimes on a weekday and a substantial 10.23 crimes on a day of a weekend. The summer months showed a different trend to that seen in the winter months, with a peak in crime rates appearing in the second year

of data, and an overall decrease by the third year. This was however only on weekdays and not on weekends. In 2003-2004, the average summer crime rate was 6.04 for weekdays and 9.40 for weekends, whilst in 2004-2005, the weekday rate was 6.53 and the rate on a day of the weekend was 11.24. By the 2005-2006 period, the disparity between the weekday and weekend figure had grown larger, with the weekday crime rate being at its lowest of 4.50, and the rate on a day of the weekend being higher than the initial 2003-2004 rate, at 10.04.

Table 4.4: Total crime rates for seasons variable

Year	**Winter Months**		**Summer Months**	
	Weekdays	**Weekend**	**Weekdays**	**Weekend**
2003-2004	1.93	3.79	6.04	9.40
2004-2005	1.73	3.55	6.53	11.24
2005-2006	1.10	3.42	4.50	10.04
Overall rate	1.59	3.59	5.69	10.23

4.1.2 Violence

Preliminary analysis of crime incidents over the three year period revealed that the violence index could be applied to almost 70% of crime incidents. The recoded assault variable was applied to approximately one in four crime incidents (for which there was location specific data). Of these incidents almost two thirds were inside or directly outside licensed venues (predominantly nightclubs). The most common streets for assaults (where only the street address rather than a specific address was recorded) were Cavill Mall and Orchid Avenue, both nightclub strips. According to initial police coding, three quarters of all crime incidents involved alcohol. This figure remains the same when studying cases that include at least one assault (recoded variable) or for which the violence index has been applied.

Lockout

The rate of violent crime dropped following the introduction of the lockout for both weekdays and weekends. Table 4.5 shows that the violent crime rate on a weekday prior to the introduction of the lockout (July 2003 to March 2004) was 0.82, and that this decreased after the introduction of the lockout (April 2004 to June 2006) to 0.70. Weekend violent crime rates increased slightly post-lockout, from 1.96 violent crime incidents per day on a weekend to 2.09.

Table 4.5: Violent crime rates for lockout variable

Time Period	Weekday	Weekend
Pre-lockout	0.82	1.96
Post-lockout	0.70	2.09

A comparison of July to September for 2003, 2004 and 2005 is displayed in Table 4.6. Figures show a decline over time for weekday violent crime, from 0.72 violent crime incidents per weekday for the 2003 period to 0.57 for the 2004 period, and 0.42 for the 2005 period. The weekend figures show a peak in the second period (2004), increasing from 1.87 violent crimes per day on a weekend in the 2003 period to 1.97 in the 2004 period and decreasing to 1.63 in the 2005 period.

Table 4.6: Violent crime rates for lockout variable (July-September 03, 04 & 05)

Time Period	Weekday	Weekend
July – Sept 2003 (Pre-lockout)	0.72	1.87
July – Sept 2004	0.57	1.97
July – Sept 2005	0.42	1.63

Special events

In the months when no special events occurred, the average violent crime rate on a weekday was 0.53, but on the weekend of these months, the crime rate doubled, at 1.34 incidents per day. Furthermore, months in which there were special events saw a crime rate almost double that of non-special event months. For weekdays, the crime rate was 1.12, whilst on an average day on a weekend, approximately two violent crime incidents occurred (Table 4.7).

Table 4.7: Violent crime rates for special events variable

Year	**Non-Special Event Months**		**Special Events Months**	
	Weekdays	**Weekend**	**Weekdays**	**Weekend**
2003-2004	1.05	1.41	0.59	1.52
2004-2005	0.57	1.43	1.14	2.57
2005-2006	0.44	1.19	1.16	1.78
Overall rate	0.53	1.34	1.12	1.96

Seasons

Violent crime rates were slightly higher in the summer months when compared to the winter months (Table 4.8). For both the winter and summer months, weekend day rates were more than double the rates for weekdays. The average number of violent crime incidents that occurred in the winter months was 0.53 on weekdays and 1.32 on weekend. However, in the summer months, 0.86 violent crime incidents occurred on a weekday and nearly two violent crime incidents occurred on an average weekend day. Violent crime rates appeared to decrease on weekdays and weekend in the winter months over the three years. However in the summer months, a peak in violent crime rates appeared in the second year of data (2004-2005), with the peak being more substantial at the weekend in comparison to the weekdays.

Table 4.8: Violent crime rates for seasons variable

Year	Winter Months		Summer Months	
	Weekdays	**Weekend**	**Weekdays**	**Weekend**
2003-2004	0.61	1.40	0.84	1.48
2004-2005	0.61	1.37	0.87	2.12
2005-2006	0.44	1.20	0.86	1.52
Overall rate	0.53	1.32	0.86	1.71

4.2 Results of Analysis 1 - Prais-Winsten Regressions

Four models were run, all using the lockout, special events and seasons as independent variables. The unit of analysis for each model was month. The dependent variables for the four models: 1) weekday total crime rate (WDTC); 2) weekend total crime rate (WETC); 3) weekday violent crime rate (WDVC); and 4) weekend violent crime rate (WEVC). The models were designed to be analysed in pairs comparing weekdays and weekends.

4.2.1 Model 1 and 2 Graphical Comparison

A time series graph (Figure 4.1) of monthly weekday and weekend total crime rates over the three years shows limited differences between the general patterns of the two models over time. Weekday crime rates run below and parallel to weekend crime rates. Both plots on the graph indicate increasing intensity around the special event months each year. The lockout appears to have no immediate or long term influence on the general and seasonal crime patterns.

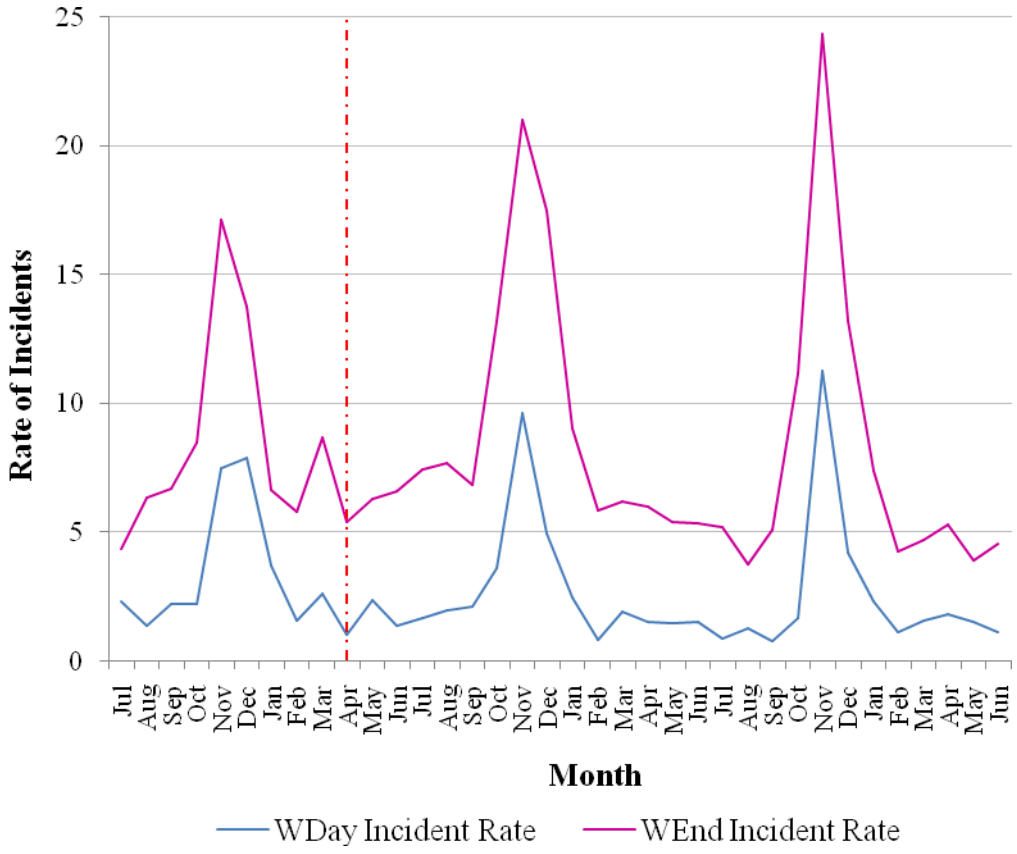


Figure 4.1: Mean total crime rates on weekdays or weekend for July 2003 to June 2006, with 3am lockout introduction reference line.

4.2.2 Model 1 – Weekday Total Crime Rate

Results showed that when taken together, the lockout, special events and seasons were highly significant predictors of the dependent variables: weekday crime rate ($F(3,32) = 18.94$, $p < 0.001$). Furthermore, the three independent variables accounted for 61% of the variance in weekday total crime rates. The Durbin-Watson statistic value of 2.30 for model 1 indicates no auto-correlation. In this model, the lockout variable ($t(35) = -0.65$, $p = 0.52$) and seasons ($t(35) = -0.07$, $p = 0.94$) were not significant, indicating that the lockout and seasons played no role in the variance in weekday crime rates over time. Special events however were highly significant predictors of variation in total crime rates on weekdays ($t(35) = 5.85$, $p<0.001$).

4.2.3 Model 2 – Weekend Total Crime Rate

When taken together, the three independent variables were highly significant predictors of the weekend crime rate ($F(3,32) = 17.65$, $p < 0.001$). Collectively, the lockout, special events and seasons were responsible for 59% of the variance in weekend total crime rates. No auto-correlation was detected, with a Durbin-Watson statistic value of 2.07. The lockout ($t(35) = 0.71$, $p = 0.48$) and seasons ($t(35) = -0.01$, $p = 0.99$) had no statistically significant influence on the weekend total crime rate. However, special events were found to be significant predictors of variance in weekend crime rates ($t(35) = 5.80$, $p < 0.001$). Statistics for models 1 and 2 are presented in Table 4.9.

Table 4.9: Prais-Winsten regression results – lockout, special events and seasons in period t by total crime rates.

Independent Variables	**Model 1 WDTC**		**Model 2 WETC**	
	Coef.	**p-value**	**Coef.**	**p-value**
Constant	1.75	0.005	4.96	0.00
Lockout	-0.36	0.52	0.86	0.48
Special Events	3.90	0.00	8.23	0.00
Seasons	-0.04	0.94	-0.017	0.99
Observations	36		36	
Adjusted R-squared	0.61		0.59	
Durbin-Watson (original)	2.57		2.14	
Durbin-Watson (transformed)	2.30		2.07	

4.2.4 Model 3 and 4 Graphical Comparison

As with total crime rates, Figure 4.2 shows large peaks in violent crimes during months of special events over the three years. However, unlike the general crime trend which showed a gradual increase in intensity over the three years, violent crimes show a peak

in 2004. This is particularly the case with weekend violent crime. More specifically, the graph illustrates a different trend to the mirroring pattern seen between total crime rate on weekdays and weekend. Rather, there appears to be a steady weekday violence crime trend over the three years, while the rate for weekend increases significantly in 2004 before returning in 2005 to a similar intensity and pattern to that seen in 2003.

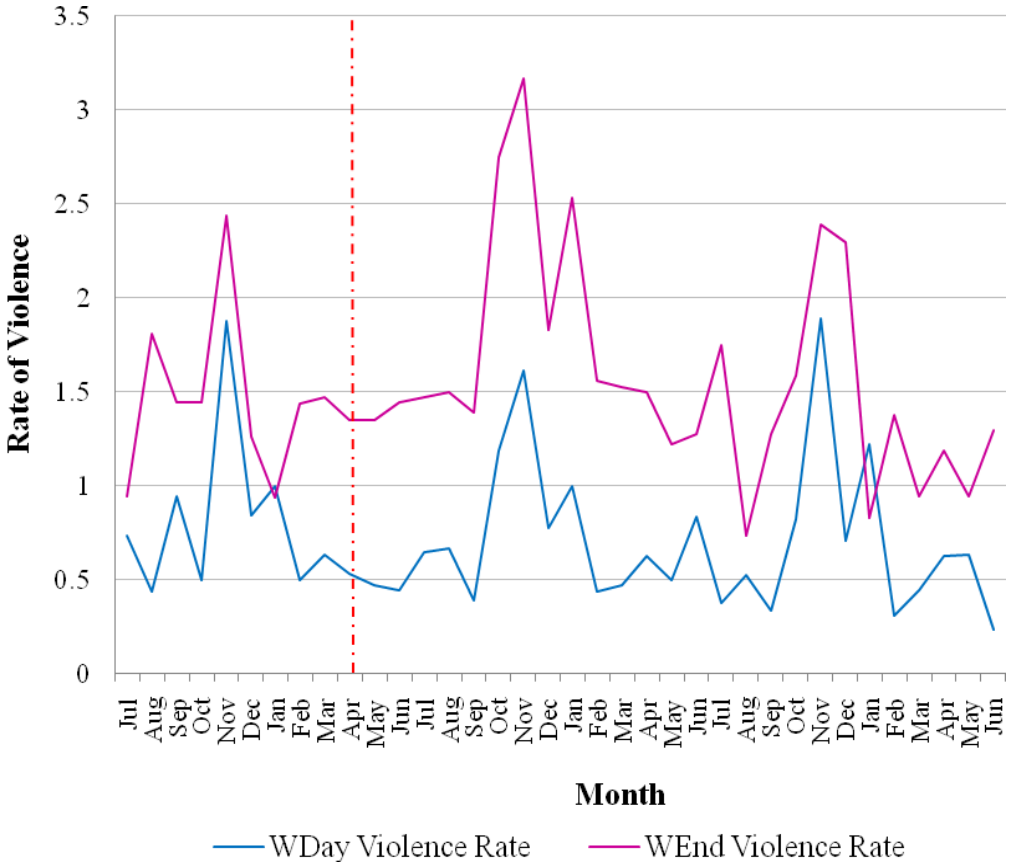


Figure 4.2: Mean violent crime rates on weekdays or weekend for July 2003 to June 2006, with 3am lockout introduction reference line.

4.2.5 Model 3 - Weekday Violent Crime Rate

When taken collectively, the Lockout, Special Events and Seasons were highly significant predictors of the weekday violent crime rate ($F(3,32) = 38.31$, $p < 0.001$). Together, the independent variables explain 76% of the variance in the weekday violent crime rates over time. Model 3 showed no auto-correlation between independent variables, as is evident by the Durbin-Watson statistic value of 2.31. In model 3, the lockout variable ($t(35) = -0.54$, $p = 0.59$) and the seasons variable ($t(35) = -0.50$, $p =$

0.62) were not significant, suggesting that the introduction of the lockout, and changes in seasons played no role in the variance in weekday crime rates over the three years. As expected, special events were found to be highly significant predictors of variation in violent crime rates on weekdays ($t(35) = 8.43$, $p < 0.001$).

4.2.6 Model 4 – Weekend Violent Crime Rate

Together, the Lockout, Special Events and Seasons variables were moderately significant predictors of weekend violence ($F(3,32) = 3.37$, $p = 0.03$). These three variables jointly explain only 17% of the variance seen in weekend violent crime rates over the three years. The Durbin-Watson statistic value was 2.00 indicating no auto-correlation. Model 4 showed similar results to those seen in the other three models, in that only special events were significant predictors of crime ($t(35) = 2.43$, $p = 0.021$). The Lockout did not have a significant influence on rates of violence on weekends over time ($t(35) = 0.93$, $p = 0.36$), as was also the case with seasons ($t(35) = -0.21$, $p = 0.83$). Statistics for models 3 and 4 are presented in Table 4.10.

Table 4.10: Prais-Winsten regression results – lockout, special events and seasons in period t by violent crime rates.

Independent Variables	**Model 3 WDVC**		**Model 4 WEVC**	
	Coef.	**p-value**	**Coef.**	**p-value**
Constant	0.56	0.00	1.61	0.00
Lockout	-0.03	0.59	0.24	0.36
Special Events	0.63	0.00	0.71	0.02
Seasons	-0.03	0.62	0.06	0.83
Observations	36		36	
Adjusted R-squared	0.76		0.17	
Durbin-Watson (original)	3.13		1.92	
Durbin-Watson (transformed)	2.31		2.00	

4.3 Results of Analysis 2 - Hot Spot Mapping

CRIMESTAT III was interfaced with MapInfo to create hot spots maps of both total crime incidents and violent crime incidents in the Surfers Paradise catchment area. Hot spots maps for violent incidents will be presented in section 4.4 on risky facilities.

4.3.1 Hot Streets 2003-2006

Natural breaks have been used to create thresholds for the data representation of street level data in all hot spot maps. Table 4.11 shows that over the three year period, Orchid Avenue, Cavill Avenue and Cavill Mall were coded as 'hot streets' with significantly higher total crime rates than other streets in the CBD. For these hot streets, more than one crime was reported for every metre of street over the three years. Figure 4.4 shows these streets to be deep red. Cavill Mall experienced the most crime without a specific location, with just over five crimes per metre occurring over the three year period. Crime on other streets (with the exception of Surfers Paradise Beach) often occurs on the sidewalk, directly outside an identifiable location. However in the mall, the pedestrian walkway is as wide as a street and identifying which property is closest to the incident may be difficult, particularly considering that many crimes such as violence or disorderly behaviour are often not static events. Furthermore, police officers may view Cavill Mall as a specific location in itself causing them to be non-specific in their incident records. The Police Beat is also situated on Cavill Mall which allows for immediate reporting of incidents to police, quick responses by police to incidents, as well as a high likelihood of detection due to police and extensive CCTV surveillance.

Table 4.11: *Number of metres per one crime incident for street level data from July 2003 – June 2006 in Surfers Paradise*

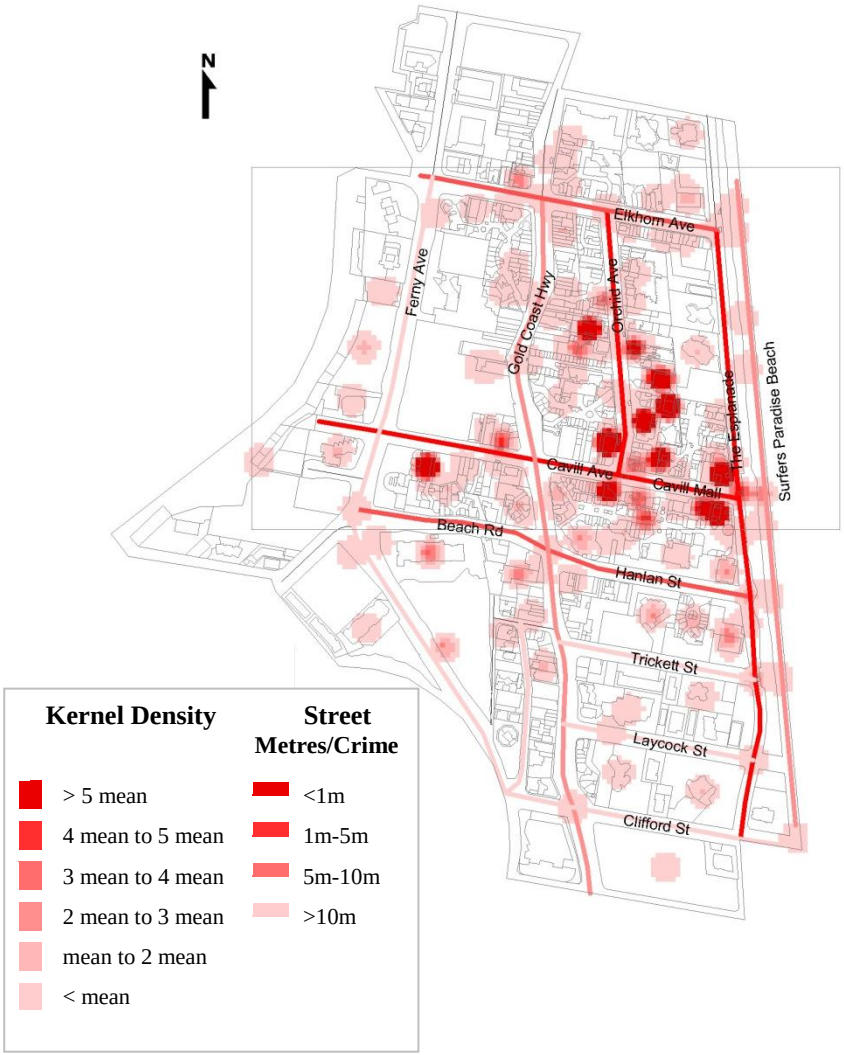
Street	**Length (mt)**	**No. of Crimes**	**Metre(s) / Crime**
Orchid Avenue	335	1341	0.25
Cavill Mall	154	834	0.18
Cavill Avenue	380	667	0.57
The Esplanade	770	777	0.99
Hanlan Street	260	75	3.47
Elkhorn Avenue	376	93	4.04
Beach Road	248	51	4.86
Gold Coast Highway	890	160	5.56
Surfers Paradise Beach	813	135	6.02
Trickett Street	249	24	10.38
Ferny Avenue	838	67	12.51
Clifford Street	353	21	16.81
Laycock Street	241	12	20.08
Appel Street	223	4	55.75
Alison Street	80	0	0
The Promenade	162	0	0
Whelan Street	117	0	0
Wharoonga Place	73	0	0

4.3.2 Hot Spots 2003-2006

Figure 4.4 shows the major hot spots for crime between 2003 and 2006. Major hot spots have been numbered for identification in the following discussion (numbering does not relate to level of risk). Many hot spots viewed in the map are related to major activity nodes such as nightclubs, bars and fast food outlets as well as major travel pathways such as The Esplanade and Cavill Mall and edges such as the beach. Melba's nightclub (1) is a consistent hot spot. According to Gold Coast City Council Community Safety staff much of this is related to Melba's being a place that clubbers like to visit at the end of the evening, therefore attracting individuals that are likely to be intoxicated. One particular activity node and hot spot can be seen at the entrance to Surfers Paradise beach (7), where a highly recognised sign is a meeting place for young people (Figure 4.3). Across the main road from this sign is the pedestrian mall full of mainly two storey buildings occupied by restaurants, bars and retail stores.

Figure 4.3: Surfers Paradise sign at Surfers Paradise main beach entrance.

All crime July 2003 – June 2006



1	Melba's Bar & Restaurant	12	Bourbon Bar
2	The Drink Nightclub	13	Crazy Horse Bar
3	The Avenue Restaurant	14	Shooters Saloon
4	Surfers Paradise Beer Garden	15	My Bar
5	Howl at the Moon	16	Cocktails & Dreams Nightclub
6	Hungry Jack's Fast Food	17	The Party Nightclub
7	Surfers Paradise beach entrance	18	Santa Fe Gold (Hollywood Showgirls)
8	Police Beat	19	Players Showgirls Nightclub
9	O'Malley's Irish Bar	20	The Shack Bar & Café
10	McDonald's Fast Food	21	Fever Nightclub (Ambassee/The Bedroom)
11	Rose & Crown Tavern	22	Clock Tower Tavern

Figure 4.4: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July 2003 to June 2006, with a zoom of the nightclub neighbourhood listing major hot spots (no specific order).

At the entrance to Cavill Mall (intersecting with The Esplanade) there are bench seats outside two major fast food venues open 24 hours – Hungry Jack's (6) and McDonald's (10) (Figure 4.5). These sites are also late-night last stops for intoxicated nightclub patrons before going home. Both these venues have bars built above them (So Bar/Berlin Bar and O'Malley's Irish Bar (9)), increasing the likelihood of intoxicated people visiting these venues as they leave the area and/or having confrontations with patrons around the outdoor seating. These venues and this pathway are frequently congested with youth, often underage, on Friday and Saturday nights. Close to the mall entrance is the Police Beat (8), another crime activity node due to frequent assaults against police as charges are laid against intoxicated youth already in custody.

Figure 4.5: Entrance to Cavill Mall, with McDonald's on the right and the Police Beat and Hungry Jack's on the left.

The intersection of Cavill Mall and Orchid Avenue is a further major activity node, as youth congregate here before and after venturing into nightclubs in Cavill Avenue and Cavill Mall as well as Orchid Avenue. These are the main streets and travel pathways at

the heart of Surfers Paradise, particularly for those wanting to go clubbing. It is not surprising therefore that these three major pathways are hot paths for crime and disorder. Nightclubs and bars on these paths are also activity nodes for crime and violence, with fights frequently occurring on the pathways outside club doors. The beach is a major definitive edge, but is also a travel pathway for those wanting a quiet moment after a big night out or a nice walk home. Unfortunately, the fact that it is an edge limits victims in any attempt to escape from danger, and consequently, the beach is frequently a hot spot for robbery, assault and sexual assault.

Multi-level clubs and multi-level buildings housing numerous clubs appear to be major hot spots and activity nodes for crime as seen on Orchid Avenue (Figure 4.6). This is partially due to crimes for all nightclubs located directly on top of one another being mapped to the same or similar geographical coordinates. Whilst the layering of nightclubs does intensify the crime rates for these geographical coordinates, many of these nightclubs are hot spots in their own right. A large majority of the clubs in these multi-level buildings are long-term tenants with common owners.

Figure 4.6: The Mark Building housing numerous clubs across a number of levels

It is also likely that some of these crimes are associated with having one major entry and exit point for numerous clubs in the same building. Alternatively, there may be separate entries to clubs in the same building in very close proximity to each other, creating overcrowding around the line-up and exiting areas. In addition, very large clubs with only one entry may as a result have large queues and higher numbers of incoming and outgoing patrons, increasing the likelihood of intoxicated individuals bumping into each other. Specific clubs and bars where aggression is common are discussed in the risky facilities analyses that follow.

4.3.3 Hot Street Changes Over Time

Table 4.12 shows that Orchid Avenue, Cavill Mall, Cavill Avenue and The Esplanade are consistently the top four hot streets over the three years. As discussed, these are the major travel pathways in Surfers Paradise CBD. Whilst there was little change in hot streets crime rates over time, one extra crime on a short neighbouring street can have a dramatic impact on the calculated rate of metres per crime. Changes in police recording processes, changes to parking on Surfers Paradise streets, the opening or remodelling of hotels and accommodation specials are just some of the factors that may have a substantial impact on the number of potential victims and offenders attracted to streets in Surfers Paradise. Furthermore, serious crimes often result in police recording more accurate details as found with some of the lengthy assault descriptions. Therefore, a decrease in crime on a particular street may not always equate to a real decrease, but on the contrary more decisive police recording practices. One of the ‘streets’ that is unlikely to be affected by these factors is Surfers Paradise Beach. Table 4.12 shows a decrease in crime on the beach the second year (2004-2005) followed by an increase to a three year high in the third year (2005-2006).

Table 4.12: Number of metres per one crime incident for street level data from July 2003 – June 2006 in Surfers Paradise

Street	Length (mt)	2003-04		2004-05		2005-06		Total (2003-06)	
		No. of Crimes	Metre(s) / Crime	No. of Crimes	Metre(s) / Crime	No. of Crimes	Metre(s) / Crime	No. of Crimes	Metre(s) / Crime
Orchid Avenue	335	482	0.70	458	0.73	401	0.84	1341	0.25
Cavill Mall	154	276	0.56	323	0.48	235	0.66	834	0.18
Cavill Avenue	380	209	1.82	238	1.60	220	1.73	667	0.57
The Esplanade	770	293	2.63	258	2.98	226	3.41	777	0.99
Hanlan Street	260	30	8.67	20	13.00	25	10.40	75	3.47
Elkhorn Avenue	376	36	10.44	33	11.39	24	15.67	93	4.04
Beach Road	248	20	12.40	15	16.53	16	15.50	51	4.86
Gold Coast Highway	890	40	22.25	60	14.83	60	14.83	160	5.56
Surfers Paradise Beach	813	47	17.30	36	22.58	52	15.63	135	6.02
Trickett Street	249	11	22.64	7	35.57	6	41.50	24	10.38
Ferny Avenue	838	27	31.04	26	32.23	14	59.86	67	12.51
Clifford Street	353	7	50.43	2	176.50	12	29.42	21	16.81
Laycock Street	241	4	60.25	5	48.20	3	80.33	12	20.08
Appel Street	223	1	223.00	3	74.33	0	0	4	55.75
Alison Street	80	0	0	0	0	0	0	0	0
The Promenade	162	0	0	0	0	0	0	0	0
Whelan Street	117	0	0	0	0	0	0	0	0
Wharoonga Place	73	0	0	0	0	0	0	0	0

4.3.4 Hot Spot Changes Over Time

Figures 4.7.1, 4.7.2 and 4.7.3 show basic hot spot maps without interpolation. The number of crime incidents per cell (10m x 10m) is represented by a pink to red threshold legend. Whilst this method is useful in easily identifying problematic venues, it is not visually appealing, and does not take into account the impact of incidents in neighbouring locations.

The kernel density estimations in Figures 4.8.1, 4.8.2 and 4.8.3 were created using a bandwidth of 20.33 metres. These maps show hot spots that are realistic representations of levels of crime. Using this bandwidth, specific problematic venues can be identified (and targeted by police). Changes over time are clear in the northern end of Orchid Avenue, where club turnover was more common. Whilst most hot spots remained stable, a number of hot spots along Orchid Avenue (nightclubs) appear to intensify over time (particularly between the first and second year).

The kernel density estimations in Figures 4.9.1, 4.9.2, and 4.9.3 were created using a bandwidth of 30.69 metres. These maps show gross misrepresentation of the data. At this bandwidth, a number of hot spots have spread far beyond their original location source and merged with other hot spots, making it difficult to identify specific changes over time. This bandwidth would be useful in directing community policing and patrolling, but would not be very useful in directing targeted policing efforts.

1. 2003 – 2004

Grid cell 10m x 10m

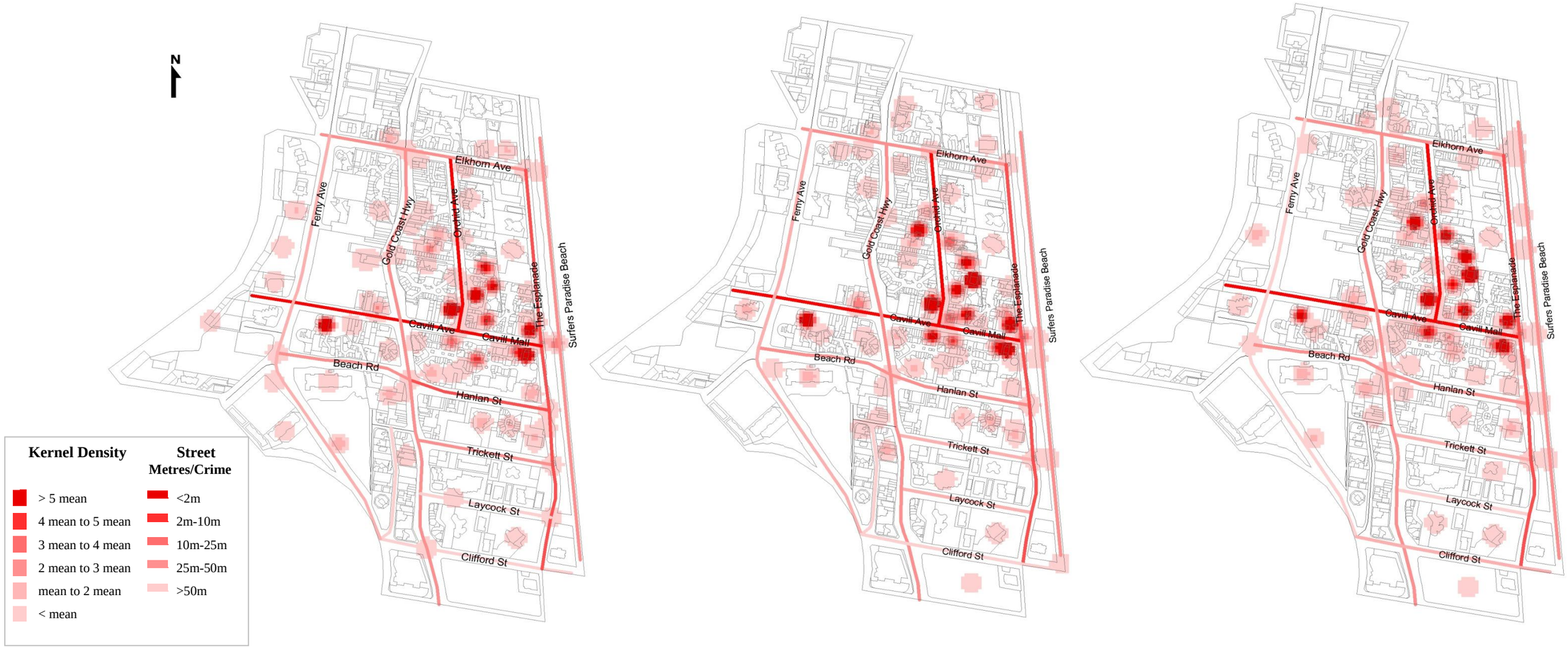
2. 2004 – 2005

Grid cell 10m x 10m

3. 2005 – 2006

Grid cell 10m x 10m

Figure 4.7.1: *Grid cell count map (cell size 10m x 10m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2003-04*
Figure 4.7.2: Grid cell count map (cell size 10m x 10m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2004-05
Figure 4.7.3: Grid cell count map (cell size 10m x 10m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2005-06



1. 2003 – 2004

Bandwidth 20.33m

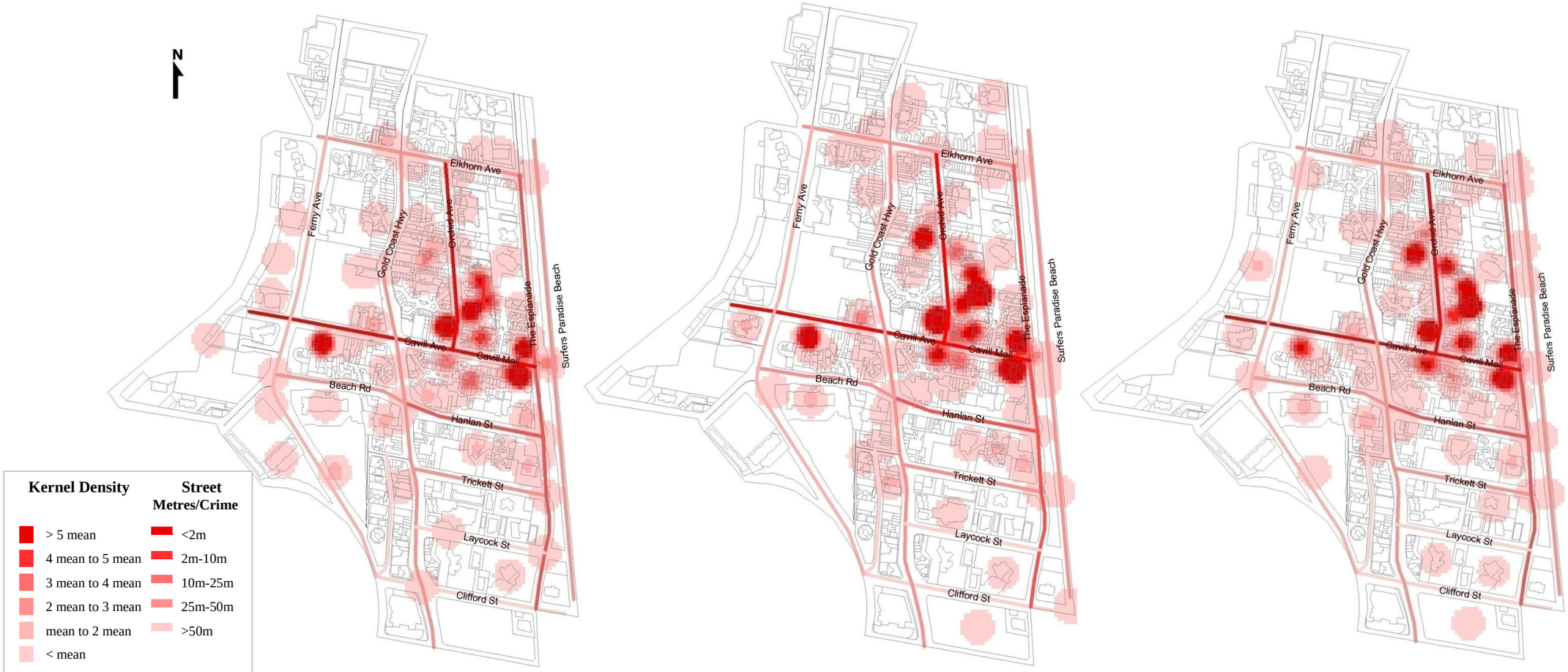
2. 2004 – 2005

Bandwidth 20.33m

3. 2005 – 2006

Bandwidth 20.33m

Figure 4.8.1: *Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2003-04*
Figure 4.8.2: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2004-05
Figure 4.8.3: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2005-06



1. 2003 – 2004
Bandwidth 30.69m

2. 2004 – 2005
Bandwidth 30.69m

3. 2005 – 2006
Bandwidth 30.69m

Figure 4.9.1: Kernel density hot spot map (bandwidth 30.69m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2003-04
Figure 4.9.2: Kernel density hot spot map (bandwidth 30.69m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2004-05
Figure 4.9.3: Kernel density hot spot map (bandwidth 30.69m) and mean metres/crime (for street level data) of all crime incidents in Surfers Paradise CBD occurring from July to June for 2005-06

4.4 Results of Analysis 3 - Risky Facilities

Violent crime (violence index) was mapped for each year and all three years combined using a bandwidth of 20.33m. Risky licensed venues were ranked, and the top ten represented 20% of all venues. The top ten venues over the three years remained relatively stable. These venues were analysed in detail to aid in the creation of risky facility typologies.

4.4.1 Violent Crime: July 2003 – June 2004

The 140 incidents listed by venue in Table 4.5 represent 30.7% of all violent incidents that occurred in Surfers Paradise between July 2003 and June 2004. The ten highest ranked venues (20% of all venues) accounted for 65.7% of violent incidents reported to occur at a known licensed venue (Figure 4.10). Melba's nightclub is ranked first with 19 violent incidents, representing 13.6% of all violent incidents. Four other clubs listed in the top ten risky venues (Table 4.13) are located within very close proximity of each other in the Mark Building, sharing main exits and entrances. Figure 4.11 shows the hot spots for violent crime between July 2003 and June 2004, with hot spot numbers referring to rankings in Table 4.13.

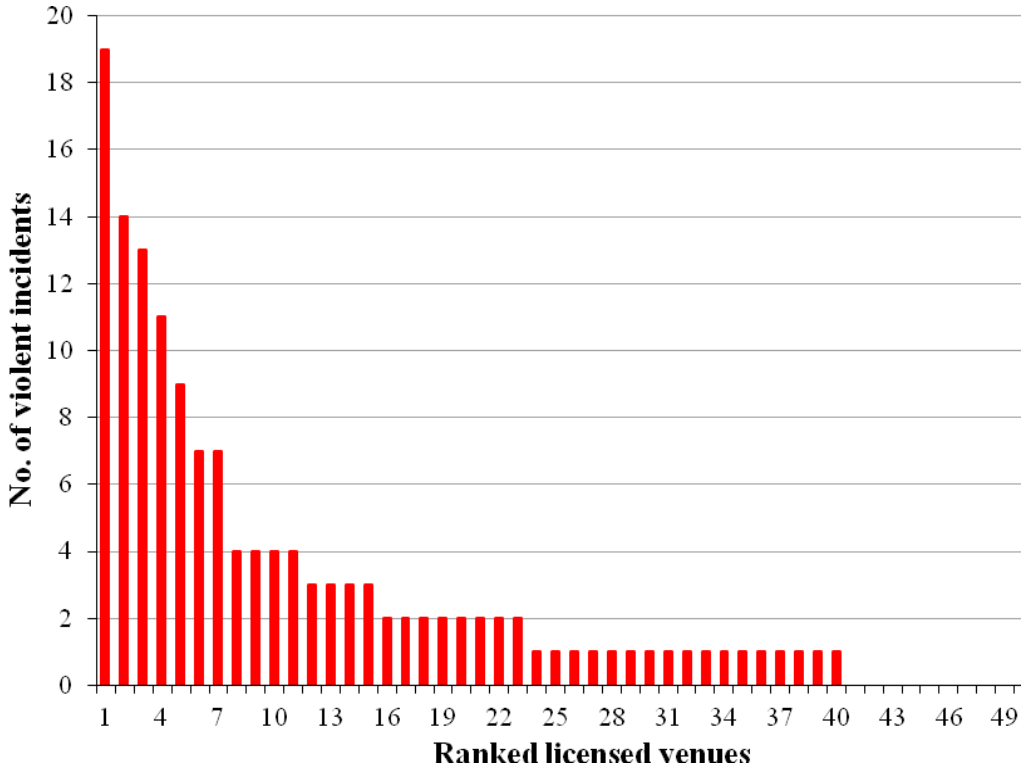


Figure 4.10: Number of violent incidents by ranked licensed venue in Surfers Paradise CBD for July 2003 to June 2004.

Violent crime July 2003 – June 2004

Kernel Density	Street Metres/Crime
> 5 mean	<15m
4 mean to 5 mean	15m-50m
3 mean to 4 mean	50m-100m
2 mean to 3 mean	100m-150m
mean to 2 mean	>150m
< mean	

Figure 4.11: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of violent incidents in Surfers Paradise CBD occurring from July 2003 to June 2004, with a zoom of the nightclub neighbourhood locating the top ten ranked licensed venues (rankings refer to Table 4.13)

Table 4.13: Violent incidents in licensed venues in Surfers Paradise CBD from July 2003 – June 2004

Rank	Risky Venue	No. of Violent incidents	% of violent incidents	Culmulative % of violent incidents
1	Melba's Bar & Restaurant	19	13.6	13.6
2	The Drink Nightclub	14	10.0	23.6
3	Bourbon Bar	13	9.3	32.9
4	Rose & Crown Tavern	11	7.9	40.7
5	Shooters Saloon	9	6.4	47.1
6	Surfers Paradise Beer Garden	7	5.0	52.1
7	The Party Nightclub	7	5.0	57.1
8	Clock Tower Tavern	4	2.9	60.0
9	Cocktails & Dreams Nightclub	4	2.9	62.9
10	Players Showgirls Nightclub	4	2.9	65.7
11	SoBar Nightclub (Berlin Bar)	4	2.9	68.6
12	Fever Nightclub(Ambasee/The Bedroom)	3	2.1	70.7
13	Gilhooleys Irish Bar	3	2.1	72.9
14	The Avenue Restaurant	3	2.1	75.0
15	The Shack Bar & Café	3	2.1	77.1
16	Bad Girls Stripclub (Ruby Tramp)	2	1.4	78.6
17	Crazy Horse Bar	2	1.4	80.0
18	Disco Bar	2	1.4	81.4
19	Fourplay Sportsbar	2	1.4	82.9
20	Meeting Place Bar & Club	2	1.4	84.3
21	Pink Elephant	2	1.4	85.7
22	Surfers Paradise SLSC	2	1.4	87.1
23	Santa Fe Gold (Hollywood Showgirls)	2	1.4	88.6
24	Charlies on the Mall Restaurant	1	0.7	89.3
25	Courtyard Mariott	1	0.7	90.0
26	Groovalicious	1	0.7	90.7
27	Hard Rock Café	1	0.7	91.4
28	Just Hooters Bar	1	0.7	92.1
29	Lansdowne Rd Irish Tavern	1	0.7	92.9
30	My Bar	1	0.7	93.6
31	O'Malley's Irish Bar	1	0.7	94.3
32	Rish Café & Bar	1	0.7	95.0
33	Search & Rescue Club	1	0.7	95.7
34	The Troccadero	1	0.7	96.4
35	Vegas in Paradise	1	0.7	97.1
36	Billy’s Beachhouse	1	0.7	97.9
37	Bavarian Haus Restaurant	1	0.7	98.6
38	Hogs Breath Café	1	0.7	99.3
39	La Porchetta Italian Restaurant	1	0.7	100.0
40	Elsewhere Nightclub	0	0.0	100.0
41	Seafood on the Beach Restaurant	0	0.0	100.0
42	Central Lounge Bar & Dining	0	0.0	100.0
43	Down Under Bar	0	0.0	100.0
44	Surfers Paradise Sports Club	0	0.0	100.0
45	Howl at the Moon	0	0.0	100.0
46	Surfers Paradise RSL	0	0.0	100.0
47	The Temple Bar	0	0.0	100.0
48	Liquid Bar	0	0.0	100.0
49	Twenty-one Dining Room and Bar	0	0.0	100.0
50	Legends Hotel	0	0.0	100.0
	Total	140	100.0%	100.0%

4.4.2 Violent Crime: July 2004 – June 2005

The 212 incidents listed by venue in Table 4.14 accounted for 39.2% of all violent incidents between July 2004 and June 2005. The ten highest ranked venues (20% of all venues) accounted for 73.6% of reported violent incidents that occurred at a known licensed venue (Figure 4.12). This is 7.9% higher than for the top ten locations in the previous year. It appears from Figure 4.13 and Table 4.14 that Shooters Saloon is responsible for much of the increase, with reported violent incidents at this location increasing more than four fold in comparison to the previous year. Whilst this may be due to an actual increase in violence at this location, considerations include change in staff or a police crackdown on this location. Also, this venue is situated at the entrance of the Mark Building, a building that houses a number of other nightclubs, many of which are also in the top ten risky venues. These venues include: The Party, Cocktails and Dreams, My Bar, Bourbon Bar, Crazy Horse and the Search and Rescue Club. At the time, the owners of Shooters Saloon Bar also owned My Bar, situated on a semi-underground level underneath Shooters Saloon Bar.

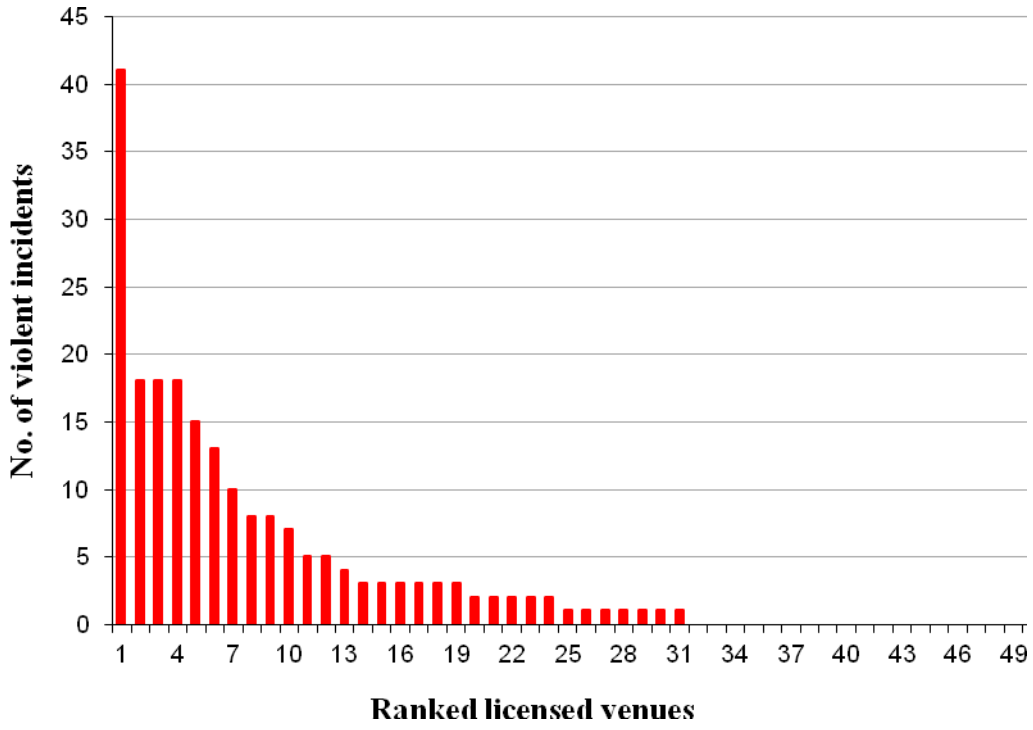


Figure 4.12: Number of violent incidents by ranked licensed venue in Surfers Paradise CBD for July 2004 to June 2005.

Violent crime July 2004 – June 2005

Figure 4.13: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of violent incidents in Surfers Paradise CBD occurring from July 2004 to June 2005, with a zoom of the nightclub neighbourhood locating the top ten ranked licensed venues (rankings refer to Table 4.14).

Table 4.14: Violent incidents in licensed venues in Surfers Paradise CBD from July 2004 – June 2005

Rank	Risky venue	No. of violent incidents	% of violent incidents	Cumulative % of violent incidents
1	Shooters Saloon	41	19.3	19.3
2	Melba's Bar & Restaurant	18	8.5	27.8
3	The Drink Nightclub	18	8.5	36.3
4	The Shack Bar & Café	18	8.5	44.8
5	The Avenue Restaurant & Saloon	15	7.1	51.9
6	Rose & Crown Tavern	13	6.1	58.0
7	Surfers Paradise Beer Garden	10	4.7	62.7
8	Bourbon Bar	8	3.8	66.5
9	Howl at the Moon	8	3.8	70.3
10	Cocktails & Dreams Nightclub	7	3.3	73.6
11	Hollywood Showgirls (Santa Fe Gold)	7	3.3	76.9
12	Elsewhere Nightclub	5	2.4	79.3
13	The Party Nightclub	5	2.4	81.6
14	Fever Nightclub(Ambasee/Bedroom)	4	1.9	83.5
15	Bad Girls Stripclub (Ruby Tramp)	3	1.4	84.9
16	Gilhooleys Irish Bar	3	1.4	86.3
17	Just Hooters Bar	3	1.4	87.7
18	My Bar	3	1.4	89.2
19	O'Malley's Irish Bar	3	1.4	90.6
20	The Troccadero	3	1.4	92.0
21	Billy’s Beachhouse	2	0.9	92.9
22	Courtyard Mariott	2	0.9	93.9
23	Hard Rock Café	2	0.9	94.8
24	Players Showgirls Nightclub	2	0.9	95.8
25	Surfers Paradise SLSC	2	0.9	96.7
26	Clock Tower Tavern	1	0.5	97.2
27	Crazy Horse Bar	1	0.5	97.6
28	Seafood on the Beach Restaurant	1	0.5	98.1
29	SoBar Nightclub (Berlin Bar)	1	0.5	98.6
30	Surfers Paradise Sports Club	1	0.5	99.1
31	Vegas in Paradise	1	0.5	99.5
32	Surfers Paradise RSL	1	0.5	100.0
33	Bavarian Haus Restaurant	0	0.0	100.0
34	Central Lounge Bar & Dining	0	0.0	100.0
35	Charlies on the Mall Restaurant	0	0.0	100.0
36	Disco Bar	0	0.0	100.0
37	Down Under Bar	0	0.0	100.0
38	Fourplay Sportsbar	0	0.0	100.0
39	Groovalicious	0	0.0	100.0
40	Hogs Breath Café	0	0.0	100.0
41	La Porchetta Italian Restaurant	0	0.0	100.0
42	Lansdowne Rd Irish Tavern	0	0.0	100.0
43	Meeting Place Bar & Club	0	0.0	100.0
44	Pink Elephant	0	0.0	100.0
45	Rish Café & Bar	0	0.0	100.0
46	Search & Rescue Club	0	0.0	100.0
47	The Temple Bar	0	0.0	100.0
48	Liquid Bar	0	0.0	100.0
49	Twenty-one Dining Room and Bar	0	0.0	100.0
50	Legends Hotel	0	0.0	100.0
	Total	212	100.0%	100.0%

4.4.3 Violent Crime: July 2005 – June 2006

The 145 incidents listed by venue in Table 4.15 represented 33.6% of all violent incidents between July 2005 and June 2006 (shown in Figure 4.15). The ten highest ranked venues (20% of all venues) accounted for 79.3% of violent incidents that occurred at a known licensed venue. These figures correspond to the 80-20 rule (Eck, Clarke & Guerette, 2007) and show that over the three years, the J-curve became steeper as crime became more concentrated in the top 20 percent of venues (Figure 4.14). The consistent listing of the top ten locations suggests that they are not risky facilities due to randomness. A number of these top venues are close to each other, many being near the southern end of Orchid Avenue, where it meets with Cavill Mall.

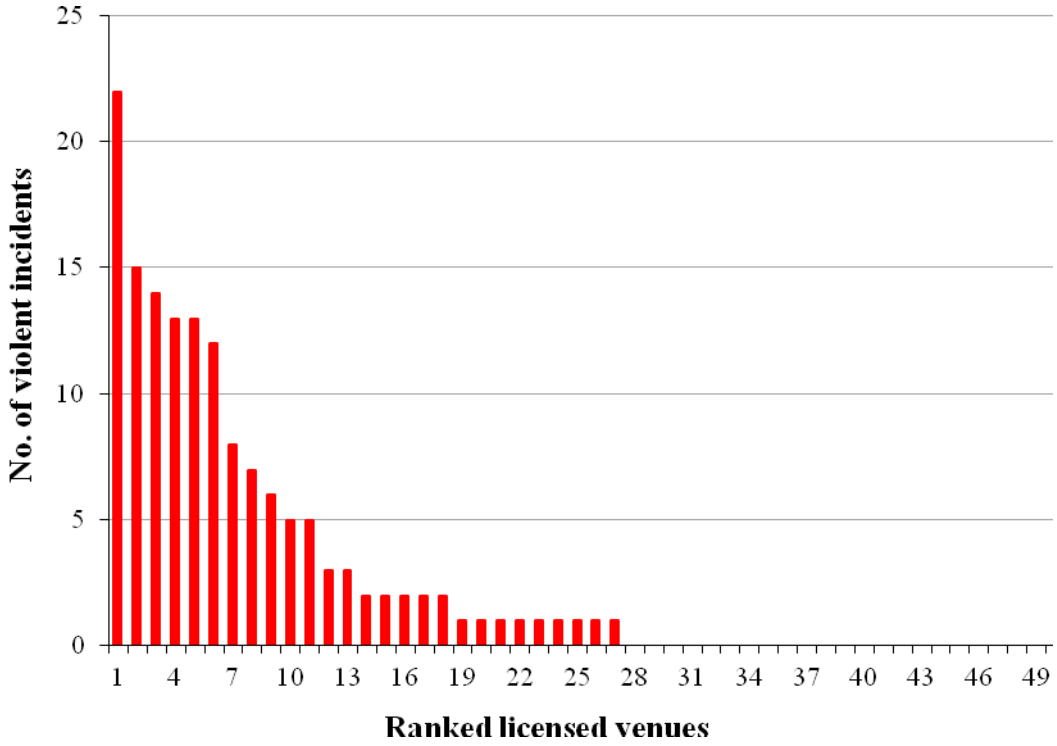


Figure 4.14: Number of violent incidents by ranked licensed venue in Surfers Paradise CBD for July 2005 to June 2006.

Violent crime July 2005 – June 2006

Figure 4.15: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of violent incidents in Surfers Paradise CBD occurring from July 2005 to June 2006, with a zoom of the nightclub neighbourhood locating the top ten ranked licensed venues (rankings refer to Table 4.15)

Table 4.15: Violent incidents in licensed venues in Surfers Paradise CBD from July 2005 – June 2006

Rank	Risky venue	No. of violent incidents	% of violent incidents	Culmulative % of violent incidents
1	Shooters Saloon	22	15.2	15.2
2	Rose & Crown Tavern	15	10.3	25.5
3	The Shack Bar & Café	14	9.7	35.2
4	Hollywood Showgirls (Santa Fe Gold)	13	9.0	44.1
5	Melba's Bar & Restaurant	13	9.0	53.1
6	Cocktails & Dreams Nightclub	12	8.3	61.4
7	The Avenue Restaurant & Saloon	8	5.5	66.9
8	The Drink Nightclub	7	4.8	71.7
9	Bourbon Bar	6	4.1	75.9
10	Ambasee/The Bedroom (Fever)	5	3.5	79.3
11	Surfers Paradise Beer Garden	5	3.5	82.8
12	Billy's Beachhouse	3	2.1	84.8
13	Players Showgirls Nightclub	3	2.1	86.9
14	Central Lounge Bar & Dining	2	1.4	88.3
15	Clock Tower Tavern	2	1.4	89.7
16	Howl at the Moon	2	1.4	91.0
17	Surfers Paradise RSL	2	1.4	92.4
18	The Party Nightclub	2	1.4	93.8
19	Courtyard Mariott	1	0.7	94.5
20	Crazy Horse Bar	1	0.7	95.2
21	Down Under Bar	1	0.7	95.9
22	Elsewhere Nightclub	1	0.7	96.6
23	Gilhooleys Irish Bar	1	0.7	97.2
24	Meeting Place Bar & Club	1	0.7	97.9
25	Search & Rescue Club	1	0.7	98.6
26	Surfers Paradise SLSC	1	0.7	99.3
27	Vegas in Paradise	1	0.7	100.0
28	Bad Girls Stripclub (Ruby Tramp)	0	0.0	100.0
29	Bavarian Haus Restaurant	0	0.0	100.0
30	Charlies on the Mall Restaurant	0	0.0	100.0
31	Disco Bar	0	0.0	100.0
32	Fourplay Sportsbar	0	0.0	100.0
33	Groovalicious	0	0.0	100.0
34	Hard Rock Café	0	0.0	100.0
35	Hogs Breath Café	0	0.0	100.0
36	Just Hooters Bar	0	0.0	100.0
37	La Porchetta Italian Restaurant	0	0.0	100.0
38	Lansdowne Rd Irish Tavern	0	0.0	100.0
39	My Bar	0	0.0	100.0
40	O'Malley's Irish Bar	0	0.0	100.0
41	Pink Elephant	0	0.0	100.0
42	Rish Café & Bar	0	0.0	100.0
43	Seafood on the Beach Restaurant	0	0.0	100.0
44	SoBar Nightclub (Berlin Bar)	0	0.0	100.0
45	Surfers Paradise Sports Club	0	0.0	100.0
46	The Troccadero	0	0.0	100.0
47	The Temple Bar	0	0.0	100.0
48	Liquid Bar	0	0.0	100.0
49	Twenty-one Dining Room and Bar	0	0.0	100.0
50	Legends Hotel	0	0.0	100.0
	Total	145	100.0%	100.0%

4.4.4 Violent Crime: July 2003 – June 2006

As with the annual maps, Figure 4.17 shows that most hot spots for violence are nightclubs and bars. The thematic legend thresholds for Figure 4.17 (created using the incremental mean threshold approach), show that the top ten nightclub hot spots have met the criteria of three multiples of the mean. This suggests that they are legitimate hot spots that are statistically significantly hotter than other locations. The ten highest ranked venues represented 20% of all venues, and accounted for 71.4% of the 497 violent incidents that occurred at a known licensed venue (Figure 4.16 and Table 4.16). These figures are close to the 80-20 ratio. Most of these locations were consistently ranked in the top ten venues over the three years. Risky facility typologies have been created by analysing these ten venues.

Figure 4.18 presents the J-curves for each of the three years, showing that the curve became steeper as crime became more concentrated in the top 20 percent of venues in the second year (2004-2005). However the graph also shows that the distribution of crime changed over the three years, with violence becoming more concentrated in a smaller number of venues. In 2003 to 2004, violence was present in 41 of the 50 locations, in 2004 to 2005, 32 of the 50, and in 2005 to 2006, 28 of the 50.

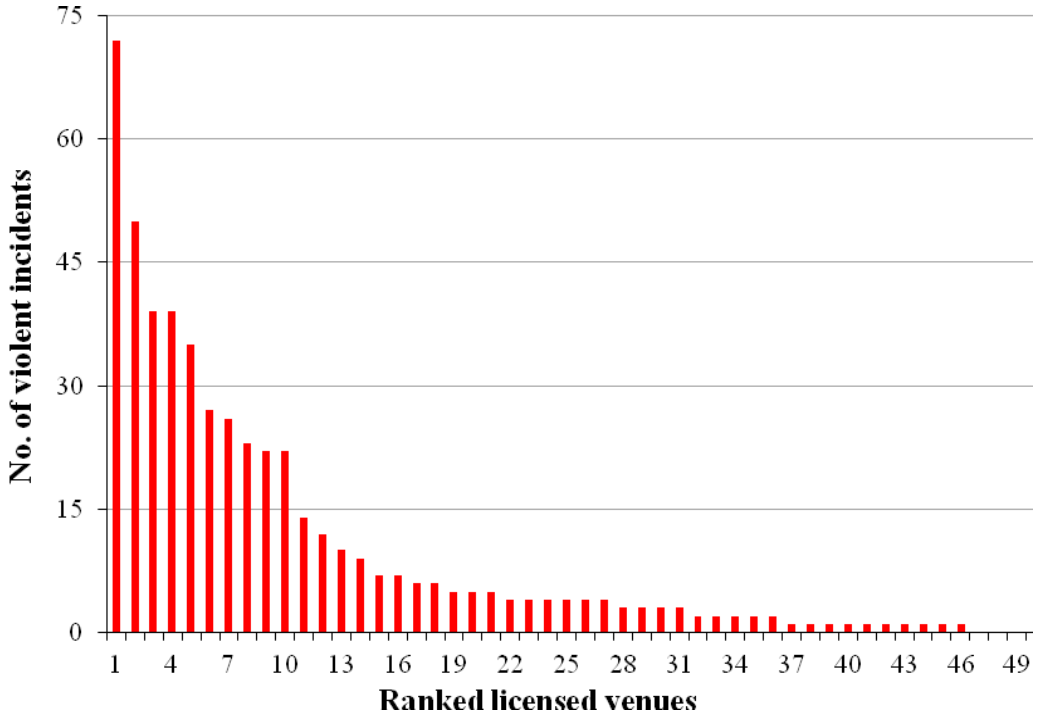


Figure 4.16: Number of violent incidents by ranked licensed venue in Surfers Paradise CBD for July 2003 to June 2006.

Violent crime July 2003 – June 2006

Figure 4.17: Kernel density hot spot map (bandwidth 20.33m) and mean metres/crime (for street level data) of violent incidents in Surfers Paradise CBD occurring from July 2003 to June 2006, with a zoom of the nightclub neighbourhood locating the top ten ranked licensed venues (rankings refer to Table 4.16)

Table 4.16: Violent incidents in licensed venues in Surfers Paradise CBD from July 2003 – June 2006

Rank	Risky venue	No. of violent incidents	% of violent incidents	Culmulative % of violent incidents
1	Shooters Saloon	72	14.5	14.5
2	Melba's Bar & Restaurant	50	10.1	24.6
3	Rose & Crown Tavern	39	7.9	32.4
4	The Drink Nightclub	39	7.9	40.2
5	The Shack Bar & Café	35	7.0	47.3
6	Bourbon Bar	27	5.4	52.7
7	The Avenue Restaurant	26	5.2	58.0
8	Cocktails & Dreams Nightclub	23	4.6	62.6
9	Santa Fe Gold (Hollywood Showgirls)	22	4.4	67.0
10	Surfers Paradise Beer Garden	22	4.4	71.4
11	The Party Nightclub	14	2.8	74.3
12	Fever Nightclub(Ambasee/Bedroom)	12	2.4	76.7
13	Howl at the Moon	10	2.0	78.7
14	Players Showgirls Nightclub	9	1.8	80.5
15	Clock Tower Tavern	7	1.4	81.9
16	Gilhooleys Irish Bar	7	1.4	83.3
17	Billy’s Beachhouse	6	1.2	84.5
18	Elsewhere Nightclub	6	1.2	85.7
19	Bad Girls Stripclub (Ruby Tramp)	5	1.0	86.7
20	SoBar Nightclub (Berlin Bar)	5	1.0	87.7
21	Surfers Paradise SLSC	5	1.0	88.7
22	Courtyard Mariott	4	0.8	89.5
23	Crazy Horse Bar	4	0.8	90.3
24	Just Hooters Bar	4	0.8	91.2
25	My Bar	4	0.8	92.0
26	O'Malley's Irish Bar	4	0.8	92.8
27	The Troccadero	4	0.8	93.6
28	Hard Rock Café	3	0.6	94.2
29	Meeting Place Bar & Club	3	0.6	94.8
30	Surfers Paradise RSL	3	0.6	95.4
31	Vegas in Paradise	3	0.6	96.0
32	Central Lounge Bar & Dining	2	0.4	96.4
34	Disco Bar	2	0.4	96.8
35	Fourplay Sportsbar	2	0.4	97.2
36	Pink Elephant	2	0.4	97.6
37	Search & Rescue Club	2	0.4	98.0
38	Bavarian Haus Restaurant	1	0.2	98.2
39	Charlies on the Mall Restaurant	1	0.2	98.4
40	Down Under Bar	1	0.2	98.6
41	Groovalicious	1	0.2	98.8
42	Hogs Breath Café	1	0.2	99.0
43	La Porchetta Italian Restaurant	1	0.2	99.2
44	Lansdowne Rd Irish Tavern	1	0.2	99.4
45	Rish Café & Bar	1	0.2	99.6
46	Seafood on the Beach Restaurant	1	0.2	99.8
47	Surfers Paradise Sports Club	1	0.2	100.0
47	The Temple Bar	0	0.0	100.0
48	Liquid Bar	0	0.0	100.0
49	Twenty-one Dining Room and Bar	0	0.0	100.0
50	Legends Hotel	0	0.0	100.0
	Total	497	100.0%	100.0%

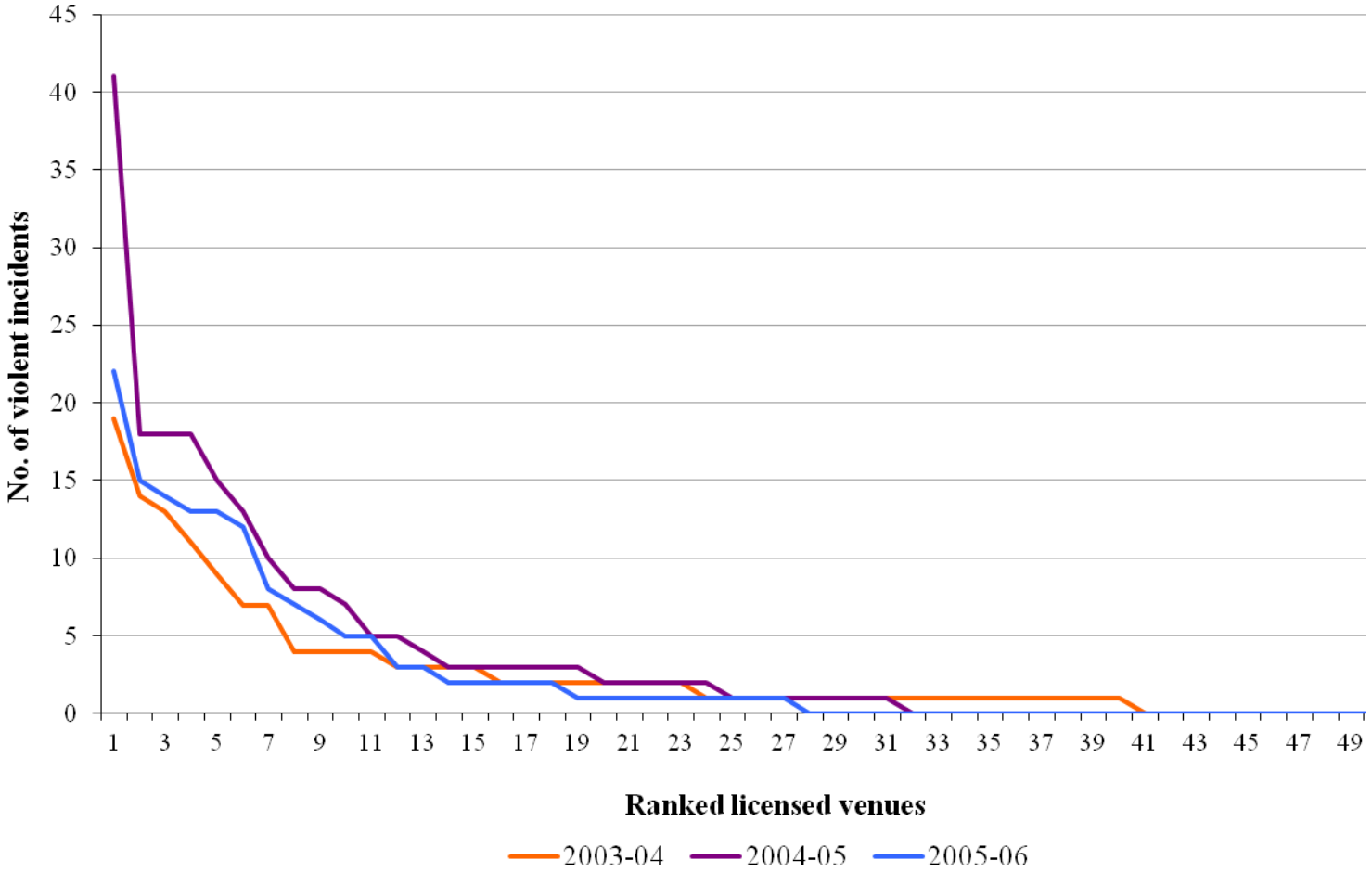


Figure 4.18: Number of violent incidents by ranked licensed venue in Surfers Paradise CBD for July to June 2003-04, 2004-05 and 2005-06.

4.4.5 Risky Venue Typologies

There are a number of possible explanations as to why the top ten venues between 2003 and 2006 are hot spots for aggressive behaviour. Information on the physical and social environment of each risky venue was obtained through casual site visits and police incident descriptions. Factors that typified the top ten venues and may encourage violence (according to literature presented in chapter two) were: aggressive security staff, proximity to other venues, poor access (shared entries, exits and staircases), size of venue and competitive entertainment (pool table and/or dance floor). Table 4.17 shows how these explanations apply to each of the top ten risky venues.

Table 4.17: Risky venue typologies for top ten risky venues between July 2003 – June 2006

Rank	Risky Venue	Typology				
		Security	Proximity	Access	Size	Entertainment
1	Shooters Saloon	✓	✓	✓		✓
2	Melba's Bar				✓	✓
3	Rose & Crown Tavern			✓	✓	✓
4	The Drink Nightclub	✓	✓	✓		✓
5	The Shack Bar & Café					✓
6	Bourbon Bar		✓			✓
7	The Avenue		✓			✓
8	Cocktails & Dreams		✓	✓		✓
9	Santa Fe Gold / Hollywood Showgirls	✓				✓
10	Beer Garden			✓		✓

Three of these explanations for risky licensed venues in Surfers Paradise draw on Eck, Guerette and Clarke's (2007) five explanations for risky facilities - random variation,

reporting processes, targets, offenders and place management. Aggressive security staff are related to poor place management, the size of the venue is related to the number of available targets, and close proximity to other venues can expand offender opportunities. Since many of the top ten risky venues were consistently in the top ten over the three years, random variation is not a likely explanation. Also, reporting processes appears to be an unlikely explanation for violence for many of the top ten risky venues, as they are difficult to view or access directly from the roadside. Melba's is the exception. The design of Melba's allows for natural surveillance of the entrance and ground level from the street by police foot patrols. Police descriptive reports suggest that staff are diligent about reporting incidents of violence.

Security

Much research has found a significant association between aggressive security staff and violence in and around nightclubs (as discussed in chapter two). Police incident descriptions suggested that aggressive security staff at Shooters Saloon, The Drink Nightclub and Hollywood Showgirls made significant contributions to the assault rates at these locations. At Shooters Saloon, almost one in four of the 72 violent incidents that occurred over the three years involved bouncers as the offenders. A pack mentality amongst the bouncers was mentioned by a number of victims in their police descriptions, illustrated in the example given in Table 4.18. When bouncer group assaults are frequent occurrences, it reflects an embedded culture of violence amongst bouncers, and suggests management endorsement of violence as a way to control patrons. This volatile and masculine atmosphere may have attracted male targets and male offenders.

Table 4.18: Violent bouncers at Shooters Saloon, QPS database (2005)

'The complainant was refused entry to Shooters Nightclub after a brief conversation with security personnel. A security officer from the nightclub has approached the complainant from behind and applied a choking hold around the complainant's neck. The complainant was dragged backwards by this security officer and another security officer from the nightclub. The complainant was dragged approximately ten metres down a ramp to the right hand side from the nightclub entrance. The complainant was face down at the time with the security officer maintaining the hold throughout the incident. Another two staff from the nightclub have joined the first two security officers and proceeded to kick and hit the complainant around the head. This continued for approximately two to three minutes. The incident stopped upon the arrival of police officers from Surfers Paradise Police Station. The complainant was handcuffed and transported to the Surfers Paradise Police Beat and released on his own undertaking to attend Pindara Private Hospital. The complainant states that he sustained a large cut to his forehead above his right eye requiring five stitches, concussion and a suspected broken nose which is to be confirmed'.

Situated diagonally across the road from Shooters Saloon Bar is The Drink Nightclub, where one third of all assaults were committed by security staff. Bouncer assault victims frequently reported being assaulted whilst being escorted off the property (in the lift or staircase), or at the front door (Table 4.19 and Table 4.21). Following the reopening of The Drink in June 2005 after renovations, there was a significant drop in the number of assaults. This drop may be due to a change in staff and/or management following renovations, or even a change in staff attitude towards disorderly behaviour after adopting a more sophisticated image.

Table 4.19: Violent bouncer at The Drink Nightclub, QPS database (2003)

'The complainant and a male associate were refused entry into The Drink Nightclub. The complainant verbally abused the suspect, who is a security provider at the nightclub. The complainant has turned and proceeded to walk away when the suspect has punched the complainant in the head with a clenched left fist. The complainant sustained a large gash above his right eye. The suspect returned to duties after the incident'.

Between July 2003 and June 2006, there were 21 violent incidents at the gentleman's club Hollywood Showgirls, nine of which involved security staff as offenders. Only one of these nine incidents occurred in the first year and a half of data, when the place was known as Santa Fe Gold. This suggests that violence is not intrinsic to the physical location, but may be the result of a change in management, security staff, layout, club purpose or clientele (or a combination thereof). A number of the incident descriptions refer to a 'pack mentality' amongst security staff, similar to the Shooters Saloon Bar. These incidents of group violence often resulted in serious permanent injuries (Table 4.20).

Table 4.20: Violent bouncers at Hollywood Showgirls, QPS database (2005 & 2006)

Unprovoked bouncer assault causes brain haemorrhaging 'The doctor explained that the complainant had received some type of severe knock to the back left side of his head causing the force of the blow to travel forwards and as a result, severe bleeding and tearing in the front right region of the complainant's brain. The doctors have explained that his injuries will take a couple of months to heal properly and could possibly result in permanent symptoms such as dizziness, fatigue and poor concentration and may even result in epileptic fits or spasms'.
VIP treatment 'The complainant has organised a private party in the club's VIP section with management. During this event a member of the party was evicted without incident. The complainant has requested to speak with management about the incident and about the attitude of security staff. The complainant states he was walking down a stairwell from the VIP area when he was confronted by four male security staff. The complainant was set upon by the four males. The complainant further states that he received several blows to the back of the head as well as several blows to the face after being pinned to the ground in a choke hold. Complainant believes he lost consciousness before being removed from the club and thrown onto the street. Complainant has received bruising, swelling and cuts to the face and head as well as soft tissue damage to arms and throat. Complainant has considerable pain....and has trouble swallowing'.
Eviction leads to paralysis 'The suspect is a security officer on duty at the time of the offence. The complainant was a patron. The complainant has been involved in a verbal altercation with the suspect. The suspect has used an open or closed right or left hand and struck the complainant once to the right side of his face or ear. This has knocked the complainant to the ground, immediately becoming unconscious. The complainant has sustained a serious head injury resulting in some form of haemorrhage. QAS transported the complainant to the Gold Coast Hospital. The complainant has sustained nerve damage which has caused the right side of his face to drop'.

Proximity

Close proximity to other nightclubs increases the density of nightclubs in a district, a factor strongly related to crime and disorder (as discussed in chapter two). Close proximity to other nightclubs appears to be a key cause of violence for a number of the top ten risky venues. Close to the corner of Orchid Avenue and Cavill Mall is a three storey building housing The Avenue Restaurant on ground level, Bad Girls Stripclub (which changed to Ruby Tramp) on level two and The Drink Nightclub on level three. The closeness of these locations requires patrons to queue next to each other. Across the road is the Mark Building, where Shooters Saloon, Bourbon Bar, and Cocktails and Dreams share a street front and exit/entry ways. The Bourbon Bar is situated on the ground level (partially underground). Its entrance is at the base of the stairs that lead up to the first level of the Mark Building where Shooters Saloon and Cocktails and Dream are located. Stairs also go underground outside the Bourbon Bar to The Party Nightclub (ranked 11) and My Bar (ranked 25). Due to its central location, it is likely that security staff from the Bourbon Bar deal with intoxicated individuals lingering from other nightclubs. This is supported by Eck, Clarke and Guerette's (2007) 'offender' cause of risky facilities, which suggests that areas in which there are a number of venues close to each other (high density) may have problems as potential offenders are brought close to various types of targets.

The impact that neighbouring venues can have on each other was demonstrated in the increase in incidents between 2004 to 2005 at both The Avenue and The Drink. The Drink peaked in incident numbers in 2004 to 2005 with 18 incidents (regardless of being closed for part of the year for renovations), as did The Avenue, moving from being ranked 14th in 2003 to 2004, to being ranked fifth in 2004 to 2005. This increase was five fold. Many of the 27 acts of violence occurred outside of the venue, along with a number of evictions and refusal of entry incidents that resulted in arrest.

Access

Related to proximity is access. Within clubs and at the entry of clubs, poor design at access points can lead to congestion and limited surveillance, both situational precipitators to violence. Police incident descriptions of incidents at the top ten risky venues showed that stairs were often hot spots for violence due to congestion, poor

surveillance and the high likelihood of injury when pushed down them (Table 4.21). At The Drink Nightclub it was the narrow staircase and the elevator that were found to be hot spots for violence (Table 4.21).

Table 4.21: Violence at Nightclub Access Point, QPS database (2003 & 2004)

Violence in stairs at Rose and Crown Hotel 'At the nominated time the complainant was at the offence location with some friends when a fight has broken out. The complainant was not involved in the fight but has intervened to break it up and his friends were involved. The entire party has been ejected from the club. The complainant was leaving when an unknown person started to have a go at him. The complainant did not respond. Even so the bouncer saw this and pushed the complainant in the upper part of his back. The complainant fell down a flight of stairs not touching the stairs on the way down and landed awkwardly making his right knee collapse under him'.
Violence in the elevator at The Drink Nightclub 'The complainant's male friend has been asked to leave the dance floor area of the nightclub due to being intoxicated. The complainant's friend has started to be escorted from the club. The complainant has then stepped in and protested about the treatment of his friend. As a result the complainant was put in a choke hold and escorted to an elevator in the premises. Whilst being restrained in an enclosed elevator, he has been elbowed or punched in the left eye region by the bouncer. This has caused a cut that needed stitches and associated bruising. The complainant was then escorted from the premises'.

Size

Eck, Clarke and Guerette (2007) highlight size as a consideration when determining the causes of risk due to the increase in targets with greater capacity. With a capacity of 1,300, Melba's is the largest known nightclub in Surfers Paradise. This large capacity equates to a large number of potential targets, a possible explanation for its high number of violent incidents. Discussions with local council suggest that another explanation is its popularity as a final venue for the night, when patrons are likely to enter the venue already intoxicated, resulting in large numbers of vulnerable targets and/or volatile offenders.

Similar to Melba's, the Rose and Crown Hotel had a capacity of 1020 and was hidden on the second level of a shopping centre (Raptis Plaza), isolated from other venues and

the street life. The venue closed in June 2009 after 18 years of operation. The large capacity of the Rose and Crown Hotel is likely to have played a role in it being a hot spot for violence, considering all other venues in the top ten have a capacity of between 300 and 600.

Entertainment

There is some evidence to suggest that certain types of entertainment can evoke competitive behaviour and increase the likelihood of agitation due to bumping into others. Dance floors, certain types of live music (e.g. punk rock) and pool tables in particular, can create opportunities for confrontation and competition for the attention of the opposite sex (Table 4.22). Every venue in the top ten provide some form of entertainment, such as a dance floor, pool tables, live band, strippers or television.

Table 4.22: Violence at the pool tables in Melba's Bar and Restaurant, QPS database (2004)

'Complainants one and two and the witness were playing pool in the upstairs area of the Melbas Nightclub. An altercation has occurred between the complainants and an unknown male person. During the altercation, this unknown male person has used a glass to hit complainant one in the head causing a laceration above his left eyebrow. Complainant two has also been hit during the altercation causing him to fall to the ground. Once on the ground, other unknown males have continued to hit complainant two with their hands. Security at Melbas have intervened and ejected the male persons from the club. Complainant one was taken to the kitchen area by security staff where he received first aid. Complainant one has later attended a doctors surgery where he has received four stitches to the laceration above his left eyebrow. Complainant one has also sustained numerous bruises. Complainant two has sustained bruising around his neck and above his left eyebrow and has received medical attention'.

Shooters Saloon is a renowned drinking hole for local biker gangs. Combined with no nonsense bouncers, the bar portrays a tough macho image and atmosphere. It appears that this atmosphere attracted female targets looking for male companions as well as aggressive female offenders. Over the three years there were 11 incidents of male (including bouncers) on female, and female on female assaults (not sexual). This figure is particularly high considering female assault victims are relatively uncommon in the

Surfers Paradise nightclub district. Police incident descriptions suggest that most of these assaults were unprovoked, and offenders were often unknown to victims (Table 4.23). One contributing factor was ladies' night on Tuesdays, where women received a free glass of champagne on arrival and male strippers were the entertainment. However, 'Ladies' night' also attracted males seeking a drinking environment with a large number of females. Police reports show 13 incidents of assault, move on orders (usually due to intoxicated individuals harassing security staff and refusing to leave door entry) and disorderly behaviour in the late hours of Tuesday night or (early hours of Wednesday morning).

Table 4.23: Examples of female assault victims at Shooters Saloon Bar, QPS database (2003 & 2005).

Male on female violence 'The suspect approached the complainant whilst she was dancing and asked her to give him a lap dance. The complainant has tapped the suspect on the face at which point the suspect has punched her with a closed left fist to the right side of her face. The complainant has received redness to her face; cuts inside her mouth; headaches and soreness to the right side of her face. ***Female on female violence*** 'The complainant in this matter was at the offence location when she accidentally bumped into a woman in the crowd. The woman has taken exception to it believing she was pushed in the back and has assaulted the complainant by punching her on the left side of her top lip causing a deep laceration'.

4.5 Results of Analysis 4 – 3am Lockout

Crime incident hot spot maps were created for July to September 2003, 2004 and 2005. These maps provided no additional information to that provided by the year long maps (Figures 4.8.1, 4.8.2 and 4.8.3) and have therefore not been included. An analysis of crime incidents over 24 hours was conducted for July to September for 2003, 2004 and 2005. Figure 4.19 and data in Appendix 3 suggest there was some temporal displacement of crime after the lockout introduction (in periods 2 and 3). The graph shows that the number of crime incidents prior to the lockout introduction (2003) peaked between 1am and 2am, with approximately 0.72 crimes occurring daily at this

time. During period 2 (2004), the crime rate between 1am and 2am increased to 0.79 crime per day, but remained relatively high until 5am. By period 3 (2005), rates were significantly lower but peaked later between 2am and 3am, with a rate of 0.45 crimes per day. The 2005 graph also shows an early evening peak not seen in previous years between 10pm and 11pm.

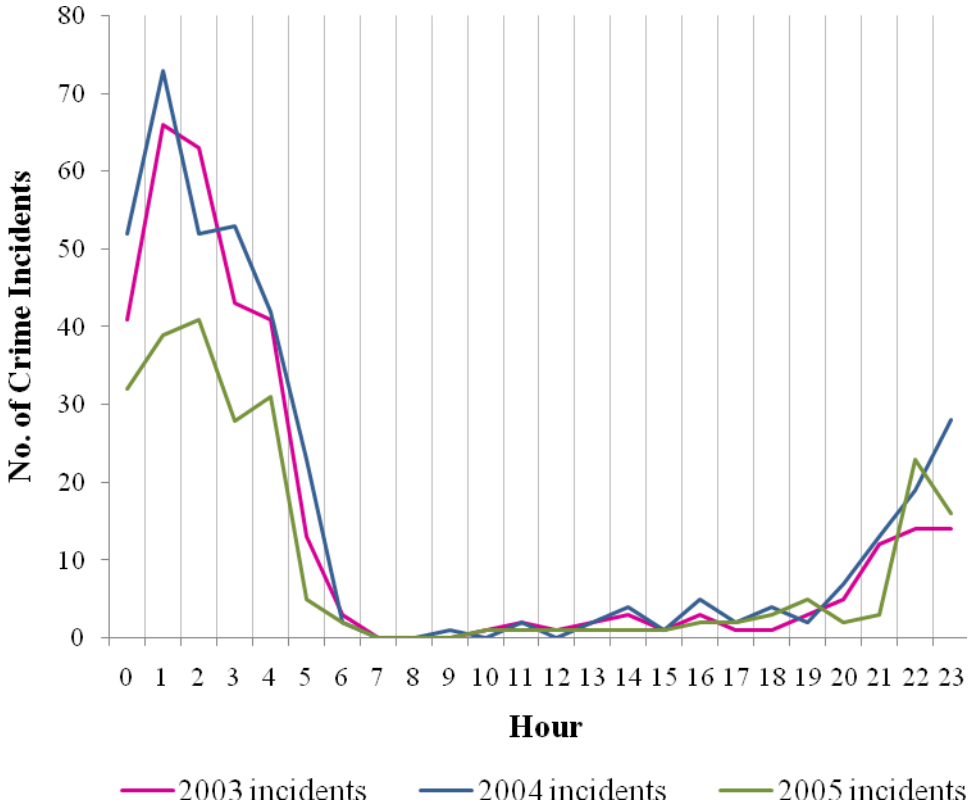


Figure 4.19: Crime rate over 24 hours for July – September 2003, 2004 and 2005

These distributions of crime over 24 hours were plotted for each period on circular graphs using a rose plot design with frequencies represented by the radius of the plot (from the centre) (Figure 4.20.1, 4.20.2 and 4.20.3). These figures were designed using Oriana software. Results showed that the mean time for violence became progressively earlier over time, from 1.52am, to 1.41am, to 1.34am. A simple Watson's U^2 test was conducted in the programme to test for temporal displacement by comparing the distributions of crime over the 24 hours for July to September 2003 to 2004, 2003 to 2005 and 2004 to 2005. The result suggests that there was a moderate statistically significant change ($U^2 = 0.165$ (df1 = 336, df2 = 396), $0.1>p>0.05$) between period 1 (2003) and period 2 (2004).

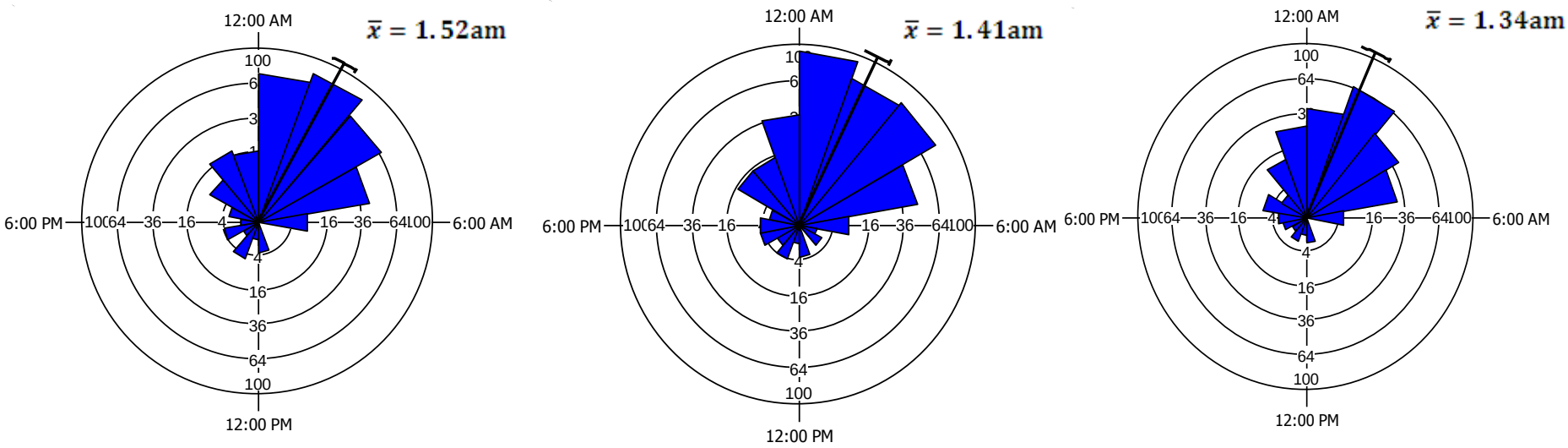


Figure 4.20.1: Rose plot diagram of violent incidents occurring over 24 hours in Surfers Paradise CBD, July to September 2003
Figure 4.20.2: Rose plot diagram of violent incidents occurring over 24 hours in Surfers Paradise CBD, July to September 2004
Figure 4.20.3: Rose plot diagram of violent incidents occurring over 24 hours in Surfers Paradise CBD, July to September 2005

4.6 Summary

This chapter has presented the results of the temporal and spatial analyses of incidents of crime and violence occurring in Surfers Paradise CBD between July 2003 and June 2006, as recorded by Queensland Police. A number of methods were used to analyse the data, namely a time series regression, hot spot analysis, risky facilities analysis and the Watson's U^2 test. The time series analyses showed a significant increase in the rates of crime and violence during months when special local events occurred. Seasons and the introduction of the 3am lockout did not have a significant impact on crime and violence rates. The hot spot analyses found that hot spots for crime and violence remained relatively stable over time.

The risky facilities analysis showed that the top ten risky venues over the three years remained relatively stable, and represented 20% of all licensed facilities. These venues were collectively responsible for approximately 72% of all violent incidents recorded by police. A thematic analysis was conducted on information collected in casual site visits and police descriptions of violent incidents that occurred in and around these venues. This analysis provided five main explanations for violence at these venues: aggressive security staff, venue size, proximity to other venues, club access, and entertainment (of a competitive nature).

Further analysis of the impact of the 3am lockout showed that hot spots remained stable before and after the lockout introduction, suggesting no spatial impact. An analysis of the impact that the lockout had on the distribution of crime over 24 hours showed some temporal displacement following the introduction of the lockout, with small peaks occurring at later times in the early hours of the morning. These peaks occurred between 3am and 4am in 2004 (following the major peak between 1am and 2am), and between 2am and 3am (major peak in the 24 hours), and 4am and 5am in 2005. The Watson's U^2 result suggests that there was a moderate statistically significant change in the distribution of incidents over 24 hours between period 1 (July to September 2003) and period 2 (July to September 2004).

CHAPTER 5

Methodology: The Temporal Patterns of Ambulance-Recorded Assaults and Injuries in Surfers Paradise

This chapter discusses the methods used to study the impact that the routine activity of Surfers Paradise has on the temporal patterns of intentional and accidental injuries and illness, according to Queensland Ambulance data. The chosen method replicates parts of the methodology used in the police data analyses (chapter three), and is therefore also based on key empirical and theoretical concepts presented in segment one of the hypothesised model (Figure 2.1).

Using month as the unit of analysis, the time series regression explores the impact of three independent variables on weekday and weekend rates for all cases of ambulance assistance, as well as assault, intoxication/overdose and head/neck injuries (as recorded by the Queensland Ambulance Service). The three independent variables are seasons, special events and the lockout introduction. They were chosen because of the potential effect they have on the routine activity of Surfers Paradise over time. It is expected that this routine activity dictates the requirement for ambulance assistance in the area.

This chapter also discusses the methodology used to create the dataset integrating QAS and QPS assault data. This exercise aims to explore the viability and requirements for an inter-agency database. It also aims to assess the proportion of case cross-over between agencies as an indicator of criminal incidents not known to police, potentially affecting their official crime rates and hot spot targeting.

5.1 Research Questions to be Addressed

This chapter discusses the methodology used to respond to research questions two and three, utilising longitudinal ambulance data. Question three has been previously addressed in chapters three and four using only police data.

2. How do data contributions made by agencies other than police affect our understanding of the spatial and temporal dynamics of alcohol-related violence and injuries?

3. How has the introduction of the 3am lockout affected the spatial and temporal distribution of alcohol-related violence and injuries as reported by the agencies contributing to the database?

Results of the analysis of ambulance data and the integration of ambulance and police assault data (and essentially responses to these questions) are presented in chapter six.

5.2 Procedure

5.2.1 Approval

Ethics approval was obtained from the Griffith University Human Ethics Committee for obtaining, using and storing Queensland Ambulance Service data. Approval for data acquisition was then requested and received from the Queensland Ambulance Commissioner. Meetings were held with research staff from the Queensland Ambulance Service to discuss data requirements.

5.2.2 Data Collection

The data received from the Queensland Ambulance Service consisted of 2540 recorded incidents that occurred between 8th December 2003 and 30th June 2006. The data was received in the form of hard copy re-printed from microfiche. Specifically, the data came as hard-copies of reports hand-written by ambulance officers as the time of the incident. Due to the time consuming nature of this data extraction method, the data received was not cleaned at the land parcel level, and included all incidents that occurred on any street in the catchment area in Surfers Paradise CBD requiring ambulance attention.

5.2.3 Data Preparation

Approximately 50 cases were removed based on illegibility and poor print quality. Following this, data was cleaned to remove those cases that occurred on streets within the catchment area, but at specific land parcels that fell outside the catchment area. Cases were also removed if they were at private addresses and had not been preceded by

drinking in a licensed venue in Surfers Paradise CBD. The final stage of data cleaning involved removing incidents of personal illness unrelated to alcohol or drug intake (e.g. heart attack, child drowning, elderly fall). Once the data was cleaned there were 1713 cases to be entered into SPSS for analysis. Data was entered using a coding sheet in preparation for time series regression and risky facilities analyses.

The following variables were readily available on the ambulance incident report: incident number, date, time (when notification of incident received), place, street number, gender, age, date of birth, located patient on arrival, location and GCS (Glasgow Coma Scale). Variables created to conduct these analyses include: case number (allocated by researcher), event causing injury/illness, persons involved, relationship to persons involved, signs of injury, incident location, alcohol or drug use, club visited, injury to head, injury to neck, injury to arm, injury to chest/back, injury to knee, injury to leg, injury to foot and police involvement.

'Event causing injury' include the following codes: fall/trip, assaulted (pushed, punched or kicked), involved in fight but details unknown, assaulted with a weapon, drowning, severe intoxication/overdose, personal injury/illness (not including fall/trip), motor vehicle accident and other. 'Event location' coding includes: footpath/roadside, club/bar, inside private dwelling, beach, Chill Out Zone and other.

The 'persons involved' variable includes coding combinations of the number of persons and gender (e.g. one male, two females, group, etc.). The 'relationship to persons involved' variable includes the following codings: no one (N/A), stranger, acquaintance, friend, spouse/partner, ex-partner, security, police and other.

5.3 Research Design

5.3.1 Time Series of Incidents, Head/Neck Injuries, Assaults and Severe Intoxication/Overdose by Month

The time series analyses involved four dependent variables (all analysed in separate analyses). The same independent variables were chosen as those used in the police data time series analysis: the lockout introduction, special events and seasons. However, unlike the police data, only 31 months of data were available for analysis rather than 36 months.

Therefore, the data ranged from December 2003 to June 2006. Whilst the first week of data was not available for December, this was not problematic as the data was analysed as a rate per weekday or weekend per month. Due to the poor quality of the data and possibility that the location of patient pick-up was not the location of incident, all cases have been treated as separate incidents (i.e. no case matching was conducted to create incidents).

Dependent Variables

The dependent variables examined were the rate of overall incidents requiring ambulance attendance (1713 incidents), the rate of head and neck injuries (782 incidents), the rate of assaults (497 incidents) and the rate of severe intoxication or overdose (551 incidents). As with the police time series analyses, the variation in the number of days per month and number of weekends (when most clubbing occurs) per month was considered. Once again, weekday rates (weekday variable) were used as a control against weekend rates (weekend variable).

There were eight analyses involved in the analysis of four dependent variables using a weekday and weekend rate. Rates were created using the sum of the total number of dependent variable incidents divided by the number of days of the week that fall on a weekday or weekend for each month. These eight rates are summarised in Table 5.1. Monthly rate figures for each dependent variable are summarised in Appendix 4 to 7.

Table 5.1: Rate calculations for eight time series models – Ambulance data

Divided by total	Sum of			
	Total incidents	**Head/neck injuries**	**Assaults**	**Intoxication/ overdose**
Weekday	Total incident/ weekday	Head/neck injuries/ Weekday	Assaults/ weekday	Intoxication/ overdose/ weekday
Weekend	Total incident/ weekend	Head/neck injuries/ Weekend	Assaults/ weekend	Intoxication/ overdose/ weekend

Independent Variables

Lockout

As in the police time series analyses, the lockout variable was included as an independent variable in the ambulance time series analyses. Since the 3am lockout was introduced on 1st April 2004, the months prior to its introduction (December 2003 to March 2004) represented 'before lockout' and were coded '0'. Therefore 'after lockout' represented months April 2004 to June 2006 which was coded '1'.

Special events

'Special events' was created to take into account the impact that high profile annual events in the local area have on rates of violence, intoxication and injuries. High profile events generally run from October through to January and include Indy Grand Prix, Schoolies, the Christmas holidays and New Years Eve. Therefore these months are considered 'special events' months and were coded '1'. The remaining months of February through to September were coded '0'.

Seasons

The final independent variable was 'seasons'. As with the police time series analyses, this variable was included in the ambulance time series analyses to account for the impact that large numbers of tourists visiting the beach and staying in the local area have on Surfers

Paradise (and the Gold Coast in general) during summer months. The months during which Surfers Paradise experiences summer weather are October through to April. These summer weather months were coded '1' whilst the winter weather months of May through to September were coded '0'.

5.3.2. Integrated Dataset – Data Matching

Only assaults were chosen for the integrated dataset, since police incidents such as robberies and public nuisance were not expected to have an ambulance match. This was also the case with drunken falls or trips (that may have an ambulance match but were unlikely to have a police match). The aim of the matching was to find a match for every ambulance assault case. Technically, all ambulance assaults should have a police record, but not all police assault incidents will have an ambulance record due to a lack of required ambulance assistance or the injured going to hospital via other means of transport.

An integrated dataset of police and ambulance cases was created using a number of techniques for data matching. Assault cases were matched according to date, time, location, gender, and a description of incident and injuries. The initial and essential criteria required, and used as a starting point for matches was the date and time. To make this process easier, a Structured Query Language (SQL) script was written to find potential matches. Similar to syntax, SQL is a script frequently used to extract data from large datasets or to find relational data in different databases. Parameters in the script used for the creation of the integrated dataset were cases with a starting ambulance time within half an hour of the ending time for police assault cases. The ending time for the police cases was chosen, since this is likely to be the time when injuries are evaluated and an ambulance called. Potential matches between the two datasets were then listed in a separate spreadsheet for further exploration.

5.4 Analyses

5.4.1 Time Series Regression

With month as the unit of analysis, time series analyses of the 31 months of data were conducted for all four dependent variables using the STATA programme. Two sets of analyses (weekday and weekend) were run for all four dependent variables (all incidents,

head/neck injuries, assaults and intoxication/overdose). As with the police time series analyses, Prais-Winsten regressions were performed to preserve all months of data available. To ensure that there was no residual auto-correlation, a Durbin-Watson test was conducted.

5.4.2 Integrated Dataset (including risky facilities analyses)

A descriptive analysis of the cases matched was conducted, providing information on the types of cases easily matched and on the proportion of matched cases. This was followed by a risky facilities analysis for ambulance incidents, with police rankings for violence included to provide a comparison of hot spot locations. Similar rankings for each location suggest that there are a significant number of matches and/or risky facilities that are known to both agencies. A high ranking in police data but not ambulance data can suggest that: 1) the management of the venue is not being socially responsible and calling for an ambulance when required (this may particularly be the case when incidents occur outside the venue and not inside); 2) injuries obtained due to assaults may not be serious enough to require ambulance assistance; and/or 3) injured patrons may require medical assistance but take alternative transport to the hospital. Alternatively, venues may contact ambulance rather than police when an assault occurs, in an effort to reduce the number of incidents recorded by police (so as to not raise alarm with regard to their liquor license).

CHAPTER 6

Results: The Temporal Patterns of Ambulance-Recorded Assaults and Injuries in Surfers Paradise

An excerpt from "Oh God! It's Schoolies" (Donaldson, 2008, p 4-5).

'As we walked along Cavill Avenue (with me still holding Angela's handbag) we had to squeeze through the shirtless or singlet clad young men who in their intoxicated state were trying to assert themselves by sticking out their chests. The scary thing was that these young fellows who were flexing were big fellows. As we made our way through I could hear taunts of 'f..... toolie' directed at me. Not game to turn around, I just puffed my chest out and tried to make the VIP tag around my neck more prominent. Mind you it is hard to look authoritative when you are carrying a handbag and lady's coat. I was grateful to see the adult populated ambulance centre ahead. The entrance was surrounded by Red Frogs volunteers, State Emergency Services and most importantly ambulance officers. Angela escorted the young girl into the ambulance tent and asked her friend to remain outside with a Red Frogs volunteer. Angela told the ambulance officer what had occurred at which stage the girl burst into tears, sat down and told the ambulance officer about the 'f.... bitch that bit my f..... finger' .Looking around I saw that I was in a large tent that is divided into 3 rooms. The first room is a make shift reception area. Seated on chairs were 2 young men both sporting bloody noses. There was another young man with his foot bandaged. Apparently laceration of the feet is common amongst schoolies as footwear (unless it is thongs being worn on arms) tends to be an inconvenience. Angela beckoned me through to the next room where she introduced me to a number of ambulance officers. She also introduced me to a doctor from the Gold Coast Hospital who has given up his night to assist. The second room is where all the supplies are kept and where the overworked ambulance officers can take a few moments of well earned rest. The third room is a 20 stretcher ward. In this room there were already 4 young people who had succumbed to the effects of alcohol. Three of them were being closely monitored by the ambulance officers who have sick bags at the ready. The fourth girl had passed out with a blanket over her. I was informed that by the end of the night the room would be full and there wouldn't be a stretcher vacant'.

Like the Queensland Police Service, the Queensland Ambulance Service plays a pivotal role in providing a safe environment in Surfers Paradise, especially during peak times such as Schoolies. This chapter provides an in-depth examination of ambulance assistance required for all intoxication, injury and assault related incidents in the Surfers Paradise nightclub district. In addition, it explores the possibility of constructing a dataset that integrates police and ambulance cases, and the impact that data matching can have on the story of violence and injuries in an entertainment district.

Extensive descriptive statistics have been provided on each dependent variable. This does not include a yearly crime rate as per the independent variables (as provided for the police data in chapter four), since this may be misleading due to the reduced number of months in the first year of data. Similar to the police data analyses, Prais-Winsten regressions were conducted using 31 months of data, spanning from December 2003 to June 2006. These time series analyses examined the temporal patterns of mean weekday and weekend ambulance rates for 1) all incidents; 2) incidents of head and neck injury; 3) incidents of assault; and 4) incidents of severe intoxication/overdose. The impact of the seasons, special events and the introduction of the 3am lockout was considered.

Results indicated that the independent variables best explain total incident rates and intoxication/overdose incident rates rather than injury rates and assault rates. Similar to the police data time series analyses, special events were the only significant predictors of ambulance assistance for intoxication/overdose and assault related incidents and injuries.

6.1 Descriptive Statistics

6.1.1 All Ambulance Incidents

In total, there were 1713 possible alcohol/drug and violence related incidents requiring ambulance assistance in the Surfers Paradise CBD between 8 December 2003 and 30 June 2006. Of these incidents, 93.7% (1543) involved ambulance officers locating a patient on arrival. Of those cases in which the patient was located and the gender was recorded, two thirds of the patients were male (985) and one third were female (529). The average age of a patient was 24.6 years, with a range from 12 to 65. Approximately half of all patients were aged 21 years and under.

Over half of all cases (924) recorded alcohol or drug intake. Forty percent (685) recorded alcohol intake, 3.9% (66) recorded drug intake and 6.9% (118) recorded a combination of both. A further 3.2% (55) required assistance for suspected drink spiking. Table 6.1 shows that for 551 cases (32.2% of all cases), the sole treatment was for severe intoxication or overdose (drugs or drugs and alcohol combined), making this the most likely treatment sought by party-goers in the entertainment district. For these cases, the listing of alcohol or drug consumption is an essential requirement for diagnostic recordings. However, it is likely that a large number of the remaining cases for which details on alcohol intake was not recorded did involve alcohol consumption due to the young age of many patients, the time of day (often night and early hours of the morning) and location of incidents (Surfers Paradise CBD).

A further 29.1% (497) of cases required assistance after an assault, with 8.8% (44) of those assaults involving a weapon. Knives or glass (particularly beer bottles) were the most common weapons used. Falls or trips represented 8.4% of cases (144). A further 1.8% of cases required assistance due to a motor vehicle accident. Many of the 33 accidents involved a car hitting a pedestrian. There were also two patients (0.1%) treated for drowning after heavy drinking. Other personal illnesses or injuries such as lacerations to feet and dislocations represented 17.4% (298) of all ambulance cases studied. Causes unknown represented 11.1% (190) of cases. Table 6.1 presents the primary cause of injury or illness as recorded by the ambulance officer.

Table 6.1: Event causing injury/illness as recorded by the Queensland Ambulance Service

Event	**Percent**	**Total**
Fall / trip	8.4	144
Assault	29.1	497
Drowning	0.1	2
Severe intoxication / overdose	32.2	551
Road traffic accident	1.8	31
Other personal injury/illness	17.4	298
Unknown	11.1	190
Total incidents	**100.0%**	**1713**

It is difficult to know exactly where these incidents occurred. For example, a victim of an assault in a nightclub may walk to the Chill Out Zone or Police Beat for assistance. The ambulance will then list the place of pick-up as the Chill Out Zone or Police Beat. It is also likely that those that call the ambulance may provide an easily found nearby landmark (which is not necessarily the event location) which is then listed as the place of pick-up. Moreover, those requiring assistance may walk to the roadside to be more easily located by the ambulance staff. Hence, the location recorded by the Queensland Ambulance Service may not be a reliable indication of the location of the event.

Whilst the most frequent location for assistance was the roadside (representing 38.8%), 27.3% (467) of patients were collected by ambulance from a nightclub or bar. The specific nightclub or bar was mentioned in 74.5% (348) of cases, most often as the place of patient collection, but on occasion as the place of last drink. Table 6.2 shows that almost one in four (80) nightclub related incidents (for which location was known) were linked to Melba's nightclub. Other hot spots for ambulance assistance included Shooters Saloon and the Rose and Crown Tavern. The top ten locations represent 67.5% of all incidents in and around nightclubs (for which location was known) requiring ambulance attention. Table 6.2 presents data on all ambulance incidents related to specific nightclubs over the study period.

Table 6.2: Risky venues in Surfers Paradise CBD for incidents requiring ambulance assistance from December 2003 – June 2006

QAS Rank all Incidents	QPS Rank Violent Incidents	Risky Venue	No. of QAS Incidents	% of QAS Incidents	Culmulative % of QAS Incidents
1	2	Melba's Bar & Restaurant	80	23.0	23.0
2	1	Shooters Saloon	36	10.3	33.3
3	3-4	Rose & Crown Tavern	23	6.6	39.9
4	3-4	The Drink Nightclub	19	5.5	45.4
5	5	The Shack Bar & Café	18	5.2	50.6
6	14	Players Showgirls Nightclub	14	4.0	54.6
7	9-10	Surfers Paradise Beer Garden	12	3.4	58.0
8-10	7	The Avenue Restaurant	11	3.2	61.2
8-10	8	Cocktails & Dreams Nightclub	11	3.2	64.4
8-10	47	Legends Hotel	11	3.2	67.5
11-13	12	Fever Nightclub (Ambasee/Bedroom)	10	2.9	70.4
11-13	6	Bourbon Bar	10	2.9	73.3
11-13	9-10	Santa Fe (Hollywood Showgirls)	10	2.9	76.1
14	17/18	Elsewhere Nightclub	9	2.6	78.7
15/16	22-27	Crazy Horse Bar	6	1.7	80.5
15/16	28-31	Surfers Paradise RSL	6	1.7	82.2
17-23	13	Howl at the Moon	5	1.4	83.6
17-23	22-27	My Bar	5	1.4	85.1
17-23	11	The Party Nightclub	5	1.4	86.5
17-23	32-37	Pink Elephant	5	1.4	87.9
17-23	15-16	Gilhooleys Irish Bar	5	1.4	89.4
17-23	17-18	Billy's Beachhouse	5	1.4	90.8
17-23	19-21	Surfers Paradise SLSC	5	1.4	92.2
24-27	22-27	Courtyard Mariott	3	0.9	93.1
24-27	28-31	Hard Rock Café	3	0.9	94.0
24-27	19-21	SoBar Nightclub (Berlin Bar)	3	0.9	94.8
28-32	28-31	Vegas in Paradise	2	0.6	95.4
28-32	32-37	Central Lounge Bar & Dining	2	0.6	96.0
28-32	38-47	Charlies on the Mall Restaurant	2	0.6	96.6
28-32	15-16	Clock Tower Tavern	2	0.6	97.1
28-32	38-47	La Porchetta Italian Restaurant	2	0.6	97.7
33-40	32-37	Disco Bar	1	0.3	98.0
33-40	38-47	Hogs Breath Café	1	0.3	98.3
33-40	48-50	The Temple Bar	1	0.3	98.6
33-40	32-37	Search & Rescue Club	1	0.3	98.9
33-40	19-21	Bad Girls Stripclub (Ruby Tramp)	1	0.3	99.1
33-40	48-50	Twenty-One Dining Room & Bar	1	0.3	99.4
33-40	48-50	Liquid Bar	1	0.3	99.7
33-40	22-27	The Troccadero	1	0.3	100.0
41-50	32-37	FourplaySportsbar	0	0.0	100.0
41-50	28-31	Meeting Place Bar & Club	0	0.0	100.0
41-50	38-47	Groovalicious	0	0.0	100.0
41-50	22-27	Just Hooters Bar	0	0.0	100.0
41-50	38-47	Lansdowne Rd Irish Tavern	0	0.0	100.0
41-50	22-27	O'Malley's Irish Bar	0	0.0	100.0
41-50	38-47	Rish Café & Bar	0	0.0	100.0
41-50	38-47	Bavarian Haus Restaurant	0	0.0	100.0
41-50	38-47	Seafood on the Beach Restaurant	0	0.0	100.0
41-50	38-47	Down Under Bar	0	0.0	100.0
41-50	38-47	Surfers Paradise Sports Club	0	0.0	100.0
		Total	348	100.0%	100.0%

6.1.2 Injuries

Of 1713 total ambulance incidents, 782 incidents (45.6%) required assistance for the treatment of 901 injuries. Of these 782 incidents, 101 (12.9%) required treatment for multiple injuries to various parts of the body. As shown in Table 6.3, there were 556 head injuries, making head injuries the most common injury. Head injuries were evident in approximately one third of all ambulance cases and 71.1% of all cases with at least one injury. When combined, head and neck injuries represent 34.5% of all ambulance incidents and 75.6% of all incidents with injuries. Arm (including hand and shoulder) injuries were the second most likely injury, evident in 7.5% of all ambulance cases and 16.4% of cases with at least one injury.

Table 6.3: Injuries attained by Surfers Paradise CBD users as recorded by the Queensland Ambulance Service

Injury	**% of injury cases**	**% of all ambulance cases**	**Total**
Head	71.1	32.5	556
Neck	4.5	2.0	35
Chest/back	8.2	3.7	64
Arm	16.4	7.5	128
Knee	4.0	1.8	31
Leg	6.6	3.0	52
Foot	3.7	1.7	29
Genitals	0.8	0.4	6
Total incidents resulting in injury(s)	**100.0%**	**45.6%**	**901**

In those cases where gender was known, men were significantly over-represented, with 85.7% (443) of all patients requiring assistance for a head or neck injury being male, compared to 14.3% (73) female. This result is expected, considering bar-related violence is gendered and often results in head and neck injuries. For cases providing sufficient information, assaults (usually by a stranger) were recorded as the cause of 72.7% of head

and neck injuries. For most of the remaining cases, head and neck injuries were the result of an accident.

Approximately 40% of patients with head and neck injuries were aged 21 years and under, whilst 64.6% were aged 25 years and under. Approximately 40% (212) of patients had been consuming alcohol, whilst only 0.6% (three) had consumed drugs and 2.3% (12) had consumed both.

The most likely location for head and neck injuries to occur was the roadside, representing 60.5% (318) of all head and neck injury cases. Many of the remaining head and neck injuries were acquired inside or outside a nightclub or bar (23.4%). Table 6.4 shows the nightclub and bar hot spots for head and neck injuries to be similar locations to those that are hot spots for all ambulance incidents, with Melba's nightclub being ranked first followed by Shooters Saloon Bar, The Drink nightclub and Rose and Crown. The top ten clubs (20% of locations) represented 64% of head and neck injuries that occurred in and around nightclubs and were attended to by ambulance staff.

Table 6.4: Risky venues in Surfers Paradise CBD for head and neck injuries requiring ambulance assistance from December 2003 – June 2006

QAS Rank H & N Injuries	QPS Rank Violent Incidents	Risky Venue	No. of QAS Incidents	% of QAS Incidents	Culmulative % of QAS Incidents
1	2	Melba's Bar & Restaurant	16	12.8	12.8
2	1	Shooters Saloon	15	12	24.8
3	3-4	The Drink Nightclub	11	8.8	33.6
4	3-4	Rose & Crown Tavern	7	5.6	39.2
5	7	The Avenue Restaurant	6	4.8	44.0
6-10	5	The Shack Bar & Café	5	4	48.0
6-10	9-10	Surfers Paradise Beer Garden	5	4	52.0
6-10	15-16	Gilhooleys Irish Bar	5	4	56.0
6-10	17-18	Billy's Beachhouse	5	4	60.0
6-10	19-21	Surfers Paradise SLSC	5	4	64.0
11-15	8	Cocktails & Dreams Nightclub	3	2.4	66.4
11-15	12	Fever Nightclub (Ambasee/Bedroom)	3	2.4	68.8
11-15	6	Bourbon Bar	3	2.4	71.2
11-15	9-10	Santa Fe (Hollywood Showgirls)	3	2.4	73.6
11-15	11	The Party Nightclub	3	2.4	76.0
11-15	19-21	SoBar Nightclub (Berlin Bar)	3	2.4	78.4
16-19	22-27	Crazy Horse Bar	2	1.6	80.0
16-19	28-31	Vegas in Paradise	2	1.6	81.6
16-19	15-16	Clock Tower Tavern	2	1.6	83.2
16-19	38-47	La Porchetta Italian Restaurant	2	1.6	84.8
20-38	14	Players Showgirls Nightclub	1	0.8	85.6
20-38	47	Legends Hotel	1	0.8	86.4
20-38	17-18	Elsewhere Nightclub	1	0.8	87.2
20-38	28-31	Surfers Paradise RSL	1	0.8	88.0
20-38	13	Howl at the Moon	1	0.8	88.8
20-38	22-27	My Bar	1	0.8	89.6
20-38	32-37	Pink Elephant	1	0.8	90.4
20-38	22-27	Courtyard Mariott	1	0.8	91.2
20-38	28-31	Hard Rock Café	1	0.8	92.0
20-38	32-37	Central Lounge Bar & Dining	1	0.8	92.8
20-38	38-47	Charlies on the Mall Restaurant	1	0.8	93.6
20-38	32-37	Disco Bar	1	0.8	94.4
20-38	38-47	Hogs Breath Café	1	0.8	95.2
20-38	48-50	The Temple Bar	1	0.8	96.0
20-38	32-37	Search & Rescue Club	1	0.8	96.8
20-38	19-21	Bad Girls Stripclub (Ruby Tramp)	1	0.8	97.6
20-38	48-50	Twenty-One Dining Room & Bar	1	0.8	98.4
20-38	48-50	Liquid Bar	1	0.8	99.2
20-38	22-27	The Troccadero	1	0.8	100.0
39-50	32-37	FourplaySportsbar	0	0	100.0
39-50	28-31	Meeting Place Bar & Club	0	0	100.0
39-50	38-47	Groovalicious	0	0	100.0
39-50	22-27	Just Hooters Bar	0	0	100.0
39-50	38-47	Lansdowne Rd Irish Tavern	0	0	100.0
39-50	22-27	O'Malley's Irish Bar	0	0	100.0
39-50	38-47	Rish Café & Bar	0	0	100.0
39-50	38-47	Bavarian Haus Restaurant	0	0	100.0
39-50	38-47	Seafood on the Beach Restaurant	0	0	100.0
39-50	38-47	Down Under Bar	0	0	100.0
39-50	38-47	Surfers Paradise Sports Club	0	0	100.0
		Total	125	100.0%	100.0%

6.1.3 Assaults

Males were significantly over-represented in the assault patient population. Of the 497 patients assaulted, 88.5% were males and 9.5% females (with the remaining 2% unknown). The average age of patients who had been assaulted was 25.4 years with a range of 16 years to 63 years of age. Just under 40% of assaulted patients were aged 21 years and under, whilst 63.6% were aged 25 years and under.

Alcohol use by the patient was confirmed in 38% (189) of cases, whilst drugs had been used in 0.6% (3) of cases and a combination of both had been used in two percent (10) of the cases. In approximately 18.6% of cases, there were no visible injuries, however there were frequently reports of a loss of consciousness. In 72.6% of cases there was obvious swelling, bruising and lacerations. In 6.4% of cases injuries were serious and frequently multiple, including broken bones (i.e. fractured skull, cheekbone and/or nose), dislocations and severe lacerations.

Of the 497 patients assaulted, 87.3% reported their relationship with the assailant. Approximately 75% of patients were assaulted by a stranger, whilst almost 10% were assaulted by nightclub security. The remaining 15% were assaulted by an acquaintance, friend, partner, ex-partner or police. In approximately 10% of cases, the patients were assaulted by two or more individuals. No details on the assailant were recorded in 9.3% of cases.

Approximately one in four assaults occurred in or outside a nightclub or bar, however the bar name was only recorded for 94 of the 127 cases. Almost one in three assaults occurred roadside, whilst 1.2% occurred on the beach. The specific location was unknown for the remaining cases. As Table 6.5 shows, the most frequent nightclub location for assault was Melba's followed by Shooters, representing 17% and 12.8% of assaults in and around nightclubs (for which the location is known) respectively. The top ten hot spot nightclubs were responsible for almost 73% of assaults in and around clubs.

Table 6.5: Risky venues in Surfers Paradise CBD for assaults requiring ambulance assistance from December 2003 – June 2006

QAS Rank Assaults	QPS Rank Violent Incidents	Risky Venue	No. of QAS Incidents	% of QAS Incidents	Culmulative % of QAS Incidents
1	2	Melba's Bar & Restaurant	16	17.0	17.0
2	1	Shooters Saloon	12	12.8	29.8
3	3-4	Rose & Crown Tavern	8	8.5	38.3
4	5	The Shack Bar & Café	7	7.4	45.7
5	3-4	The Drink Nightclub	6	6.4	52.1
6	8	Cocktails & Dreams Nightclub	5	5.3	57.4
7-8	7	The Avenue Restaurant	4	4.3	61.7
7-8	9-10	Santa Fe (Hollywood Showgirls)	4	4.3	66.0
9-12	9-10	Surfers Paradise Beer Garden	3	3.2	69.1
9-12	6	Bourbon Bar	3	3.2	72.3
9-12	11	The Party Nightclub	3	3.2	75.5
9-12	14	Players Showgirls Nightclub	3	3.2	78.7
13-16	12	Fever Nightclub (Ambasee/Bedroom)	2	2.1	80.9
13-16	38-47	La Porchetta Italian Restaurant	2	2.1	83.0
13-16	17-18	Elsewhere Nightclub	2	2.1	85.1
13-16	22-27	My Bar	2	2.1	87.2
17-28	17-18	Billy’s Beachhouse	1	1.1	88.3
17-28	22-27	Crazy Horse Bar	1	1.1	89.4
17-28	28-31	Vegas in Paradise	1	1.1	90.4
17-28	47	Legends Hotel	1	1.1	91.5
17-28	28-31	Surfers Paradise RSL	1	1.1	92.6
17-28	13	Howl at the Moon	1	1.1	93.6
17-28	32-37	Pink Elephant	1	1.1	94.7
17-28	22-27	Courtyard Mariott	1	1.1	95.7
17-28	28-31	Hard Rock Café	1	1.1	96.8
17-28	32-37	Central Lounge Bar & Dining	1	1.1	97.9
17-28	19-21	Bad Girls Stripclub (Ruby Tramp)	1	1.1	98.9
17-28	48-50	Twenty-One Dining Room & Bar	1	1.1	100.0
29-50	15-16	Gilhooleys Irish Bar	0	0.0	100.0
29-50	19-21	Surfers Paradise SLSC	0	0.0	100.0
29-50	19-21	SoBar Nightclub (Berlin Bar)	0	0.0	100.0
29-50	15-16	Clock Tower Tavern	0	0.0	100.0
29-50	38-47	Charlies on the Mall Restaurant	0	0.0	100.0
29-50	32-37	Disco Bar	0	0.0	100.0
29-50	38-47	Hogs Breath Café	0	0.0	100.0
29-50	48-50	The Temple Bar	0	0.0	100.0
29-50	32-37	Search & Rescue Club	0	0.0	100.0
29-50	48-50	Liquid Bar	0	0.0	100.0
29-50	22-27	The Troccadero	0	0.0	100.0
29-50	32-37	FourplaySportsbar	0	0.0	100.0
29-50	28-31	Meeting Place Bar & Club	0	0.0	100.0
29-50	38-47	Groovalicious	0	0.0	100.0
29-50	22-27	Just Hooters Bar	0	0.0	100.0
29-50	38-47	Lansdowne Rd Irish Tavern	0	0.0	100.0
29-50	22-27	O'Malley's Irish Bar	0	0.0	100.0
29-50	38-47	Rish Café & Bar	0	0.0	100.0
29-50	38-47	Bavarian Haus Restaurant	0	0.0	100.0
29-50	38-47	Seafood on the Beach Restaurant	0	0.0	100.0
29-50	38-47	Down Under Bar	0	0.0	100.0
29-50	38-47	Surfers Paradise Sports Club	0	0.0	100.0
		Total	94	100.0%	100.0%

6.1.4 Severe Intoxication / Overdose

Findings show that patients requiring assistance for intoxication and overdose in Surfers Paradise CBD were likely to be women and younger than the average patient for all recorded incidents. Of the 551 cases of severe intoxication or overdose, 53.4% (294) were female whilst 44.3% (244) were male. The gender of the remaining 13 cases was unknown. Almost one in five patients were aged 17 and under, whilst approximately two in three patients were aged 21 and under, and four in five were aged 25 and under.

Approximately 60% were reported to have consumed alcohol, whilst a further 9.8% had consumed drugs, 18.1% had consumed both and 9.6% (53) believed their drink to have been spiked. For the remaining 2.7% (15), the details were unknown (but there was suspicion of substance use). In 37.6% (207) of cases, the patient had been vomiting prior to ambulance pick-up or whilst obtaining ambulance assistance.

With regards to pick-up location, 29.2% (161) were collected from the roadside, whilst 11.8% (65) were collected from a private dwelling after drinking in Surfers Paradise CBD. The Chill Out Zone represented the pick-up location for 3.4% (19) of patients, whilst the beach was the collection point for 2.7% (15). However, the most frequent pick-up location was a nightclub or bar, representing 42.6% of ambulance cases for intoxication or overdose. Nightclub details were known for 135 of these 235 incidents. Table 6.6 shows that Melba's was the pick-up location for more than one in four intoxication or overdose cases for which the location was known. Shooters Saloon was the second most likely nightclub pick-up location, but was far less frequented, representing only 7.4% of cases. The data suggests that the top ten locations (20% of all licensed bar locations) were responsible for 67.4% of all cases of intoxication and overdose requiring ambulance assistance.

Table 6.6: Risky venues in Surfers Paradise CBD for severe intoxication or overdose requiring ambulance assistance from December 2003 – June 2006

QAS Rank Intox/OD Incidents	QPS Rank Violent Incidents	Risky Venue	No. of QAS Incidents	% of QAS Incidents	Culmulative % of QAS Incidents
1	2	Melba's Bar & Restaurant	38	28.1	28.1
2	1	Shooters Saloon	10	7.4	35.6
3	3-4	Rose & Crown Tavern	7	5.2	40.7
4	5	The Shack Bar & Café	7	5.2	45.9
5	3-5	The Drink Nightclub	7	5.2	51.1
6	12	Fever Nightclub	6	4.4	55.6
7-12	8	Cocktails & Dreams Nightclub	4	3.0	58.5
7-12	7	The Avenue Restaurant	4	3.0	61.5
7-12	17-18	Elsewhere Nightclub	4	3.0	64.4
7-12	9-10	Surfers Paradise Beer Garden	4	3.0	67.4
7-12	13	Howl at the Moon	4	3.0	70.4
7-12	14	Players Showgirls Nightclub	4	3.0	73.3
13-14	32-37	Pink Elephant	3	2.2	75.6
13-14	6	Bourbon Bar	3	2.2	77.8
16-25	22-27	My Bar	2	1.5	79.3
16-25	9-10	Santa Fe (Hollywood Showgirls)	2	1.5	80.7
16-25	17-18	Billy’s Beachhouse	2	1.5	82.2
16-25	22-27	Crazy Horse Bar	2	1.5	83.7
16-25	15-16	Gilhooleys Irish Bar	2	1.5	85.2
16-25	47	Legends Hotel	2	1.5	86.7
16-25	19-21	SoBar Nightclub (Berlin Bar)	2	1.5	88.1
16-25	15-16	Clock Tower Tavern	2	1.5	89.6
16-25	11	The Party Nightclub	2	1.5	91.1
16-25	38-47	La Porchetta Italian Restaurant	2	1.5	92.6
16-25	22-27	Courtyard Mariott	2	1.5	94.1
26-33	28-31	Hard Rock Café	1	0.7	94.8
26-33	32-37	Central Lounge Bar & Dining	1	0.7	95.6
26-33	19-21	Bad Girls Stripclub (Ruby Tramp)	1	0.7	96.3
26-33	48-50	Twenty-One Dining Room & Bar	1	0.7	97.0
26-33	22-27	The Troccadero	1	0.7	97.8
26-33	32-37	Search & Rescue Club	1	0.7	98.5
26-33	28-31	Vegas in Paradise	1	0.7	99.3
26-33	28-31	Surfers Paradise RSL	1	0.7	100.0
34-50	19-21	Surfers Paradise SLSC	0	0.0	100.0
34-50	38-47	Charlies on the Mall Restaurant	0	0.0	100.0
34-50	32-37	Disco Bar	0	0.0	100.0
34-50	38-47	Hogs Breath Café	0	0.0	100.0
34-50	48-50	The Temple Bar	0	0.0	100.0
34-50	48-50	Liquid Bar	0	0.0	100.0
34-50	32-37	FourplaySportsbar	0	0.0	100.0
34-50	28-31	Meeting Place Bar & Club	0	0.0	100.0
34-50	38-47	Groovalicious	0	0.0	100.0
34-50	22-27	Just Hooters Bar	0	0.0	100.0
34-50	38-47	Lansdowne Rd Irish Tavern	0	0.0	100.0
34-50	22-27	O'Malley's Irish Bar	0	0.0	100.0
34-50	38-47	Rish Café & Bar	0	0.0	100.0
34-50	38-47	Bavarian Haus Restaurant	0	0.0	100.0
34-50	38-47	Seafood on the Beach Restaurant	0	0.0	100.0
34-50	38-47	Down Under Bar	0	0.0	100.0
34-50	38-47	Surfers Paradise Sports Club	0	0.0	100.0
		Total	135	100.0%	100.0%

6.2 Results of Analysis 1 - Prais-Winsten Regressions

Eight models were run, all using the lockout, special events and seasons as independent variables. The unit of analysis for each model was month. Using QAS incident rates, the dependent variables for each model were: model 1 – weekday total incident rate (WDTI); model 2 – weekend total incident rate (WETI); model 3 – weekday head/neck injury rate (WDII); model 4 – weekend head/neck injury rate (WEII); model 5 – weekday assault rate (WDAI); model 6 – weekend assault rate (WEAI); model 7 – weekday alcohol-related incident rate (WDARI); and model 8 – weekend alcohol-related incident rate (WEARI). As with the models used to analyse the police incident data, the ambulance models were designed to be analysed in pairs, with comparisons to be made between model 1 and 2, 3 and 4, 5 and 6, 7 and 8. The Durbin-Watson test statistic was calculated for each model, showing no indications of auto-correlation.

6.2.1 Model 1 and 2 Graphical Comparison

A time series graph (Figure 6.1) of monthly weekday and weekend total ambulance daily incident rates over the two years and seven months (Appendix 4) shows some differences between the general patterns of the two models over time. Whilst the weekday crime rates ran below weekend crime rates, they are most parallel to each other during periods of increased intensity. As with the police data, these periods of high incident rates were the months of October, November and December, during which special events such as Schoolies occur. The lockout appeared to have no immediate or long term influence on the general and seasonal incident patterns.

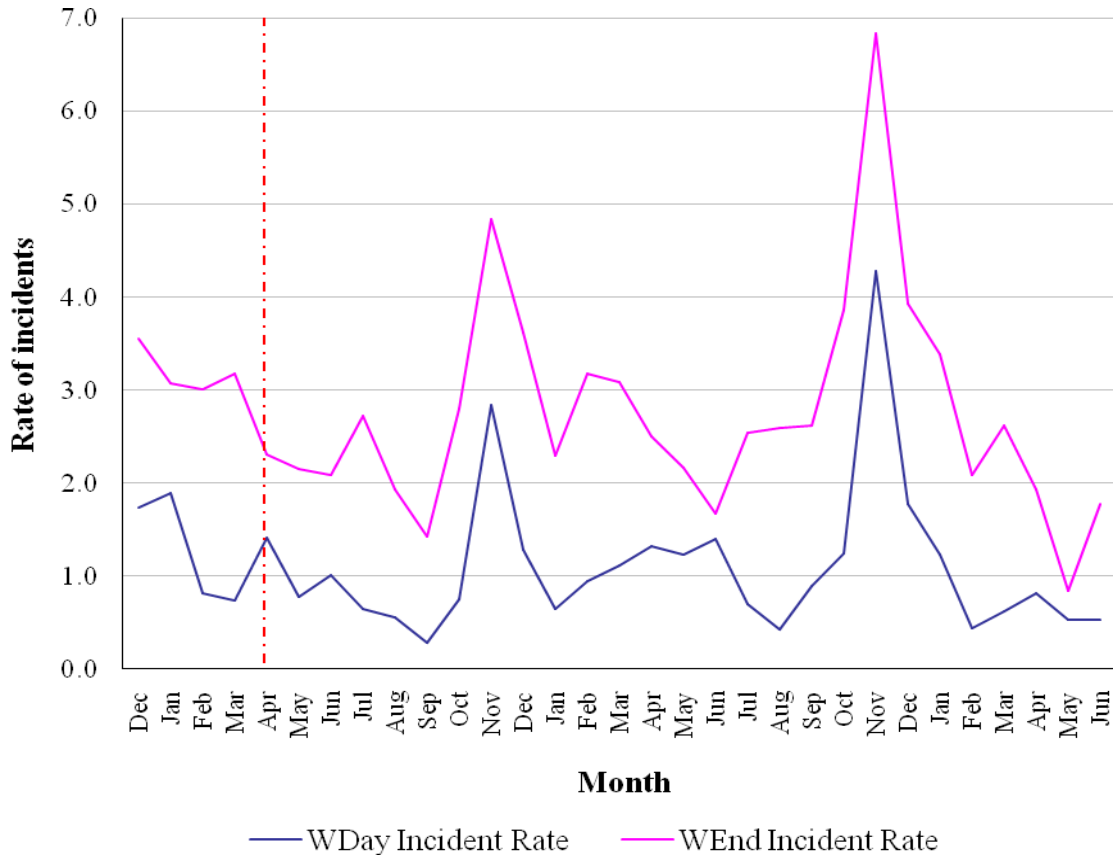


Figure 6.1: Total ambulance incident rates for weekdays or weekends between December 2003 to June 2006, with a 3am lockout introduction reference line.

6.2.2 Model 1 – Weekday Total Incident Rate

Results showed that when analysed together, the Lockout, Special Events and Seasons were highly significant predictors of the weekday crime rate ($F(3,27) = 5.14$, $p < .001$). Furthermore, the three independent variables accounted for only 29% of the variance in weekday ambulance incident rates. The Durbin-Watson statistic value of 2.02 indicated no auto-correlation. In model one, the only significant independent variable was special events. Special events were highly significant predictors of variation in total ambulance incident rates on weekdays ($t(30) = 2.95$, $p<.001$). The introduction of the lockout had no significant impact on the variance in weekday ambulance incident rates over time ($t(30) = 0.12$, $p = .90$). Furthermore, the change in seasons did not play a significant role in the variation observed in weekday ambulance incident rates over the three years ($t(30) = .56$, $p =0.58$).

6.2.3 Model 2 – Weekend Total Incident Rate

Collectively, the three independent variables were highly significant predictors of the weekend total ambulance incident rates ($F(3,27) = 7.16$, $p < .001$), being responsible for 38% of the variance in the rates over time. A Durbin-Watson statistic value of 1.98 indicated no auto-correlation. The lockout did not have a statistically significant impact on the weekend total ambulance incident rate ($t(30) = 0.04$, $p = .97$). This was also the case with seasons ($t(30) = 1.57$, $p = .13$). However, special events was significant for weekend crime rates ($t(30) = 2.73$, $p<.05$). Table 6.7 presents Prais-Winsten regression results for models one and two.

Table 6.7: Prais-Winsten Regression Results for Models 1 and 2 – Lockout, Special Events and Seasons in Period t by Total Ambulance Incident Rates.

Independent Variables	**Model 1 WDTI**		**Model 2 WETI**	
	Coef.	**p-value**	**Coef.**	**p-value**
Constant	.70	.10	2.02	.00
Lockout	.44	.90	.02	.97
Special Events	.88	.01	1.11	.01
Seasons	.17	.58	.64	.13
Observations	31		31	
Adjusted R-squared	.29		.38	
Durbin-Watson (original)	2.15		1.87	
Durbin-Watson (transformed)	2.02		1.98	

6.2.4 Model 3 and 4 Graphical Comparison

A time series graph (Figure 6.2) of monthly weekday and weekend neck and head injury rates over the three years (Appendix 5) shows small differences between the general

patterns of the two models over time. In particular, weekday head/neck injury rates ran below and parallel to weekend crime rates. Both plots on the graph indicate increasing intensity around the special event months over the three years. The lockout appeared to have no immediate or long term influence on the general and seasonal injury patterns.

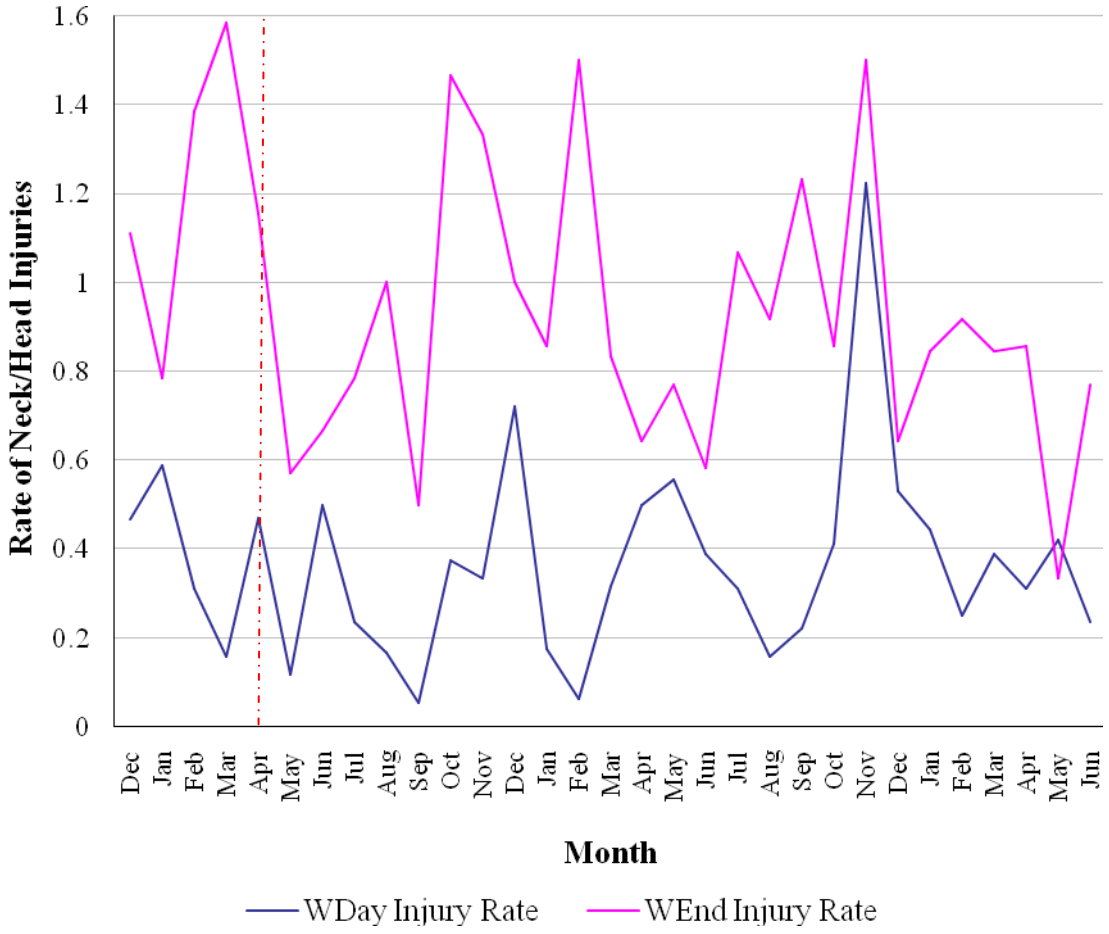


Figure 6.2: Head and neck injury rates for weekdays or weekends between December 2003 to June 2006, with a 3am lockout introduction reference line.

6.2.5 Model 3 - Weekday Injury Rate

When taken collectively, the lockout, special events and seasons were highly significant predictors of the weekday head and neck injury rate ($F(3,27) = 3.01$, $p < .05$). Together, the independent variables explained 17% of the variance in the weekday head and neck injury rates over time. Model three showed no auto-correlation between independent variables, as evident by the Durbin-Watson statistic value of 2.00. In model three, the lockout variable was not significant ($t(30) = .39$, $p = .70$). Furthermore, the seasons variable was not significant, suggesting that changes in seasons played no role in the variance in weekday head and neck injury rates over time ($t(30) = .39$, $p = .70$). As expected, special events were found to be highly significant predictors of variation in head and neck injury rates on weekdays ($t(30) = 2.31$, $p<.05$).

6.2.6 Model 4 – Weekend Injury Rate

Together, the lockout, special events and seasons variables were significant predictors of weekend head and neck injuries ($F(3,27) = 3.06$, $p = <.05$). These three variables jointly explained only 17% of the variance seen in weekend head and neck injury rates over time. The Durbin-Watson statistic value of 1.99 indicated no auto-correlation. Results for model four indicated that only special events were significant predictors of crime ($t(30) = -.017$, $p = .86$). The lockout did not have a significant influence on rates of violence on weekends over time ($t(30) = -1.24$, $p = .23$), as was also the case with seasons ($t(30) = 2.00$, $p = .056$). Prais-Winsten regression results for models three and four are presented in Table 6.8.

Table 6.8: Prais-Winsten Regression Results for Models 3 and 4 – Lockout, Special Events and Seasons in Period t by Head and Neck Injury Rates.

Independent Variables	Model 3 WDII		Model 4 WEII	
	Coef.	**p-value**	**Coef.**	**p-value**
Constant	.24	.08	.96	.00
Lockout	.05	.70	-.20	.23
Special Events	.22	.03	.02	.86
Seasons	.04	.70	.26	.06
Observations	31		31	
Adjusted R-squared	.17		.17	
Durbin-Watson (original)	2.01		2.08	
Durbin-Watson (transformed)	2.00		1.99	

6.2.7 Model 5 and 6 Graphical Comparison

Figure 6.3 is a times series graph of weekday and weekend assault rates for all months between December 2003 and June 2006 (Appendix 7). It shows times of convergence and divergence between the two models over the series, although in general, weekday assault rates were lower than weekend assault rates. As with other ambulance and police time series, the series peaked for both weekday and weekend assault rates during November and December 2005. The lockout appeared to have no long term influence on the general and seasonal injury patterns, but may have played a role in the sharp increase in weekend rates in the month following its introduction.

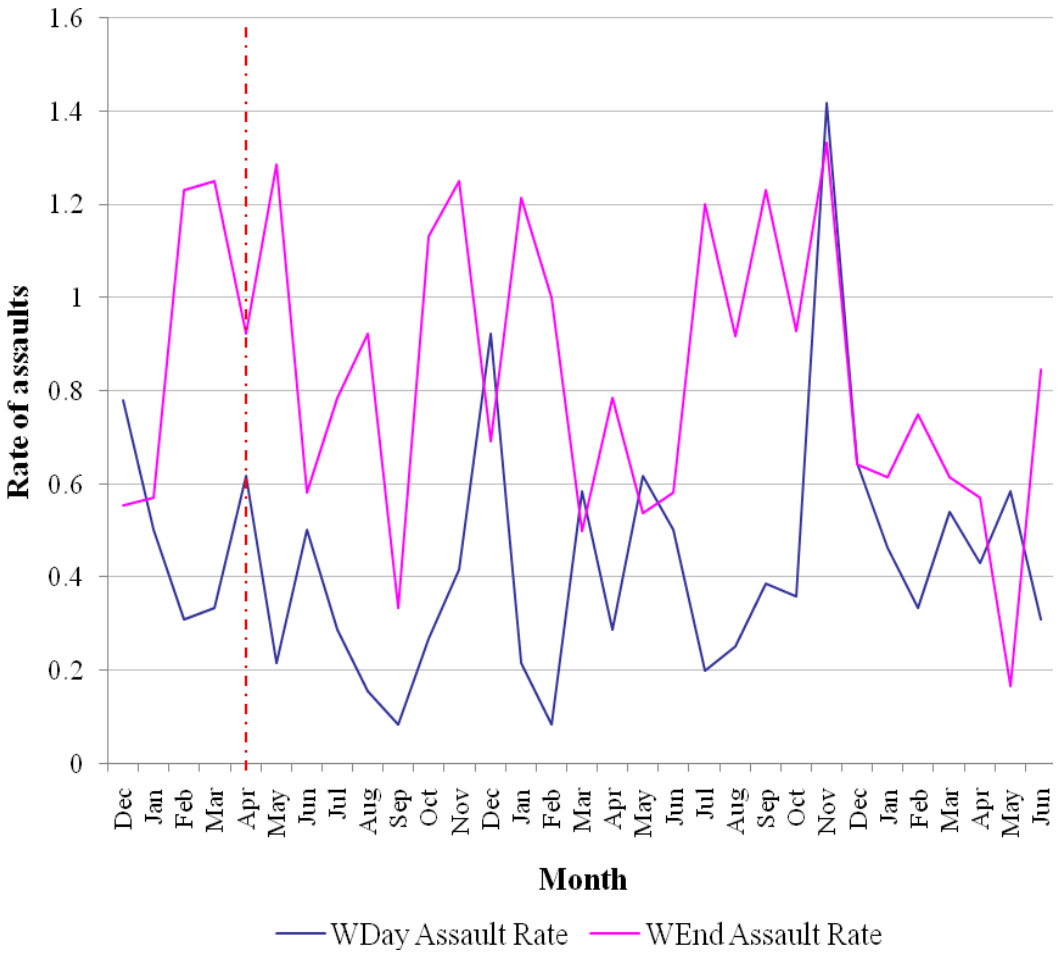


Figure 6.3: Assault rates for weekdays or weekends between December 2003 to June 2006, with a 3am lockout introduction reference line.

6.2.8 Model 5 - Weekday Assault Rate

When examined collectively, the Lockout, Special Events and Seasons were not significant predictors of the weekday assault rate ($F(3,27) = 2.29$, $p < .10$). These independent variables explained only 11% of the variance in the weekday assault rates over time. There was no auto-correlation between these independent variables, as evident by the Durbin-Watson statistic value of 2.00. Results indicated that the lockout played no role in the variance in weekday assault rates over time ($t(30) = .14$, $p = .89$). Results also suggested that seasons ($t(30) = .54$, $p = .59$) and special events ($t(30) = 1.91$, $p = .07$) played no role in the variance in weekday assault rates over time.

6.2.9 Model 6 – Weekend Assault Rate

When taken together, the introduction of the lockout, special events and seasons were not significant predictors of weekend assault rates ($F(3,27) = 0.09$, $p = .96$). These three variables only accounted for 10% of the variance seen in weekend assault rates over time. No auto-correlation is indicated by a Durbin-Watson statistic value of 1.96. Similar to the weekday results, special events were not significant predictors of assaults ($t(30) = .20$, $p = .84$). Results also showed that the lockout did not have a significant impact on rates of weekend assaults ($t(30) = -0.19$, $p = .85$), as was the case with seasons ($t(30) = .43$, $p = .67$). Table 6.9 presents the results for the Prais-Winsten regression models five and six.

Table 6.9: Prais-Winsten Regression Results for Models 5 and 6 – Lockout, Special Events and Seasons in Period t by Assault Rates.

Independent Variables	**Model 5 WDAI**		**Model 6 WEAI**	
	Coef.	**p-value**	**Coef.**	**p-value**
Constant	.32	.04	.82	.00
Lockout	.02	.89	-.04	.85
Special Events	.21	.07	.03	.84
Seasons	.06	.59	.07	.67
Observations	31		31	
Adjusted R-squared	.11		.10	
Durbin-Watson (original)	2.19		1.79	
Durbin-Watson (transformed)	2.00		1.96	

6.2.10 Model 7 and 8 Graphical Comparison

A time series graph (Figure 6.4) of monthly weekday and weekend severe intoxication/overdose rates (requiring assistance by ambulance staff) over the three years shows some differences between the general patterns of the two models over time. The weekday severe intoxication/overdose rates ran below weekend severe intoxication/overdose rates. These rate lines generally ran parallel to each other during the peak times of October through to December. As seen with other models and the Police data, the peak of the series was at November 2005. This is most likely due to Schoolies. The lockout appeared to have no significant immediate or long term impact on the general and seasonal intoxication/overdose patterns.

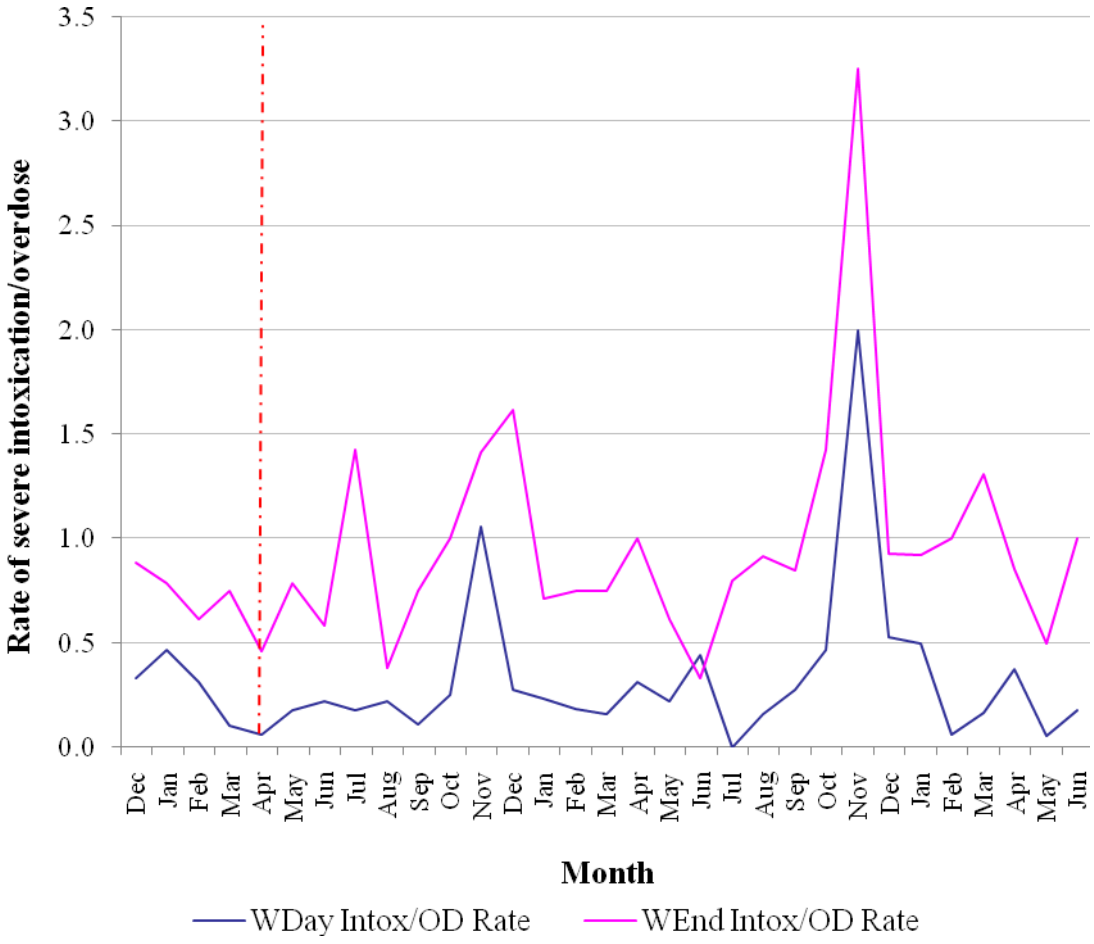


Figure 6.4: Severe intoxication/overdose rates for weekdays or weekends between December 2003 to June 2006, with a 3am lockout introduction reference line.

6.2.11 Model 7 – Weekday Intoxication/Overdose Incident Rate

Collectively, the Lockout, Special Events and Seasons were highly significant predictors of the weekday severe intoxication ($F(3,27) = 6.12$, $p < .01$). These three independent variables explained 34% of the variance in weekday severe intoxication rates, as recorded by the Queensland Ambulance Service. The Durbin-Watson statistic value of 2.03 suggests no auto-correlation. Special events were highly significant predictors of variation in severe intoxication rates on weekdays ($t(30) = 3.46$, $p<.01$). The introduction of the lockout had no significant impact on the variance of severe intoxication rates for weekdays over time ($t(30) = .80$, $p = .43$) as was the case with changes in the seasons ($t(30) = .19$, $p = .85$).

6.2.12 Model 8 – Weekend Intoxication/Overdose Incident Rate

When analysed together, the three independent variables were highly significant predictors of the weekend severe intoxication/overdose rates ($F(3,27) = 5.30$, $p < .01$), accounting for 30% of the variance in rates over time. A Durbin-Watson statistic value of 2.07 indicates no auto-correlation. As seen in the weekday analysis, the only significant predictor of overdose or intoxication incidents was special events. Special events were found to be a highly significant predictor of variance in severe intoxication/overdose rates on weekends ($t(30) = 2.60$, $p<.05$). The lockout did not have a statistically significant impact on the weekend rate of severe intoxication/overdose ($t(30) = 1.80$, $p = .0.08$). Seasons were also found to have no impact on the variance in severe intoxication/overdose rates ($t(30) = .88$, $p = .39$). Table 6.10 presents Prais-Winsten regression results for models seven and eight.

Table 6.10: Prais-Winsten Regression Results for Models 7 and 8 – Lockout, Special Events and Seasons in Period t by Intoxication/Overdose Incident Rates.

Independent Variables	Model 7 WDIOI		Model 8 WEIOI	
	Coef.	**p-value**	**Coef.**	**p-value**
Constant	.06	.75	.32	.23
Lockout	.12	.43	.41	.08
Special Events	.45	.00	.50	.02
Seasons	.02	.85	.17	.39
Observations	31		31	
Adjusted R-squared	.34		.30	
Durbin-Watson (original)	2.37		2.34	
Durbin-Watson (transformed)	2.03		2.07	

6.3 Results of Analysis 2 – Police and Ambulance Data Integration

6.3.1 Graphical Comparison of All Incidents

Figure 6.5 shows that ambulance assistance patterns between December 2003 and June 2006 temporally mirror police assistance patterns, with peaks during November 2004 and 2005. Like the police data time series analyses, the ambulance time series analyses showed that ambulance incidents rates are significantly affected by the special events during this time of year. Overall, this graph suggests that rates of assistance provided by the Queensland Ambulance Service fluctuate in similar ways to the rates of assistance provided by the Queensland Police Service and therefore, it is likely that many Queensland Ambulance assault incidents will have a matching Police assault incident.

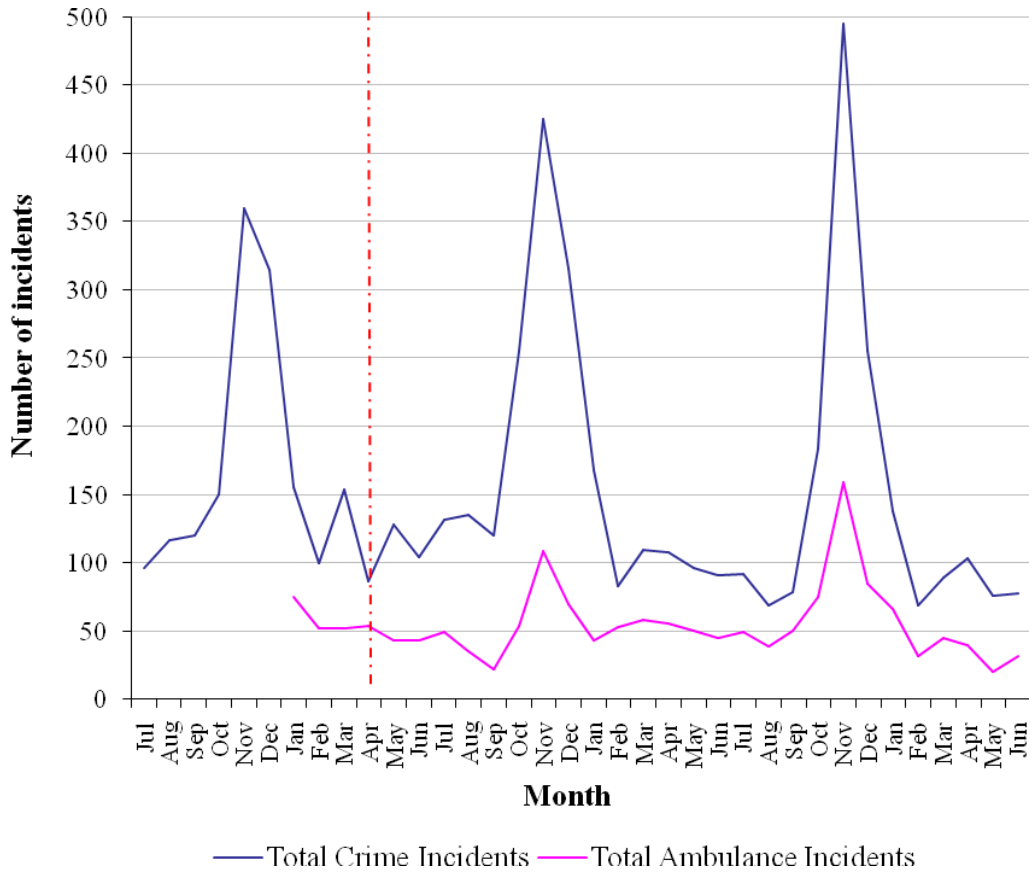


Figure 6.5: Incident rates by month for total crime incidents (as recorded by police) and total ambulance incidents for July 2003 to June 2006, with a 3am lockout introduction reference line.

6.3.2 Graphical Comparison of Violent Incidents

The longitudinal trend similarities shown between police and ambulance assault incident data in Figure 6.6 are not as clear as the similarities shown in Figure 6.5 for all incidents. However, Figure 6.6 does reinforce that there are similarities between the police and ambulance data trends, and therefore indicates a high likelihood of assault cases matching between datasets.

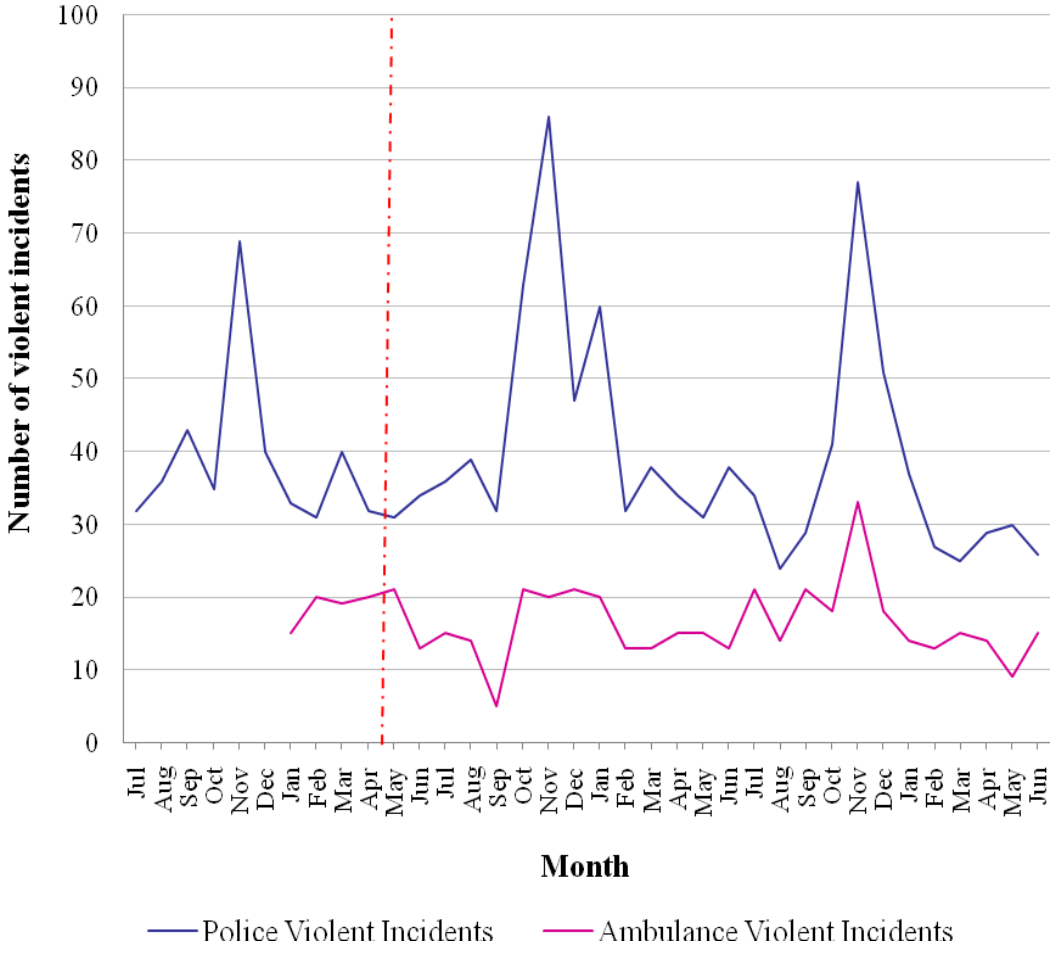


Figure 6.6: Violent incident rates by month for total violent incidents (as recorded by police) and total assault incidents (as recorded by ambulance) for July 2003 to June 2006, with a 3am lockout introduction reference line.

6.3.3 Integrated Dataset of Violent Incidents

Of the 492 ambulance assault cases, only 118 (24%) had a police incident match, based on date, time, location, gender and description of incident and injuries. Based on only time, the SQL output identified 297 ambulance incidents with at least one potential police match for which the incidents occurred within half hour of each other. Time appeared to be one of the most important matching factors, with a 33% chance of a match when the police and ambulance cases were within a half hour of each other, compared to only an 11% chance of a match when the difference in reported time was longer than a half hour.

Cases were particularly likely to be matched if there were defining characteristics mentioned regarding the perpetrator (e.g. group of males or security guard at a nightclub or bar). Male cases were more likely to be matched, as males were more likely than females to be assaulted with a weapon and to have more serious injuries, both factors that often expand the event description in police data, providing more distinct details for matching.

Cases were frequently matched using street name, but rarely using exact location. For example, only 30 matched incidents had a matching nightclub name. In many cases, a match was based on an exact location such as a nightclub name being mentioned in one dataset, and a street name such as Orchid Avenue being mentioned in the other. Table 6.5 shows a ranking of QAS hot spot nightclub locations and their comparative QPS hot spot ranking. The table shows that the top five nightclub assault locations for ambulance attendance were also the same as the top five locations for police attendance (although not in the same order). The top ten nightclub assault QAS pick-up locations account for 72.3% of all assault in or outside of nightclubs (for which there was a specific location recorded).

Melba's nightclub was the top ranking ambulance pick-up point but ranked second on the police hot spot ranking, suggesting: 1) the management at Melba's are more socially responsible than at Shooters and call for an ambulance more frequently; or 2) the management at Melba's are more likely to call an ambulance than police when an assault occurs, avoiding police detection of assault; or 3) the injuries resulting from assaults at Melba's were more severe than those resulting from assaults at Shooters and therefore more frequently require medical attention; or 4) the isolation of Melba's from other nightclubs and landmarks made it more likely that it would be listed as the specific location for pick-up.

As a cross-checking exercise, all ambulance incidents for which the pick-up location was the Police Beat or Police Station were analysed due to the high likelihood that there would be a match. The Police Beat or Police Station was recorded as the pick-up location for 189 ambulance incidents. According to ambulance records, only 98 (51.9%) of these were assaults (with most the remaining being for falls, intoxication and personal injuries). Only 30 incidents (30.6%) had a matching police record, suggesting that the patient was a victim unwilling to press charges or that the police beat or station was used as a landmark

pick-up point by a caller other than police. Furthermore, QAS attendance was mentioned in 36 police descriptions, evidence that there should definitely be a match, however, seven of these cases did not have a matching ambulance record.

In general, the story in the police description contextualised the ambulance report. For example, a young male patient was picked up from the Police Beat by the ambulance after being assaulted by a group of strangers on the roadside, resulting in a possible broken jaw. The police description added the following information: the patient was the victim of an armed robbery after meeting with three offenders in Cavill Mall and agreeing to walk down to the beach with them to smoke a cigarette. On the footpath at the entrance to the beach, the victim was punched in the face approximately seven times and was robbed of possessions. He was a tourist from England and begged the offenders to leave his passport.

6.4 Summary

This chapter has explored the trends in Queensland Ambulance Service data for all incidents requiring assistance in Surfers Paradise CBD, head/neck injuries, assault and severe intoxication/overdose cases. This has been done through descriptive analyses and Prais-Winsten regressions. Using monthly data from December 2003 to June 2006, the time series regressions examined the impact of three independent variables on the weekday and weekend rates for the aforementioned dependent variables. These three independent variables included the introduction of the lockout, seasons and special events.

Results showed that the only independent variable to have a significant impact on the variations in ambulance incidents over time was special events. This was also the case for changes in rates of severe intoxication and overdose over time. Special events had a significant impact on the weekday variation in head and neck injuries over time, but not on weekends. This is likely to be due to the very low rates of head and neck injuries in non special event months and the high rates that can occur during special events that run over weekdays (e.g. Schoolies). No independent variables had a significant impact on the variation in assault rates over time. Special events did however have a significant impact on the variation in assault rates over time according to police data. This may be due to

increased police presence during special event times, increasing the rate of assault detection.

This chapter also explored the viability of integrating police and ambulance data. Matching cases using date and time (through SQL) as well as other variables such as incident description, location and resulting injuries allowed for a match on only 24% of cases. In addition, approximately five percent of police cases had a potential ambulance match but there was not enough descriptive information in the police data to confirm the match and a charge of disorderly behaviour or public nuisance rather than assault also hindered matching. These results provide support for the use of SQL or matching through SPSS if more defining variables were available such as name and date of birth.

Risky facilities, according to Queensland Ambulance Service data, were also analysed. Melba's nightclub was the hotspot for all incidents, head/neck injuries, assaults, and in particular, severe intoxication/overdose. Reasons for this are explored in chapter nine.

CHAPTER 7

Methodology: Perceptions of Surfers Paradise Club and Bar Users

As demonstrated in chapter two, much is known about the role of alcohol and problematic places in the night-time economy. However, it appears that less is known about bar users in this environment – their perceptions, motivations, behaviours and attitudes. How do they perceive the relationship between environmental factors in a nightclub, and the occurrence of crime and violence, and, how do perceptions differ between violent and non-violent patrons? What are the behavioural and attitudinal risk factors to being a violent patron? The importance of this research is underlined by the findings of limited work conducted in this area.

The methodology used by Leather and Lawrence (2003) has been used as a foundation for the experiment. Leather and Lawrence manipulated experimental variables in photographed vignettes set in bars. Findings showed significant differences between bar manager and bar user perceptions of the importance of the presence of bouncers, a tidy bar and good place management. In this PhD research, three experimental variables were manipulated in written vignettes set in a nightclub. The three variables that were manipulated were: bouncer friendliness, temperature and patron sex composition.

This chapter will discuss the creation of an online questionnaire, designed to gauge perceptions of these three factors and the impact of these factors on the perceived likelihood, frequency and fear of crime inside the venues as well as the user's willingness to drink in the hypothetical scenario, and the perceived severity of injuries if an assault were to occur. The online questionnaire also collected data on bar users' clubbing behaviours and attitudes, and fight experience.

7.1 Research Questions to be Addressed

This chapter presents the methodology used to address research questions four and five:

4. How do bar users perceive social and physical environmental cues in entertainment venues?

5. Do the perceptions of bar fight participants differ from those of non-participants?

7.2 Research Design

The design of the Study B experiment was a 2 x 2 x 2 randomised independent groups factorial design with covariates. Similar to the work of Leather and Lawrence's (1995; 2003) this study used vignettes. This data collection technique was highly suitable for an experimental design as it can 'elicit perceptions, opinion, beliefs and attitudes from responses or comments to stories depicting scenarios and situations' (Barter & Reynold, 1999, 2). More specifically, vignettes serve three main purposes in social research, namely 'to allow actions in context to be explored; to clarify people's judgements; and to provide a less personal and therefore less threatening way of exploring sensitive topics' (Barter & Reynold, 1999, 1).

Vignettes set in a nightclub or bar facilitate the thorough exploration of the role social and environmental factors play in users' perceptions of crime there. A clear interpretation of actions within a specific context can be verified, creating some level of standardisation between participants. Unlike the Leather and Lawrence study (2003), photos were not used to accompany the written vignettes. This was due to the difficulty of isolating one factor in the photo for manipulation and excluding the influence on perceptions that all other random factors in the photo may have had. There were three points within the vignette that were manipulated with two options at each point. This created eight combinations and therefore, eight experimental groups overall (Appendix 9).

The three experimental variables chosen had to meet three criteria. First, there had to be limited or ambiguous evidence in the literature over their relationship with violence and other crimes in and around nightclubs. Second, variables needed to be easily manipulated and therefore, policy relevant. Third, variables needed to be discussed as risk factors to violence in nightclubs by participants in the focus groups/interviews. These criteria are explored in more detail in the following section.

7.2.1 Selection of Experimental Variables

Focus groups and one-on-one interviews were conducted with male bar users of Surfers Paradise CBD to 1) generally inform the creation of the online questionnaire; and 2) facilitate the identification of possible risk factors for crime and violence in clubs to be included as experimental variables in the questionnaire. The discussions were marketed towards Gold Coast Griffith University students with the use of flyers and posters being erected and handed-out on the Gold Coast campus. A number of lecturers on the Gold Coast Campus were also willing to allow the researcher to attend their lectures and discuss the aims of the focus groups as well as the times and places they would be held. Participants were offered ten dollars.

Overall there were 13 male participants aged between 18 and 26 who participated in four focus groups and one one-on-one interview, with a minimum of two and a maximum of four participants in the focus groups. The duration of each focus group or interview was between 20 and 35 minutes. Discussion was prompted by a number of questions on their general perception of Surfers Paradise as a place to go clubbing, warning signs or risk factors to violence in clubs, and their most favourite and least favourite venues to go clubbing. A basic thematic analysis was conducted by reviewing transcripts. The analysis identified a number of prominent themes frequently discussed as risk factors for crime and violence in clubs. These themes were: male to female patron ratio, the role of girlfriends, irresponsible service of alcohol/patron intoxication, temperature/crowding, bouncer friendliness, age of patrons, club style/design and public transport/taxis.

Variables such as irresponsible service of alcohol and young age of patrons were not chosen due to their well-established relationship with violence in clubs (discussed in chapter two). Other variables such as club design and a lack of public transport, are also well established as risk factors to violence. In addition, they are expensive and difficult to change. Whilst the effect of the presence of girlfriends on male violence varies based on the girlfriend's role in the situation, it is another factor that is impossible to realistically monitor and control in real-life scenarios. Therefore, there were three key themes that met the criteria to be included as a variable: bouncer friendliness, male to female patron ratio, and the temperature.

Bouncer friendliness

According to routine activity theory, the presence of bouncers as guardians, handlers and place managers discourages crime. Research in Hoboken, United States, suggests that their absence is a major predictor of aggression (Roberts, 2006). However, in Leather and Lawrence's work (1995; 2003) bouncers were viewed as encouragers of violence and the results showed that potential customers also believed their presence encouraged violence in certain situations. Much research has studied the relationship between the presence of bouncers and aggression, but there is limited research on the relationship between bouncer friendliness and aggression. Various Australian studies present conflicting results. While research in Sydney (Homel & Clarke, 1994) and Surfers Paradise (Homel *et al.*, 1997) suggest no correlation, Hauritz *et al.* (1998) found a positive relationship between unfriendly bouncers and physical aggression in their North Queensland intervention studies.

Whilst this variable is more difficult to change than the other two experimental variables, the appropriate level of bouncer friendliness is a factor that can be addressed in training designed for bar staff on how to manage problematic patrons, such as 'Safer Bars' training. In focus groups/interview, bouncers were one of the most discussed themes. Participants often discussed the role of bouncers in influencing the social atmosphere of a bar, and their influence on the likelihood of violence occurring.

> '*The vibe of the bouncers. You can tell ..... The way the bouncers are, you can tell the way the club's going to be ..... like, you can tell. The bouncer, when you walk in, if they're agro, you know the club is not necessarily going to be the nicest of places to hang out for the night'.*
>
> *Participant 1: 'The lighting isn't too dark and there is lots of security. Clubs that have security on stands on boxes to watch over the crowd always feel safe'. Participant 2: 'I don't exactly agree ..... I mean that really depends on the type of bouncer they are and whether or not they're aggressive'.*
>
> *'.... If the bouncers are looking for a fight. Sometimes there's an edgy vibe and tension in the air ..... They often won't just kick someone out but they'll bash them. They take advantage of opportunities to hurt someone'.*

'I feel safe with lots of bouncers, but I don't always think they make me feel safe if they're the ones being violent'.

'Bouncers … they're definitely not protectors … I'd say they're intimidators'.

'I love going there because it's a stylish club, I've never had any drama there. Security, at least to me has always been friendly. I've never even seen drama enter that club …'

'Clubs feels safer if I know the workers … when the bouncers aren't aggressive or I know them'.

Male to female patron ratio

Most international studies that have examined the effects of the proportion of male patrons in bars have found there to be no relationship with aggression (Quigley, Leonard & Collins, 2003; Graham *et al.*, 2004; Roberts, 2007; Forsyth, Cloonan & Barr, 2005). However, Forsyth (2006) found a significant relationship between a high proportion of female patrons and the severity of injuries from incidents of violence. Conversely, Homel and Clarke (1994) found a greater proportion of male patrons to be significantly related to higher rates of aggression.

The ratio of males to females in a nightclub is a factor that can be easily monitored and controlled at the front door by security staff. Discussion in focus groups/interview supported the inclusion of this factor in the experiment.

'I find that it's just the proportion of people in night clubs there, the proportion between males to females, there's usually much more males, and the competition …. I think that's the major predisposing factor of the aggression, the build up, and the tension'.

'It would be interesting if you could manipulate the ratio. And I think in a way they try to control that because they must be aware of the consequences of having a really skewed ratio of males and females in the clubs'.

The related issue of males competing over women is a known risk factor to fights in bars (Graham & Homel, 2008). This topic was also frequently discussed in focus groups/interview.

> *'... it was because of a fight over someone's girlfriend or something like that. This girl was dancing in front of all these men, and she was trying to look sexy and all that kind of stuff. And then I think someone made a comment, and her boyfriend heard it or something. And then it was just kind of on'.*

> *'You get a few drunk people in an area and a few girls and people start fighting over their girlfriends. 'Oh you were looking at my girlfriend, you did this to my girlfriend,' and that kind of thing'.*

> *'.... instigators?... alcohol, drugs, bouncers, men hitting on women and other people's girlfriends'.*

Temperature

Whilst there are competing theories on the relationship between temperature and aggression, negative affect theory (Berkowitz, 1983) is widely supported and suggests there is a positive linear relationship between temperature and aggression when all other factors such as time of day are controlled (Bushman, Wang & Anderson, 2005). Limited research specific to aggression in a bar or club environment suggests that there is a relationship between temperature and aggression (Homel *et al.*, 1997; Hauritz *et al.*, 1998; Quigley, Leonard & Collins, 2003; Roberts, 2007).

Warm temperatures in the indoor section of a nightclub or bar is a factor that can be easily manipulated through decent ventilation and air-conditioning. The impact of warm temperatures on the likelihood of violence was discussed in one focus group:

> *'They're a bit risky, I mean, I've seen one fight at Cocktails and Dreams and it's always crowded so it's hot and lots of people are always bumping into each other'.*

7.2.2 MANCOVA Independent (Experimental) Variables

Bouncer friendliness

The first experimental variable was bouncer friendliness. The effect of varying levels of bouncer friendliness at the door on user perceptions of crime and violence in that environment was investigated. The bouncer friendliness variable was measured on a nominal scale and coded "0" for unfriendly bouncer and "1" for friendly bouncer.

Patron Sex Composition

The second variable to be manipulated was patron sex composition. In this research, perceptions of the influence of patron composition was measured on a nominal scale of "0" for majority female patrons (two-thirds) and "1" for majority male patrons (two-thirds).

Temperature

The third experimental variable was temperature. For the purposes of this study, temperature was measured on a dichotomous nominal scale with hot and sweaty temperature conditions coded as "1" and cool and comfortable temperature conditions coded as "0."

Table 7.1: Description of independent variables for the experiment (final model)

Variables	**Description of measures**	
	Description	**N**
Bouncer friendliness	1 = friendly 0 = unfriendly	342 339
Male-female patron ratio	1 = majority male 0 = majority female	325 356
Temperature	1 = hot and sweaty 0 = cool and comfortable	355 326

7.2.3 MANCOVA Covariates

Two covariates were included in the original model because of the high likelihood that they would have some influence on how participants perceive crime and violence in clubs and bars. These covariates were prior fight participation and masculinity.

Bar fight participant

Close to the end of the questionnaire participants were asked if they had intentionally physically hurt someone in a bar fight in the past two years. The question was loosely based on Lang and Sibrel's (1989) definition of interpersonal aggression, 'the intentional (non-accidental) direction of a presumably noxious stimulus toward another person thought to be motivated to avoid it (305)'. This definition was adopted as research shows that it is hard to differentiate between the offender and the victim as both are often involved in escalating the situation through provocation (Pernanen, 1991). Richard Felson (1993) suggests that with dispute-related violence, it is more accurate to describe the victim and perpetrator as 'two antagonists'. In this PhD research, they will be described as bar fight participants.

Fight participation was originally coded on a nominal scale of 'Yes,' 'No' and 'Don't know,' and was later recoded for analysis purposes to '0' for 'No' and 'Don't know,' and '1' for 'Yes'.

Masculinity

Research suggests that masculinity plays a role in bar aggression (Tomsen, 1997; Graham & Wells, 2003; Anderson, Daly & Rapp, 2009). Snell's (1989) Masculine Behaviour Scale (MBI) was used to determine the participant's level of masculinity. Three of the four sub-scales within the MBI were used, with five questions in each. These were the restrictive emotionality subscale, the inhibited affection subscale and the exaggerated self-reliance and control subscale. The success dedication sub-scale was omitted as it focused heavily on the efforts made to pursue a professional career. This sub-scale appeared to be inappropriate, as it was expected that many participants were university students, and it was likely that they had not yet entered into a professional working environment (and would not have the experience required to answer the questions effectively). As Table 7.2 shows, not all participants completed Part C of the questionnaire (masculinity scale).

All questions were on a five level Likert scale, with '1' representing 'disagree' and '5' representing 'agree'. An index was created for analysis purposes by summing values of the 15 questions. The potential and observed minimum and maximum scores were 15 and 75 respectively.

Table 7.2: Description of the covariates for the experiment

Variables	**Description of measures**	
	Description	**N**
Fight participant	0 No / Don't know 1 Yes	614 67
Masculinity	1 Disagree 2 Slightly disagree 3 Neither agree nor disagree 4 Slightly agree 5 Agree	657

7.2.4 MANCOVA Dependent Variables

Fear Index

The fear of crime index was based on a reliable index developed by LaGrange, Ferraro and Supancic (1992). Some of the types of crime and incivilities were changed to be more suitable to the bar or nightclub environment. The ten point Likert scale used by LaGrange, and colleagues was condensed to a five point scale, with '1' representing 'not at all afraid' and '5' representing 'very afraid'. The fear of crime index used for this study was based on the summed responses to question 1 to 6 (Appendix 10). Minimum and maximum fear index values for participants were 6 and 30 respectively.

Participants were asked to rate their perceived level of fear of six types of crime or incivilities occurring in the described venue (vignette). The six variables were: drink spiking, attacked by someone without a weapon (e.g. kicked, punched), attacked by

someone with a weapon (e.g. glassed, hit with baton, knifed), robbed, sexually harassed, and verbally abused.

Likelihood Index

The likelihood of crime index was also based on a similar reliable risk of crime index developed by LaGrange, Ferraro and Supancic (1992). Once again some of the types of crime and incivilities were changed to suit the bar scenario and the ten point Likert scale was condensed to five points, with '1' representing 'not at all likely' and '5' representing 'very likely'. Responses to 7 questions, numbers 7 to 13 (Appendix 10) were summed, resulting in a minimum summed value for likelihood of 7 and a maximum value of 35.

For each question, participants were asked to rate the perceived likelihood that the mentioned crime or incivility would occur in the described venue (vignette). The seven variables were: drink spiking, attack on someone without a weapon, attack on someone with a weapon, robbery, sexual assault, sexual harassment and verbal abuse.

Frequency Index

The frequency of crime index was created by summing responses to seven questions, numbers 14 to 20 (Appendix 10). Participants were asked how frequently they believed different types of crime and incivility (variables listed for the likelihood index) would occur in the described venue. These variables were measured on a five point Likert scale, ranging from '1' for 'never,' '2' representing 'yearly,' '3' representing 'monthly,' '4' representing 'weekly' and '5' represent 'daily'. Therefore, the minimum and maximum summed values per participant were 7 and 35 respectively.

Opportunity

The opportunity variable was created with one question - 'Given the opportunity, how frequently would you choose to drink in this bar?' Responses were measured on a five point Likert scale, with '1' corresponding with 'never,' '2' with 'a few times a year,' '3' with 'monthly,' '4' with fortnightly' and '5' with 'weekly'. Consequently, minimum and maximum values for the variable were '1' and '5' respectively.

Injuries

The injuries variable was created with one question that asked 'If a physical assault occurred in this venue, how serious do you believe the injuries would be?' Responses were measured on a five point Likert scale with '1' representing 'not at all serious' such as minor bruising and '5' representing 'very serious' such as permanent damage (e.g. loss of sight, brain damage).

Table 7.3: Description of the dependent variables for the experiment

Variables & Indices	Description of Measures				
	Scale	No. of Variables in Index	N	Min	Max
Fear	1 Not at all afraid 2 3 4 5 Very afraid	6	681	6	30
Likelihood	1 Not at all likely 2 3 4 5 Very likely	7	681	7	35
Frequency	1 Never 2 Yearly 3 Monthly 4 Weekly 5 Daily	7	681	7	35
Opportunity	1 Never 2 Few times a year 3 Monthly 4 Fortnightly 5 Weekly	1	681	1	5
Injuries	1 Not at all serious (e.g. minor bruising) 2 3 4 5 Very serious (e.g. permanent damage)	1	681	1	5

7.2.5 Logistic Regression

The logistic regression was designed to determine some behavioural and attitudinal risk factors to participation in bar fights. The independent variables used were variables for which information was collection in Part B of the online questionnaire – clubbing frequency, number of standard drinks per session, belief that witnessing fights is part of the night's entertainment, and visiting hot spots. These variables were recoded from 2 point, 3 point or 6 point scales into binary variables (Table 7.4). The dependent variable was fight participation ('0' is no and '1' is yes).

Table 7.4: Description of the independent variables for the logistic regression

Variables	Description of measures	
	Scale	**Recoded scale**
Clubbing frequency	1 2 or more times/week 2 Weekly 3 Fortnightly 4 Monthly 5 Twice a year 6 Less than twice a year	0 Less than fortnightly (4-6) 1 Fortnightly or more (1-3)
Standard drinks per session	1 None 2 1-3 3 4-6 4 7-9 5 10-15 6 > 15	0 Less than 10 (1-4) 1 10 or more (5-6)
Witnessing fights is part of night's entertainment	0 No 1 Yes 2 Don't know	0 No / Don't know (0 & 2) 1 Yes
Visit hot spots	0 No 1 Yes, three or more of top 5 hot spots	0 No 1 Yes, three or more of top 5 hot spots

7.3 Procedure

7.3.1 Ethics Approval

Ethics approval was obtained from the Griffith University Human Ethics Committee for focus groups and conducting the online questionnaire.

7.3.2 Participants

The online questionnaire opening page was entered by a total of 1387 respondents. Of those, 390 chose not to continue after reading the survey conditions (Appendix 11). A further 92 respondents chose not to continue after reading their designated scenario. In addition to this, survey responses completed in 2 minutes and under were removed. This was due to the likelihood that they did not read and complete the survey thoroughly. Survey responses were also removed if respondents did not complete the first 20 questions (Part A) and if they did not complete the question regarding bar fight participation in Part B. Due to the initial design of the online survey, the scenario for 20 survey responses was not recorded and these responses were also not included in analysis. This resulted in 803 questionnaires to be considered for data analysis.

Since the survey was displayed on all common-use lab Griffith University computers, it was highly likely that the sample consisted predominantly of Griffith University students. All participants agreed to a consent form (Appendix 12) which listed a number of pre-requisites for participation (Appendix 11). These pre-requisites included: being legally able to enter a licensed premises, male, between 18 and 30 years of age, and had been out for a night in Surfers Paradise (visiting at least 1 club) at least once in the last 2 years. Despite these requirements, six participants were aged between 31 and 34, and 122 participants were female.

Due to the large number of female names on entries to the questionnaire prize draw, it was decided that efforts would be made to remove these participants, as it was highly likely that their perceptions on bar crime would be different to males as a group and their results on the masculinity scale would skew results. To remove female participants, their questionnaires needed to be matched to the prize entry time (filled out and emailed immediately after questionnaire completion). Last names were removed from entries prior to matching to preserve anonymity of respondents. Survey responses were then matched to

first names on the prize entries emailed, based on the time the questionnaire was completed and the email was received. This process showed that 15% of respondents were females. More specifically, of the 803 respondents, 587 were male, 122 were female and the sex was unknown for the remaining 94 respondents (i.e. did not include name on entry or had a name for which the sex could not be defined). These unknown cases were coded as male. This resulted in 681 respondents for final analysis.

7.3.3 Online Questionnaire

The questionnaire (Appendix 10) was designed to address research questions 4 and 5, taking into consideration the major risk factors for crime in bars and clubs raised in the focus groups/interviews.

'Survey Wizard' was employed to develop the online version of the questionnaire. The researcher was able to log in through the Survey Wizard home page and view results during the data collection as well as monitor the questionnaire progress and remove individual cases (as was done for those who completed the questionnaire in two minutes or under). At the end of the data collection phase all results were exported from the Survey Wizard site as an excel spreadsheet, and were later imported into SPSS for analysis.

The questionnaire was online for 4 months, from May until September 2008. It was displayed on the homepage of all Griffith University common-use lab computers in the five campuses across Brisbane and the Gold Coast. A brief description of the questionnaire was given on the homepage with a link to the Survey Wizard site hosting the questionnaire. After clicking on this link, potential participants were given more information on the nature of the questions being asked, the requirements to be a participant, average time expected to complete the survey (between ten and 15 minutes) and the prize to be drawn for one participant (Nintendo Wii) (Appendix 11).

After agreeing to the consent information page, participants were randomly allocated (by the software programme) a vignette with three points of manipulation (Appendix 8). At each of these points they were given one of two options. These manipulation points and options included:

1. As patron enters the bar they are greeted by either a friendly or unfriendly bouncer checking identification.

2. Patron notices that majority of individuals in the bar are either male or female.
3. Patron notices that the temperature in the bar is either uncomfortably hot and sweaty or cool and comfortable.

Part A of the questionnaire included 22 questions on a five level Likert scale, designed to gauge bar users' perceptions of the bar environment described in the given scenario. As outlined in section 7.2.4, questions 1 to 6 measured participants' perceived fear of crime (fear index), questions 7 to 13 measured perceived likelihood of crime, and questions 14 to 20 measured perceived frequency of crime (frequency index). Types of crimes and incivilities chosen for participants to respond to in questions 1 to 20 were those frequently reported in the police and ambulance cases for Surfers Paradise. Question 21 asked participants to rank the perceived seriousness of injuries if an assault were to occur in their given scenario (injury variable). In question 22, participants were asked to rank the likelihood that they would choose to drink in the bar described in their scenario if they had the opportunity (opportunity variable).

Part B of the questionnaire included ten questions that explored participants' regular drinking behaviour. Information on participant age was collected. Participants were also asked how frequently they go clubbing and consume alcohol, as well as the quantity of alcohol consumed during an average drinking session (all measured on five point Likert scales). Open-ended questions were used to gather information on participants' history of witnessing or being involved in a bar fight in the past 2 years (bar fight participant covariate). Information was also gathered on the five top bars or clubs in Surfers Paradise that the participant visits. Part C of the questionnaire included 15 questions on a five point Likert scale, drawn from the MBI (Snell, 1989) (masculinity covariate).

CHAPTER 8

Results - Perceptions of Surfers Paradise Club and Bar Users

A 2 x 2 x 2 between-subjects multivariate analysis of variance with covariates (MANCOVA) was performed on the Study B questionnaire data to determine whether the mean ratings for the five dependent variables for each scenario group were different after accounting for prior bar fight participation and masculinity. The five dependent variables were: fear of crime, likelihood of crime, frequency of crime, opportunity to drink in bar, and severity of injuries. Three experimental variables were manipulated in each scenario: bouncer (friendly or unfriendly), patron sex ratio (majority male or majority female) and temperature (cool and comfortable or hot and sweaty). Results show masculinity to have no impact on participant responses. Results also showed that only main effects were significant. The final model revealed that there were no significant differences in how bar fight participants and non-fight participants perceived the general risk of victimisation and injury severity from assaults in the varying scenarios. However, in response to questions that focused on risk to themselves if they were in such a setting, bar fight participants were significantly less fearful of bar situations they perceived to be dangerous, and were more willing to drink in any hypothetical venue compared to non-fight participants. Approximately half of all bar fight participants had participated in three or more fights in the two years prior and were therefore categorised as frequent fighters.

A binary logistic regression was also conducted to identify behavioural and attitudinal risk factors to being a fight participant. The independent variables included: frequent clubbing, heavy drinking, viewing bar fights to be part of the night's entertainment and visiting Surfers Paradise venues found to be hot spots in the risky facilities analyses conducted in chapters four and six. Frequent clubbing, heavy drinking and viewing bar fights to be part of the night's entertainment were all significant risk factors to being a fight participant whilst visiting hot spot venues was not.

8.1 Descriptive Results

8.1.1 Scenario Groups

Only 681 survey responses were completed in all sections necessary for analysis. Scenarios groups had similar but unequal participant numbers ranging from 76 to 103. Table 8.1 shows the number of participants in each group.

Table 8.1: Scenario group cell numbers

Group code	Group description	N
AAA	Friendly bouncer Majority male patrons Hot & sweaty temperature	79
ABA	Friendly bouncer Majority female patrons Hot & sweaty temperature	103
AAB	Friendly bouncer Majority male patrons Cool & comfortable temperature	76
ABB	Friendly bouncer Majority female patrons Cool & comfortable temperature	83
BAA	Unfriendly bouncer Majority male patrons Hot & sweaty temperature	92
BBA	Unfriendly bouncer Majority female patrons Hot & sweaty temperature	79
BAB	Unfriendly bouncer Majority male patrons Cool & comfortable temperature	78
BBB	Unfriendly bouncer Majority female patrons Cool & comfortable temperature	91
Total		681

8.1.2 Response Patterns for Part A of Questionnaire (the scenarios)

Fear

A descriptive analysis of the dependent variable fear showed the mean of the summed values of 6 questions to be 11.04, with a minimum of 6 (not at all afraid) and a maximum of 30 (very afraid). The standard deviation was 4.70. The mean and standard deviation is presented for each item included in the fear index in Table 8.2. The reliability of the index was measured using Cronbach's alpha ($\propto = 0.87$).

Table 8.2: Descriptive statistics for fear index

In this venue, how afraid would you be of:	**Descriptive Statistics**	
	$\bar{x}$	**SD**
Having your drink spiked?	1.48	0.88
Being attacked by someone without a weapon?	2.12	1.06
Being attacked by someone with a weapon?	1.83	1.06
Being robbed?	1.79	1.00
Being sexually harassed?	1.46	0.93
Being verbally abused?	2.35	1.14
Fear Index ($\propto = 0.87$)	11.04	4.70

According to mean fear values for the varying scenarios, perceived fear of crime was higher when the bouncer was friendly, regardless of the temperature conditions, but only when the majority of patrons were male (Figures 8.1 and 8.2). The temperature conditions had only a minimal effect on the perceived fear of crime, with participants given the hot and sweaty conditions reporting only slightly higher levels of fear.

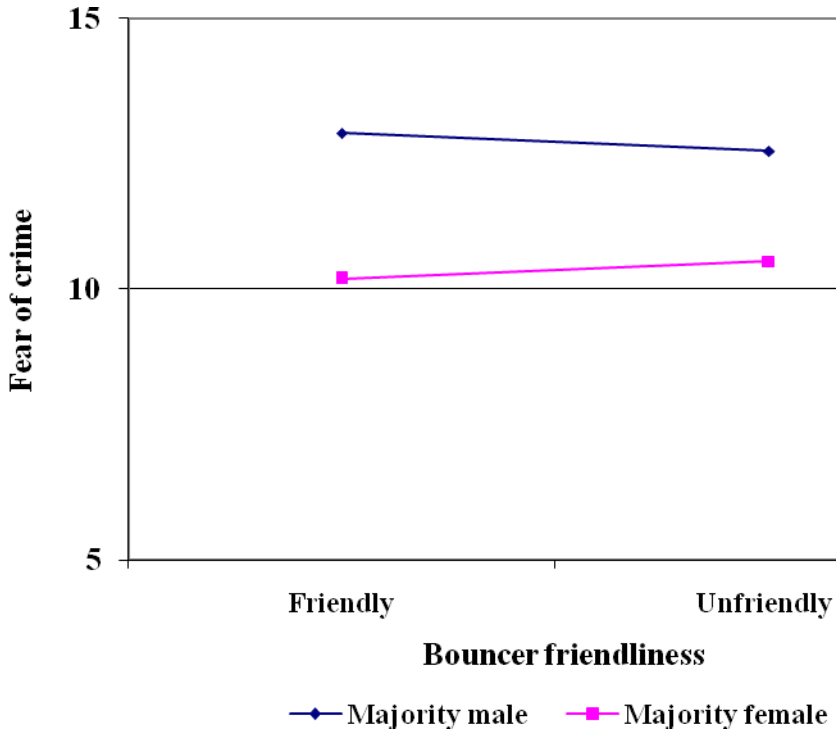


Figure 8.1: Mean fear of crime in hot and sweaty temperature conditions

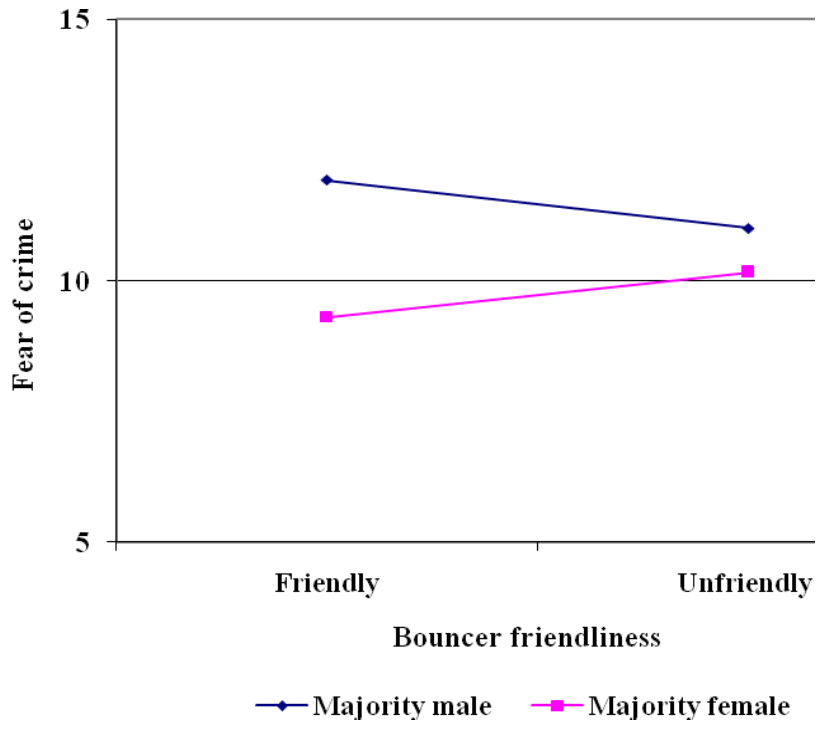


Figure 8.2: Mean fear of crime in cool and comfortable temperature conditions

Likelihood

A descriptive analysis of the likelihood index revealed the mean of the 7 questions to be 18.85, with a minimum of 7 (not at all likely) and a maximum 35 (very likely). The standard deviation was 6.09. Table 8.3 presents these results for each item included in the likelihood index. The reliability of the index was 0.89.

Table 8.3: Descriptive statistics for likelihood index

In this venue, how likely do you think it is that the following would occur:	**Descriptive Statistics**	
	$\bar{x}$	**SD**
Drink spiking?	2.35	1.12
An attack on someone without a weapon?	2.81	1.24
An attack on someone with a weapon?	2.07	1.05
Robbery of a patron?	2.29	1.06
A rape or sexual assault?	2.10	1.07
Sexual harassment?	2.82	1.31
Verbal abuse?	3.38	1.32
Likelihood Index ($\propto$ = 0.89)	18.85	6.09

Based on mean likelihood values per scenario group, Figures 8.3 and 8.4 show that the mean perceived likelihood for crime was always higher when the bouncer was unfriendly, regardless of the other bar cues. The likelihood of crime was also perceived to be much higher when the conditions were hot and sweaty and when the majority of patrons were male.

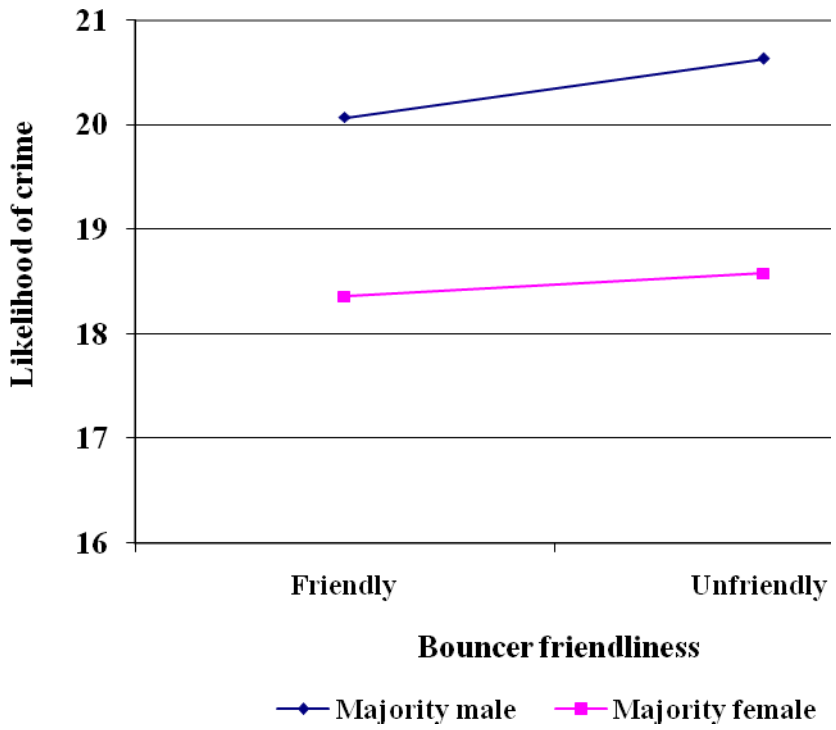


Figure 8.3: Mean likelihood of crime in hot and sweaty temperature conditions

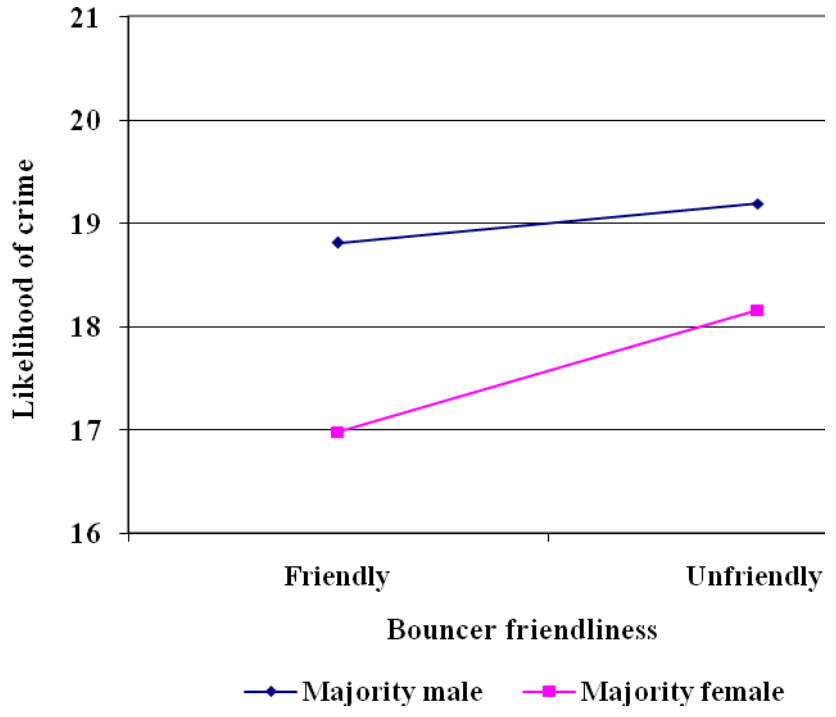


Figure 8.4: Mean likelihood of crime in cool and comfortable temperature conditions

Frequency

The mean frequency summed value was 24.25, with a minimum of 7 (never) and a maximum of 35 (daily). The standard deviation was 5.77. These statistics are presented for each item included in the frequency index in Table 8.4. Cronbach's alpha was 0.90.

Table 8.4: Descriptive statistics for frequency index

In this venue, how frequently do you think the following would occur:	**Descriptive Statistics**	
	$\bar{x}$	**SD**
Drink spiking?	3.37	1.04
An attack on someone without a weapon?	3.86	1.05
An attack on someone with a weapon?	2.71	0.96
Robbery of a patron?	3.32	1.12
A rape or sexual assault?	2.65	1.00
Sexual harassment?	3.84	1.15
Verbal abuse?	4.49	0.96
Frequency Index ($\propto$ = 0.90)	24.25	5.77

Figures 8.5 and 8.6 suggest that means were very similar for scenarios where the majority of patrons were male, regardless of the temperature conditions. However, temperature conditions seemed to play a major role in the perceived frequency of crime when the majority of patrons were female. Hot and sweaty conditions combined with a friendly bouncer resulted in high perceived frequency of crime compared to scenarios in which the bouncer was unfriendly. Moreover, when the conditions were cool and comfortable and the majority of the patrons were female, unfriendly bouncers resulted in a prominent increase in the perceived frequency of crime in comparison to friendly bouncers.

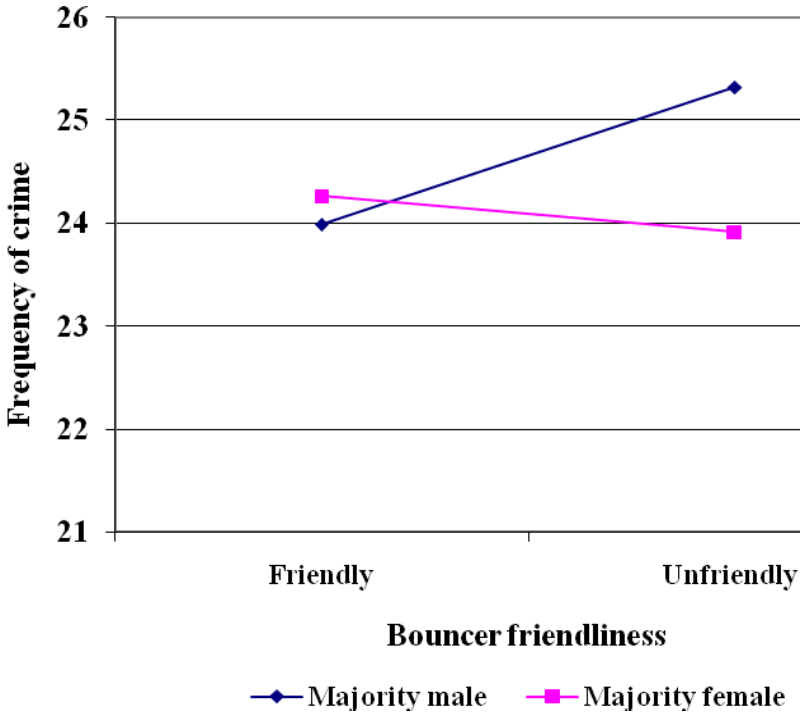


Figure 8.5: Mean frequency of crime in hot and sweaty temperature conditions

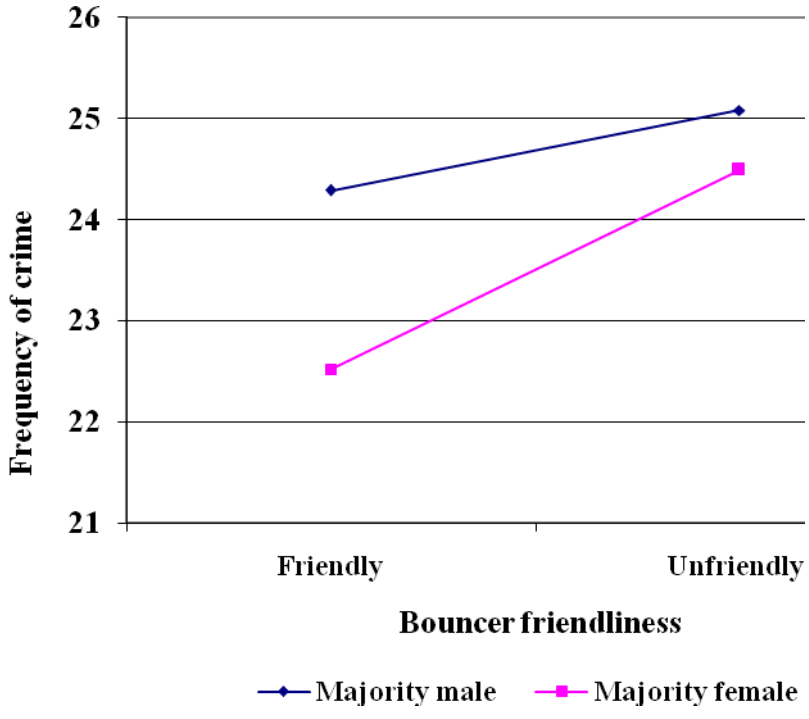


Figure 8.6: Mean frequency of crime in cool and comfortable temperature conditions

Opportunity

The mean opportunity score was 2.92 (monthly), with a minimum of 1 (never) and a maximum of 5 (weekly). The standard deviation was 1.25 (Table 8.5).

Table 8.5: Descriptive statistics for opportunity variable

Opportunity variable	**Descriptive Statistics**	
	$\bar{x}$	**SD**
Given the opportunity, how regularly would you choose to drink in this bar?	2.92	1.25

Figure 8.7 and 8.8 are based on mean opportunity values for scenario groups. They suggest that participants in general were more likely to take the opportunity to drink in a bar that is cool and comfortable compared to hot and sweaty, particularly when the majority of patrons were female. Participants were also more likely to take the opportunity to drink in the bar when the bouncer was friendly.

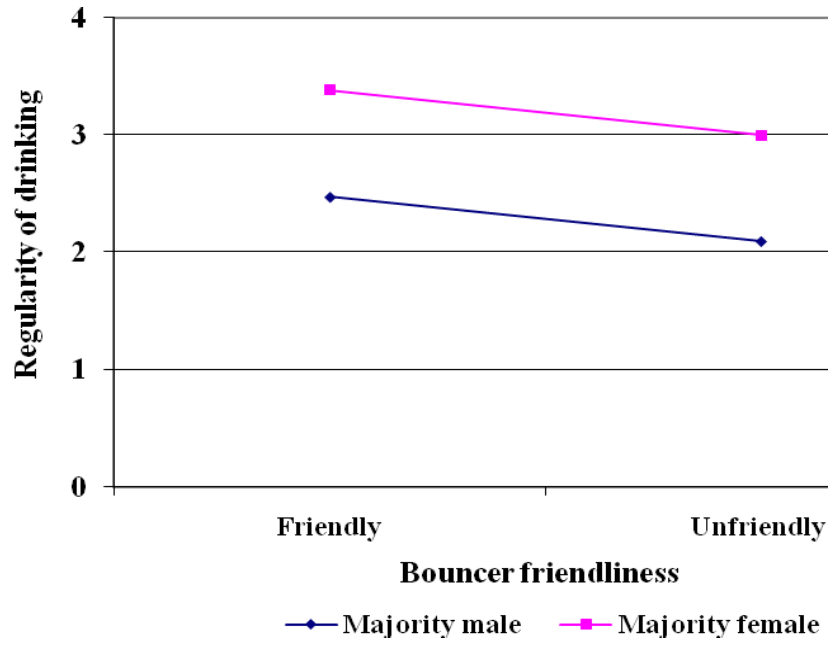


Figure 8.7: Mean regularity of drinking in bar with hot and sweaty conditions given the opportunity

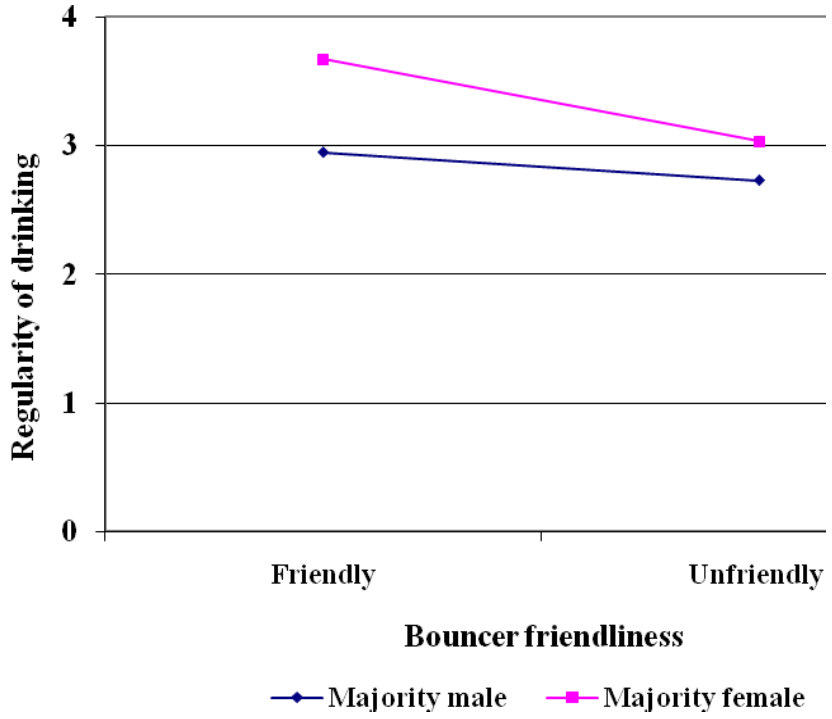


Figure 8.8: Mean regularity of drinking in bar with cool and comfortable conditions given the opportunity

Injuries

The mean of the summed values for the injuries variable was 2.55 (moderate severity), with a minimum of 1 (not at all serious) and a maximum of 5 (very serious). The standard deviation was 0.98.

Table 8.6 : Descriptive statistics for injuries variable

Injuries variable	**Descriptive Statistics**	
	$\bar{x}$	**SD**
If a physical assault occurred in this venue, how serious do you believe the injuries would be?	2.55	0.98

Figures 8.9 and 8.10 are based on mean seriousness values per scenario group. These figures show that perceived injuries from a physical assault would be more serious when the majority of patrons are male rather than female regardless of the other scenario conditions. In particular, injuries were perceived to be more serious when the bouncer was unfriendly rather than friendly, with the exception of the cool and comfortable conditions when the majority of patrons are male. In this specific scenario, the seriousness of injuries was predicted to be higher than when the bouncer was unfriendly.

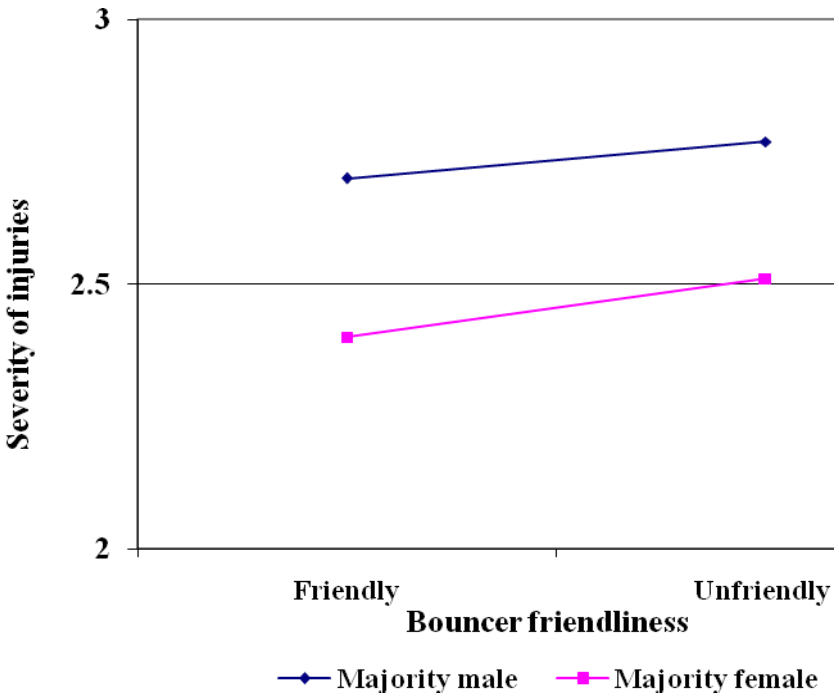


Figure 8.9: Mean seriousness of injuries resulting from physical assault in hot and sweaty bar

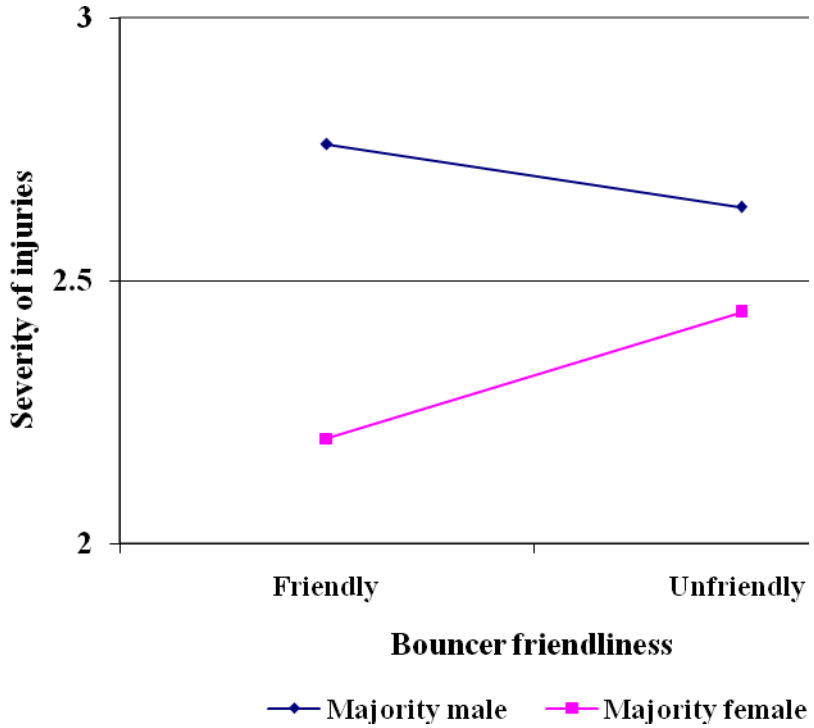


Figure 8.10: Mean seriousness of injuries resulting from physical assault in cool and comfortable bar

8.1.3 Response Patterns for Part B of Questionnaire (participant information)

Age

The average age of participants was 21.4 years, with a minimum age of 18 and a maximum age of 34 years. Just under two thirds of these respondents were aged between 18 and 21, with over 90% of respondents being between 18 and 25 years of age.

Fight Participation

Results showed that 577 (84.7%) participants had witnessed a fight. In addition, 67 (9.8%) participants had been involved in a fight including 66 who had intentionally physically hurt someone in the 2 years prior to participating in the questionnaire and one participant had been involved in a fight but did not or could not fight back. The remaining participants included 10 (1.5%) who did not know if they had intentionally hurt someone and 605 (88.7%) who were certain that they had not. Results showed that bar fight participants were significantly more likely to consider bar fights a part of the night's entertainment than non-fight participants (32.8% and 20.2% respectively).

Clubbing frequency

Further comparisons of non-participants and participants in bar fights revealed that bar fight participants visited bars and clubs much more frequently than did non-participants with 58.1% visiting one or more times per week compared to 37.6% (Table 8.7).

Table 8.7: Frequency of clubbing for non-fight participants and fight participants

Frequency of clubbing	**Non-fight participants**		**Fight participants**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Twice or more/week	61	9.9	12	17.9	73	10.7
Weekly	170	27.7	27	40.3	197	28.9
Fortnightly	152	24.8	21	31.3	173	25.4
Monthly	176	28.7	4	6.0	180	26.4
Twice a year or less	55	9.0	3	4.5	58	8.5
Total	614	100%	67	100%	681	100%

Standard drinks per session

Results showed that fight participants not only go clubbing more frequently than non-participants, but were also found to be significantly more likely to binge drink on a regular basis. More specifically, approximately 50% of fight participants reported drinking ten or more drinks per regular drinking session compared to approximately 20% of non-fight participants (Table 8.8).

Table 8.8: Number for non-fight participants and fight participants

No. of drinks consumed per session	**Non-fight participants**		**Fight participants**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
None	20	3.3	1	1.5	21	3.1
1-3	105	17.1	5	7.5	110	16.2
3-6	175	28.5	7	10.4	182	26.7
6-10	197	32.1	20	29.9	217	31.9
10-15	92	15.0	21	31.3	113	16.6
15+	25	4.1	13	19.4	38	5.6
Total	614	100%	67	100%	681	100%

Fighting frequency

Approximately three quarters of those that had previously been involved in a bar fight were repeat fighters (Table 8.9). In the questionnaire, participants were asked to report on the last fight they were involved in. When asked whether or not they viewed themselves as the aggressor or the victim, many reported viewing themselves as either the victim (43.9%) or an active participant, playing the role of both victim and aggressor (43.9%), whilst only 6.1% believed they were the aggressor. The remaining 6.1% responded ‘don’t know’. When these sub-groups were broken down into the fighter categories of frequent fighters (3 or more fights) and rare fighters (1-2 fights), the percentage of aggressors and active participants significantly changed. Out of 36 rare fighters, only 41.7% believed they were aggressors or active participants whilst 60% of the 30 frequent fighters believed they were aggressors or active participants.

Table 8.9: Frequency of fight participation

Number of fights in 2 years prior	Number of participants	Percentage
1	19	28.8
2	17	25.8
3-5	18	27.3
6+	12	18.2
Total	66	100

Fight triggers

Nearly nine out of ten (88%) fight participants viewed themselves as not starting their most recent fight. The most frequent reason provided as to why the fight started was in regards to female friends or girlfriends, discussed by approximately one in four participants (23.9%). Many of these situations involved sexual harassment, flirting or touching of participant's female friends or girlfriends by other antagonists. On some occasions the individual doing the flirting or touching of someone else's girlfriend was the participant. Other frequently mentioned reasons why they were involved in the fight included being 'stared down' or being 'stared down' by a stranger followed by verbal abuse which escalated (e.g. fight may be instigated with one aggressor saying 'what's your problem?') (20.9%), and defending a male friend who was being harassed or had become involved in a fight (17.9%). Reasons provided for fights starting are presented in Table 8.10.

Table 8.10: Reasons for fight participation

Reasons for fight participation	Number of participants	Percentage
Flirting or harassment of female friend/ girlfriend of their doing or instigated by other antagonist	16	23.9
Staring down or being stared down by a stranger followed by verbal abuse	14	20.9
Defending male friend	12	17.9
Pushing past/bumping (eg. dancefloor)	9	13.4
Spilt drink	6	9.0
Feeling drunk and/or bored	5	7.5
Unknown	3	4.5
Misunderstanding	2	3.0
Total	67	100

8.1.4 Response Patterns for Part C of Questionnaire (masculinity scale)

Masculinity

A descriptive analysis of the masculinity index revealed the mean of the 15 questions to be 43.22, with a minimum of 15 (disagree) and a maximum of 75 (agree). The standard deviation was 11.22. The mean and standard deviation for each item included in the index are presented in Table 8.11. The reliability of the index was 0.88.

Table 8.11: Descriptive statistics for masculinity index

Masculinity	Descriptive Statistics	
	$\bar{x}$	SD
I don't usually discuss my feelings and emotions with others	2.92	1.34
I don't devote much time to intimate relationships	2.30	1.32
I try to be in control of everything in my life	2.75	1.16
I am not the type of person to self-disclose about my emotions	3.12	1.20
I don't involve myself too deeply in loving, tender relationships	2.36	1.29
I make sure that "I call all the shots" in my life	3.46	1.09
I don't often talk to others about my emotional reactions to things	2.90	1.25
I don't become very close to others in an intimate way	2.39	1.24
I don't take orders (or advice) from anybody	2.41	1.08
In general, I avoid discussions dealing with my feelings and emotions	2.79	1.27
I don't often tell others about my feelings of love and affection for them	2.73	1.32
I don't let others tell me what to do with my life	3.37	1.14
I don't often admit that I have emotional feelings	2.73	1.24
I tend to avoid being in really close, intimate relationships	2.34	1.23
I don't allow others to have control over my life	3.64	1.14
Masculinity Index ($\propto$ = 0.88)	43.22	11.22

8.2 Assumption Testing

Data collected in the survey was analysed using SPSS. Three scales were created using questions in Part A of the survey. Cronbach's alpha was calculated for each scale to ensure reliability. Various tests were conducted to ensure compliance with the assumptions of a Multivariate Analysis of Covariance (MANCOVA). These assumptions include normal distribution, homogeneity of variance-covariance, no multicollinearity, adequate sample size, and absence of outliers. Preliminary assumption testing indicated a violation of normal distribution and equality of variance.

Histograms were created to analyse deviation from the normal distribution on dependent variables. The significance of the skewness for the dependent variables was calculated (Table 8.12) which indicated the need for transformation and the most suitable type of transformation. Two variables were transformed. The fear index had an extreme positive skew which was treated with a reciprocal transformation. The frequency variable had a slight negative skew and was treated with the appropriate square root transformation. Generally speaking however, the F test is robust enough to tolerate non-normality caused by skewness, especially in a sample of several hundred.

Table 8.12: Skewness of dependent variables

Variable	Skewness	Standard error of skewness	Significance	Best transformation	Significance (transformed variable)
Fear	1.30	.094	13.83	Reciprocal (1/X)	2.57
Likelihood	0.107	.094	1.14	Not necessary	-
Frequency	-1.04	.094	-11.11	Sq root (K-X)	1.42
Opportunity	0.322	.094	3.43	Not necessary	-
Injuries	0.380	.094	4.04	Not necessary	-

The Box's M Test was used to test the assumption of homogeneity of variance-covariance matrices on the final model. The null hypothesis of no significant difference between covariates was supported (F (105, 539892.881) = 1.133, p = 0.166). In addition, no multicollinearity problems were detected. The largest correlation between two dependent variables adjusting for the effects of the experimental variables involved frequency (negatively transformed) and likelihood (-.641).

The assumption of equality of variance was tested using Levene's test. Results showed that not all groups had equal variance with regards to the dependent variables: fear (F (7, 673) = 3.590, p = .001), likelihood (F (7, 673) = .441, p = .877) and frequency (F (7, 673) = .718, p = .657), opportunity (F (7, 673) = 4.760, p = .000) and injuries (F (7, 673) = .507, p = .830). For the two variables that violated this assumption (fear and opportunity), a more conservative alpha level (< 0.01) was used, as suggested by Tabachnick and Fidell (2001).

8.3 Results of MANCOVA

8.3.1 Multivariate Testing

A preliminary MANCOVA analysis examined bouncer friendliness, patron sex and temperature as independent variables, fear, likelihood, frequency, opportunity and injuries as dependent variables and fight participant along with masculinity as the covariates. The three way interaction and two way interactions between independent variables were adjusted for lower order terms and covariates.

Results of the Wilk's Lambda multivariate test showed only main effects (adjusted for covariates) were significant: bouncer friendliness (p = 0.001), patron sex composition (p = 0.000) and club temperature (p = 0.004). The covariates were tested adjusting for the main effects of other factors. Results showed that masculinity was non-significant, but the bar fight participant covariate was significant (p = 0.004). Results for the preliminary MANCOVA analysis are presented in Table 8.13.

Table 8.13:Multivariate ANOVA Table

Term	Δ	**F**	**df**	**p**
Masculinity	0.998	0.299	643	0.913
Bar fight participant	0.979	2.734	643	0.019
Bouncer Friendliness	0.966	4.458	643	0.001
Patron Sex	0.871	18.466	643	0.000
Temperature	0.971	3.490	643	0.004
Bouncer*Patron Sex	0.993	0.845	643	0.518
Bouncer*Temperature	0.997	0.345	643	0.885
Patron Sex*Temperature	0.989	1.366	643	0.235
Bouncer*Patron Sex*Temperature	0.993	0.949	643	0.448

The masculinity covariate was non-significant in all multivariate and univariate tests. After excluding the interactions between independent variables as well as the masculinity covariate as non-significant, a subsequent MANCOVA analysis was performed (Table 8.14). Results of the final model showed statistically significant differences between groups for bouncer friendliness ($F(5, 672) = 4.875$, $p = .000$), patron sex composition ($F(5, 672) = 20.282$, $p = .000$), and club temperature ($F(5, 672) = 4.237$, $p = .001$). Results also revealed statistically significant mean differences between bar fight participants and non-participants responses ($F(5, 672) = 4.237$, $p = .001$).

Table 8.14: Final model - Multivariate ANOVA Table

Term	Δ	**F**	**df**	**p**
Bar fight participant	0.977	3.116	672	.009
Bouncer Friendliness	0.965	4.875	672	.000
Patron Sex	0.869	20.282	672	.000
Temperature	0.969	4.237	672	.001

8.3.2 Univariate Testing

Bouncer Friendliness

Results of a univariate test (Table 8.14) found the level of bouncer friendliness to strongly influence opportunity (F (1,676) = 22.026, p = .000) and moderately influence frequency (F (1,676) = 3.644, p = .057). The estimate of effects for the canonical variables was equivalent to -.380. The standardised discriminant function coefficients and loadings indicated a strong negatively weighted contribution from opportunity (-.956) as well as a minor negatively weighted contribution from frequency (-.373), the negatively transformed variable. These figures indicate a willingness to take the opportunity to drink more regularly when a friendly bouncer is present as well as a perception that crime would occur less frequently when a friendly bouncer was present. Results are presented in Table 8.15.

Table 8.15: Results of the univariate F-tests for bouncer friendliness

Variable/Index	Type III SS	F	df	p	Standardised Discriminant Function Coefficient
Fear	.001	.639	676	.419	.060
Likelihood	60.600	1.578	676	.196	-.090
Frequency	2.538	3.644	676	.057	-.373
Opportunity	29.327	22.026	676	.000	-.956
Injuries	.936	.984	676	.322	-.084

Patron Sex

Univariate testing revealed a strong significant main effect for patron sex composition on fear (F (1,676) = 57.255, p = .000), likelihood (F (1,676) = 12.684, p = .000), opportunity (F (1,676) = 65.041, p = <.000) and injuries (F (1,676) = 19.252, p = .000), but not for frequency (F (1,676) = 3.425, p = .065). The estimate of effects for canonical variables was .774. Examination of standardised discriminant function coefficients and dependent variable loadings showed low scores on fear (high fear when considering reciprocal transformation of variable) (-.627), low scores on likelihood (-.090), low scores on

opportunity (-.665) and high scores on injuries (.071). The strongest of these contributions comes from the opportunity variable with a similar contribution from the fear variable, suggesting that when the majority of patrons are male, participants will have a high fear of crime occurring in the venue and will rarely take the opportunity to drink there. Results are presented in Table 8.16.

Table 8.16 : Results of the univariate F-tests for patron sex composition

Variable/Index	Type III SS	F	df	p	Standardised Discriminant Function Coefficient
Fear	.0758	57.255	672	.000	-.627
Likelihood	458.110	12.684	672	.000	-.090
Frequency	2.385	3.425	672	.065	.004
Opportunity	86.600	65.041	672	.000	-.665
Injuries	18.060	19.252	672	.000	.071

Temperature

Univariate tests (Table 8.17) revealed that perceived levels of fear (F (1,676) = 6.203, p = .013), likelihood (F (1,676) = 5.946, p = .015) and opportunity (F (1,676) = 16.275, p = .000) were all strongly and significantly influenced by the bar temperature conditions. The estimate of effects for the canonical variables was equivalent to .354. The standardised discriminant function coefficients and loadings indicated a strong negatively weighted contribution from opportunity (-.799) as well as a moderate positively weighted contribution from likelihood (.456) and a minor negatively weighted contribution from the reciprocal transformation of the fear variable (-.259). That is, when the temperature inside a bar or club is hot and sweaty, participants expect to be fearful of crime and perceive crime to be a likely occurrence. They are also very unwilling to drink in a hot and sweaty bar if given the opportunity.

Table 8.17: Results of the univariate F-tests for temperature

Variable/Index	Type III SS	F	df	p	Standardised Discriminant Function Coefficient
Fear	.008	6.203	676	.013	-.259
Likelihood	214.744	5.946	676	.015	.456
Frequency	.510	.733	676	.392	.219
Opportunity	21.669	16.275	676	.000	-.799
Injuries	1.266	1.350	676	.246	-.153

Bar fight participant

The univariate tests (Table 8.18) showed that prior bar fight experience had a moderate statistically significant effect on level of perceived fear (F (1,676) = 5.621, p = .021) and a highly statistically significant effect on opportunity (F (1,676) = 12.229, p = .001). The estimate of effects for the canonical variables was equivalent to -.510. The standardised discriminant function coefficients and loadings indicated a strong negatively weighted contribution from opportunity (-.808) as well as a moderate negatively weighted contribution from the reciprocal transformation of the fear variable (-.530). Moreover, those participants that had intentionally hurt someone in a bar fight in the past two years were highly likely to be willing to drink in their described venues if given the opportunity and also had low levels of reported fear of crime in the described venues.

Table 8.18: Results of the univariate F-tests for bar fight participant

Variable/Index	Type III SS	F	Df	p	Standardised Discriminant Function Coefficient
Fear	.007	5.621	676	.021	-.530
Likelihood	12.960	.359	676	.547	-.339
Frequency	.189	.271	676	.603	-.119
Opportunity	16.283	12.229	676	.001	-.808
Injuries	1.750	1.865	676	.172	.038

8.3 Results of Logistic Regression

A logistic regression analysis was conducted to predict risk of fight participation using clubbing frequency, number of standard drinks consumed, perception of fights as part of the night's entertainment and visiting three of the top five Surfers Paradise hot spot nightclubs (as defined in the risky facilities analyses) as predictors (Table 8.19). A comparison of the full model against a constant only model showed statistically significant results (chi square (3) = 42.41, $p < .000$). A Nagelkerke R^2 value of .136 indicated a weak relationship between prediction and groups. Prediction accuracy was 89.1%. The Wald criterion demonstrated that clubbing frequency ($p = .004$), number of standard drinks consumed ($p = .000$) and perceiving the witnessing of fights to be entertaining ($p = .040$) all made significant contributions to the prediction of fight participation. Visiting hot spots for violence in Surfers Paradise (as per the risky facilities analyses presented in chapter four) was not a significant predictor of fight participation. Results showed an odds ratio of 3.32 for clubbing fortnightly compared to less frequently, an odds ratio of 3.28 for drinking ten or more standard drinks in a session compared to less than ten drinks, and an odds ratio of 1.76 for regarding the witnessing of fights to be part of the night's entertainment compared to not regarding fights as entertaining.

Table 8.19: Results of the logistic regression predicting bar fight participant

Predictor	B	S.E	Wald	df	p	Exp (B)
Frequent Clubbing	1.199	.419	8.206	1	.004	3.317
Heavy Drinking	1.186	.275	18.563	1	.000	3.275
Visit Hot Spots	-.054	.378	.021	1	.886	.947
Fight Entertaining	.563	.274	4.233	1	.040	1.757

8.4 Summary

This chapter addressed two research questions on bar user's perceptions of social and physical environmental cues to crime and violence, and the impact that prior fight experience has on these perceptions. User's perceptions were tested through an experiment conducted online. The research design was a randomised independent groups 2 x 2 x 2 factorial design with covariates. The three independent variables were bouncer friendliness, temperature and patron sex composition. The dependent variables were: fear of crime, likelihood of crime, frequency of crime, opportunity to drink in venue and severity of injuries if an assault was to occur. The covariates were bar fight participation (in the previous 2 years) and masculinity.

Results of this study have confirmed that bouncer friendliness, temperature conditions and patron sex composition all have a significant impact on the likelihood, frequency and fear of crime in bars and clubs as well as the user's readiness to drink in the given scenario and the perceived severity of injuries if an assault were to occur. Participants generally rated fear, likelihood, frequency and injuries to be highest when the bouncer was unfriendly, the temperature was hot and sweaty and the patrons were majority male. As expected, participants had a preference for drinking in the bar where the majority of patrons were female, there was a friendly bouncer, and conditions were cool and comfortable. These preferences were not as evident for bar fight participants who were significantly more likely than non-participants to be willing to drink in any scenario. Bar fight participants also had significantly lower rates of fear of crime than non-fight participants.

A logistic regression was conducted to examine predictors of bar fight participation. Independent variables included: clubbing frequently, heavy drinking, visiting hot spots and perceiving the witnessing of fights to be entertaining. Results showed that frequent clubbing, heavy drinking and regarding fights as entertainment were all significant predictors of bar fight participation.

CHAPTER 9

Conclusion

Using Surfers Paradise as a case study, this PhD research examined the physical, social and perceptual environments that encourage violence, heavy drinking and injuries in entertainment districts. This has been achieved through the completion of two studies, the first of which stemmed from evidence-based recommendations made in the Keeping Surfers Safe Project report, and the Australian National Alcohol Strategy 2006 -2011.

Study A aimed to contribute to the evidence base to help overcome the traditional barriers to sustained crime and violence reductions in and around nightclubs by addressing three questions. The first question asked about the environmental dynamics of alcohol-related violence and injuries in the Surfers Paradise entertainment district? Time series analyses and hot spot analyses were conducted using longitudinal police incident data. The time series analyses tested the impact of seasons, special events, and the 3am lockout on crime and violence. Hot spot analyses were also conducted to show spatial changes over time, supported by risky facility analyses and the construction of risky facility typologies using police data. These analyses provided insights into the factors in the physical and social environments of nightclubs and entertainment districts that are related to the spatial and temporal clustering of crime and violence.

The second question addressed the issue of how data collections of agencies other than police affect our understanding of the spatial and temporal dynamics of alcohol-related violence and injuries. Time series analyses were conducted using ambulance data, testing the impact of seasons, special events, and the 3am lockout, on total incidents, assaults, head and neck injuries, and severe intoxication/overdose. Incidents from the police and ambulance datasets were matched to create an integrated database and a descriptive analysis was conducted. A risky facilities analysis was again conducted using ambulance data, and the identified risky venues were compared with those identified from the police data.

The third question in Study A focused on how the introduction of the 3am lockout affected the spatial and temporal distribution of alcohol-related violence and injuries as reported by

the agencies contributing to the database. This question could only be addressed using the police data.

Study B examined male bar users' perceptions of social and physical environmental cues for violence in a bar room setting. An experimental design was used to respond to two research questions: 1) how do bar users perceive social and physical environmental cues in entertainment venues; and, 2) do the perceptions of bar fight participants differ from those of non-participants? A thematic analysis was conducted on transcripts of focus groups. Bouncer friendliness, patron sex composition and room temperature were chosen as the three experimental variables based on three criteria: 1) they appeared as a theme in focus groups; 2) their effects were unclear in the literature (mainly observational studies); and 3) they were policy relevant and relatively easy to change. The experimental variables were manipulated in written hypothetical scenarios set in a bar. A three part online questionnaire recorded responses to questions on demographics, the experiment, drinking and clubbing habits, and masculinity. A MANCOVA was conducted to measure the effects of the three experimental variables on bar users' perceptions of crime and injuries in nightclubs. A binary logistic regression was also conducted to examine some of the clubbing behaviours and attitudes that increase the risk of clubbers participating in bar fights. The four independent variables were: clubbing frequency, average standard number of drinks per session, regarding fights as entertainment, and frequenting three of the top five hot spots in Surfers Paradise (as per the risky facilities analyses), and the dependent variable was fight participation (fight participant versus non-fight participant).

Routine activity theory is the theoretical foundation for both studies, and is the focus of a hypothesised model developed to frame the research. This model highlights key features of theoretical and empirical research in the fields of environmental criminology and environmental psychology, and proposes links between these two fields.

9.1 Summary of Findings

9.1.1 The Distribution of Alcohol-related Violence and Injuries

Prais-Winsten regressions using police and ambulance data indicated that ***special events was the only independent variable to have an impact on crime, violence, injury and intoxication rates over time.*** Police time series analyses showed a significant increase in crime and violence rates during months when special events such as Schoolies, the Indy Grand Prix and Christmas/New Years Eve were held. Ambulance time series analyses show a significant increase in rates of overall incidents requiring assistance, including assaults, head and neck injuries, and intoxication during months when the aforementioned annual events occur in Surfers Paradise.

Hot spots

Two sub-questions to research question one related to the clustering of violence and injuries over time and space to create hot spots, and the known features (physical and social) of these hot spots. A number of hot spot analyses using the police dataset were conducted by interfacing Crimstat III with MapInfo. These analyses found that ***hot spots for crime and violence in the Surfers Paradise CBD are relatively stable over time.*** A risky facilities analysis showed that the top ten risky clubs comprised 20% of all licensed facilities in the area. These ten clubs were responsible for approximately 72% of all violent incidents reported in both the police and ambulance datasets.

In addition, a thematic analysis was conducted on police incident descriptions of assaults that occurred at each risky venue. This analysis allowed for the creation of risky venue typologies based on prominent factors in the social or physical environments of each hot spot that encouraged aggressive behaviour in and around these venues. ***The risky venue typologies suggested five main explanations for violence: aggressive security staff, venue size, proximity to other venues, club access, and competitive entertainment.***

Security staff were frequently reported as perpetrators of assault at three of the ten locations. In addition to ensuring these venues were hot spots for violence, security staff at these locations were the perpetrators of some of the most serious acts of violence, often resulting in debilitating and even permanent injuries. Five venues were very close to other nightclubs, resulting in congestion and lingering around club entrances. Thus, security

staff of well run establishments may be required to manage the chaos outside their more poorly run neighbours, or deal with their poorly behaved ex-patrons who have been served one too many drinks. Characteristic of all risky venues was entertainment that encouraged competition between patrons (particularly males). All locations had a dance floor whilst some locations also had pool tables.

In essence, most risky venues were hot spots because of their poor management practices, their physical design, or the social atmosphere they encouraged. However Melba's nightclub (rated number one according to ambulance data and number two according to police data) is a unique hot spot. Unlike many clubs in Surfers Paradise and especially in Orchid Avenue, Melba's is relatively isolated. When police and ambulance officers reported incidents of assaults and disorder at Melba's, they were likely to report this specific club name as the location rather than the street name. However, in Orchid Avenue, nightclubs were densely situated, horizontally and vertically, making it difficult to pinpoint the location of incidents. Consequently, 1341 incidents that occurred in Orchid Avenue over three years have been recorded by police without a specific address. This inability of police to attach incidents to nightclubs reduces nightclub accountability and transparency.

Melba's notoriety was also self-generated, paradoxically because it was well managed. Police reports frequently described how Melba's bouncers refused entry to intoxicated individuals, restrained offenders until police arrived, ejected troublemakers, took responsibility for assault incidents outside the venue (and in the park next door), and offered first aid to assault victims. Diffusion of responsibility is a frequent club management response to drunk, fighting and injured patrons outside clubs in more densely populated areas (as seen in police incident descriptions in the Mark Building). It is possible that without neighbours, Melba's nightclub security staff felt under obligation (beyond that mandated by law) to act in a socially responsible manner by providing appropriate care to patrons, and contacting the police and ambulance services when required.

In addition, Melba's is the largest nightclub in Surfers Paradise. This suggests that a hot spot analysis that took into account the average number of patrons per night may put Melba's in a different light. According to local council staff, Melba's is popular as a last

destination for clubbers during the night. This scenario translates to a volatile environment, where large numbers of intoxicated people are arriving, leaving, and being refused entry.

9.1.2 Contributions Made by Queensland Ambulance Service Data

In many ways, ambulance data only confirmed what police data had already shown. For example, the top ten risky facilities according to police data were the same as the top ten risky facilities identified using ambulance data. Furthermore, the time series analyses using ambulance data confirmed that only special events influenced the variance in alcohol-related crime, disorder and injuries over time. The ambulance data also showed Melba's to be a hot spot for ambulance attendance, perhaps because ambulance officers, like the police officers, may be more likely to specify the address of Melba's than other clubs on Orchid Avenue.

On the other hand, the ambulance data went beyond police data by providing an indication of the severity of accidental and intentional injuries, and the number of unreported assault incidents that occur. A descriptive analysis of ambulance incidents revealed that fewer than half of all patients required treatment for injuries. Approximately one in three cases required treatment for head injuries. Most of these cases involved a young man who had been assaulted by a stranger. Whilst the majority of cases with head and neck injuries were collected from the roadside, nightclubs were also key locations for ambulance attention.

The police and ambulance integrated dataset provided insights into the number of unreported assaults in Surfers Paradise. ***Only one in four assault victims treated by the Queensland Ambulance Service had a matching police report.*** There were 497 assaults recorded on ambulance records, of which, 297 had a potential police match that occurred within half an hour. Only 118 of these potential matches were confirmed as matches based on the date, time, location, gender, and description of the incident and injuries. Whilst the Police Beat was a frequent pick up location for ambulance, only 98 (52%) of patients collected from this location had been assault victims and fewer than one third of these patients had a matching police record.

9.1.3 The Impact of the 3am Lockout

The time series analyses using police and ambulance data addressed research question three on the effects of the 3am lockout. Both police and ambulance data showed that ***the introduction of the 3am lockout had no impact on rates of crime, violence, head and neck injuries and intoxication over time.*** A Watson's U^2 test indicated a moderately statistically significant change in the 24 hour distribution of crime between two stable periods of July to September 2003-2004 and 2004-2005, suggesting temporal displacement of crime following the introduction of the lockout.

9.1.4 Bar Users' Perceptions of Physical and Social Environmental Bar Cues

Results pertaining to research question four show that ***participants rated perceived fear, likelihood and frequency of crime, and severity of injuries to be highest when the bouncer was unfriendly, the temperature was hot and sweaty, and patrons were majority male. Only main effects were found to be significant***, with no significant interactions between variables. All main effects were significant at $p < .01$. The largest variance was explained by patron sex composition. Masculinity was found to have no relationship with participant perceptions, however fight participation was associated with two dependent variables.

9.1.5 Differences Between Fight Participants and Non-fight Participants

Non-significant differences between non-fight participants' and fight participants' perceptions of crime likelihood and frequency suggest that fight participants are just as aware of the cues for risk and the likely resulting injuries as non-fight participants. However, responses to questions regarding them personally attending venues suggest that ***bar fight participants are: 1) significantly less fearful of bar situations they perceived to be dangerous, and 2) are more willing to drink in any hypothetical venue compared to non-fight participants.***

Almost half of all bar fight participants were identified as frequent fighters, participating in three or more fights in the two years prior. Results of the binary logistic regression showed that ***those that indulge in risky behaviours such as frequent clubbing and heavy drinking, and view bar fights as part of the night's entertainment, are at high risk of being a fight participant.*** Specifically, it was found that: 1) participants who drank

heavily (more than ten standard drinks) in an average drinking session had approximately 3:1 odds of being involved in at least one fight in the previous two years compared with those that drank less per session; 2) participants that went clubbing at least every fortnight had approximately 3:1 odds of being involved in a fight in the previous two years compared with those that went clubbing less frequently; 3) although only moderately significant, participants that regarded witnessing fights to be part of the night's entertainment had approximately 2:1 odds of being involved in at least one fight in the previous two years compared with those that did not find fights entertaining; and 4) participants who visited risky facilities (hot spots) were at no higher risk of being involved in at least one fight in the past two years than those that did not visit risky facilities.

9.2 Significance of the Research Findings

This PhD research integrated multiple sources of information to reveal some of the social, temporal and spatial patterns of crime, violence and injuries in Surfers Paradise. The most obvious potential benefit of data integration for local agencies is an improved capacity to develop more strategic, evidence based approaches to crime prevention. The results suggest that data sharing and matching between agencies that deal with alcohol-related crime, violence and injuries could benefit any high-crime community. In particular, results highlight the value of ambulance data for the monitoring and management not only of assaults but severe intoxication rates that are an indication of the irresponsible service of alcohol.

9.2.1 Study A

The findings of Study A support the application of routine activity theory - the identification of hot spots, the insignificant impact of the lockout, and the significant impact of special events on crime, intoxication and injuries. Hot spot formation within the entertainment district is consistent with international literature that suggests that crime and violence is not evenly distributed across licensed venues (Sherman, Schmidt & Velke, 1992; Homel & Clarke, 1994). Results of the risky facilities analyses support Eck, Clarke and Guerette's (2007) findings, showing that approximately 80% of crime occurs in 20% of venues. Crime concentration in Surfers Paradise licensed venues can be attributed to random variation, reporting processes, number and suitability of targets, offenders and place management, as suggested by Eck and colleagues. However the development of the

risky facilities typology has allowed for further analysis of the formation of Surfers Paradise hot spots, yielding the following explanations: aggressive security staff, venue size, proximity to other clubs, club access and entertainment.

Aggressive security staff refers to staff that are themselves perpetrators of violence. This scenario clearly demonstrates poor place management and an inability to guard vulnerable targets. However, routine activity theory would suggest that places that are hot spots for violence and assault-related injuries would likely be operating with security staff that are not necessarily violent, but are at the very least ineffective at handling offenders and guarding vulnerable targets. This risky facilities explanation aligns with users' perceptions of unfriendly staff, ascertained in Study B. Findings from focus groups and the experiment in Study B showed that in general, bar users associate unfriendly security staff with risky venues. Thus risky venues may well be characterised by unfriendly or ineffectual security staff as well as, in some cases, aggressive staff.

Routine activity theory would also propose that a large venue would have more crime than a small venue, due to the increased capacity, which in turn increases the number of vulnerable targets and motivated offenders in the vicinity. Furthermore, Brantingham and Brantingham (1993b) suggest that motivated offenders commit crime within their awareness space. It is proposed that if a motivated offender frequents a club within a cluster of clubs, the cluster is part of their awareness space and on their travel routes, putting all venues within the cluster at risk. Being close to other clubs or sharing access points can increases opportunities for interaction between motivated offenders and targets, as is the case with the clustering of clubs in the Mark Building on Orchid Avenue. Similarly, many types of entertainment such as having a DJ and a dance floor or pool tables can increase opportunity for interaction between motivated offenders and vulnerable targets.

The impact of annual special events in Surfers Paradise on the rates of crime, violence, head and neck injuries, and intoxication rates supports the notion that the routine activity of a place is a fundamental contributor to violence and injuries in the night-time economy. Theoretically, the lockout could be expected to be ineffective as it forces the convergence of vulnerable targets and motivated offenders into poorly managed places with largely ineffective handlers and guardians. Results also show the long term impact of this

initiative and support the findings of Palk, Davey and Freeman (2010), which focused only on the short–term impact of the 3am lockout. Their research found no significant reductions in alcohol-related incidents in three Gold Coast entertainment districts (including Surfers Paradise) in the five weeks following the introduction of the 3am lockout.

9.2.2 Study B

Bouncer friendliness, club temperature and patron sex composition were all variables with previously unclear associations with crime, violence and injuries. The methods used in Study B examined bar users' perceptions of these three variables based on hypothetical scenarios rather than real-life settings. Keeping this limitation in mind, results showed that the three physical and social environmental cues had a clear and strong effect when manipulated experimentally, extending the findings of Graham and Homel (2008). The results of the experiment and the binary logistic regression on behavioural and attitudinal risk factors also provide support for Graham and Wells (2003), who found that fight participants regard fighting as rewarding, perceive the chance of punishment as low, trivialise their injuries, and believe the experience added to their tough reputation and repertoire of fight stories.

Many of the key motivations listed by fight participants related to male honour and saving face, such as an antagonist flirting or harassing their female friend or girlfriend, being stared down by a stranger followed by verbal abuse, and defending a male friend. These findings support prior research that suggests masculinity and saving face are strongly associated with prior bar aggression (Tomsen, 1997; Graham & Wells, 2003; Anderson, Daly & Rapp, 2009). However, these descriptive results contradict results of the experiment, that found masculinity to be an insignificant covariate. Whilst the Snell Masculine Behaviour Scale may be a legitimate measure of masculinity, it is possible that it may have presupposed too much maturity from respondents (males predominantly aged under 21 years). For many statements such as 'I don't involve myself too deeply in loving, tender relationships' there was limited range in the responses, resulting in a ceiling effect.

Findings of Study B suggest that environmental cues perceived as risky do not deter those with bar fight experience. On the contrary, places perceived as risky were often seen as attractive. Combined with a lack of fear of victimisation, these results suggest the

existence of the 'calculating clubber' who seeks opportunities for trouble, or who at the very least is not deterred by indicators of risk. The notion of the calculating clubber is consistent with the idea that some nightclubs act as crime attractors. This is supported by questionnaire results showing that bar fight participants were significantly more willing to drink in risky bar settings than non-fight participants. However, these results conflict with those of the binary logistic regression which showed that visiting risky venues did not put patrons at higher odds of being involved in fights. Moreover, those participants who visit risky facilities are no more likely than those who do not visit such facilities to participate in fights. Thus the logistic regression results suggest that risky licensed venues in Surfers Paradise are more likely crime generators than crime attractors.

There are a number of reasons why these results may conflict. First, these variables were found to be significant predictors of crime and violence in an artificial setting when all other factors were controlled. However, in real-life settings, other factors may negate the deterrent effect of cues to risk. For example, an individual may visit a risky venue because their friends are there, the drinks are slightly cheaper than neighbouring venues, it is closer to home, they prefer the music, there is a designated smoking area, and so on. Second, it is possible that non-fight participants are just as likely to visit risky venues as fight participants because in a real-life setting, the consumption of alcohol may distort an individual's ability to accurately perceive cues to risk. Comments made in focus groups indicate that pre-loading (drinking at home or a cheap local hotel prior to going to the nightclub district) is common. Third, non-fight participants had a clear preference to drink in a location where there was majority female. Presumably this is not only because it is less risky, but because there are more opportunities to meet women with less competition from other males. Moreover, non-fight participants' motivations may not necessarily be driven by a desire to avoid male–oriented locations (and potentially risky situations), but by a desire to pursue women. Fourth, the majority of Surfers Paradise bar users have been to Melba's, one of the top five risky facilities, which in reality is a much larger, well run venue compared to many other venues in the district, and is a location unlikely to be deemed a risky facility by fight or non-fight participants. Therefore, its possible inclusion as a 'risky facility' in one of the independent variables in the logistic regression may produce misleading results.

Non-fight participants' perceptions of the severity of injuries resulting from nightclub fights was not significantly different to the perceptions of those that had experience in causing and acquiring fight injuries. This suggests that whilst non-participants have an accurate understanding of the risk of injury, their perception of other risks such as being arrested may be different. In addition, they may be unaware of the social benefits that fight participants gain from showcasing their injuries, or alternatively, they have different social goals and do not place value in having a 'reckless' reputation. Considering that bar fight participants go clubbing more frequently, it is likely that they not only have a detailed, extensive awareness space of their favourite clubbing district(s), but in particular, are socially connected and club 'savvy,' both factors that likely allay fear of victimisation and increase their confidence in and out of clubs. Fight participants are also more likely to be heavy drinkers, which goes with frequent clubbing. Recently in England, Hughes *et al.* (2008) found that those who drink 20 or more standard drinks per session are 2.5 times more likely to get involved in a fight than those that drink less. The results from the present research suggest that drinking ten or more drinks puts patrons at increased risk of being involved in a fight.

9.3 Limitations

The research designs chosen for each study in this PhD project utilised the most appropriate methods to address the research questions. Nevertheless, there were a number of limitations relating to data collection and analysis.

9.3.1 Data from Limited Agencies

The original research design of Study A was ambitious, with plans to obtain and integrate data from a number of other agencies in addition to police and ambulance, including the local Gold Coast Hospital, local taxi companies, and the Chill Out Zone set up in Orchid Avenue. All agencies were contacted via an introductory letter, but there were a number of factors that prevented the involvement of most.

For some organisations, their reluctance was related to the perceived pressure that involvement would have on their resources. This was for example the case for the hospital, which is well known to be grossly under-resourced. For the Chill Out Zone, their prior involvement in the 'Keeping Surfers Safe' Project had made them cautious about being

involved in a related project, since the ‘Keeping Surfers Safe’ Project concluded that the Chill Out Zone caravan encouraged disorderly behaviour and recommended its removal. For groups such as the taxi companies, incident information was collected in hand-written log books. The extensive work required to enter data, code and analyse made data collection from such groups unfeasible.

Other data sources such as Liquor Licensing and the Department of Tourism were considered during later stages of data collection but not approached due to the challenges faced with the data already collected from Queensland Police Service and Queensland Ambulance Service.

9.3.2 Police and Ambulance Data Quality

As it happened, the data entry, cleaning and coding processes that were carried out for the police and ambulance data were extremely demanding in terms of time and effort. Apart from delays of more than three months, data from the Queensland Ambulance Service (an organization that an official enquiry showed in late 2007 required major restructuring) was only available in the form of hard copies printed from microfiche, which led to several months of work to code and create the electronic dataset. Over 100 cases received were illegible and therefore unusable.

The poor quality of the police data resulted in considerable efforts being made to match charges and event descriptions to create incidents and recode crimes (according to the description rather than the charges) and produce useful results. Much time and effort was devoted to deleting irrelevant cases that were not within the catchment area. Furthermore, the failure of officers of both agencies to record rudimentary data regarding the incident resulted in problematic datasets. The difficulties experienced when matching cases between the police dataset and the ambulance dataset highlighted the poor quality and accuracy of data recorded by these agencies. These difficulties related to a lack of information regarding the presence of other agencies at the incident, the consumption of alcohol and drugs, the descriptions of the incident, and limited information on the specific location of incidents. The datasets also often had no identifying data (for perpetrators, victims or the injured).

The poor quality of data provided by both agencies affected the types of analyses that could be conducted. For example, a hot spot analysis of ambulance cases was not possible due to officers rarely recording the location of the incident (in addition to the patient collection location). Much police and ambulance data was only recorded at street level.

9.3.3 Evaluating the Impact of the 3am Lockout

The methodology used to evaluate the impact of the 3am lockout made best use of the data available. However ideally, an evaluation of such an initiative would use a control entertainment district with comparable qualities, as used in the successful Stockholm Prevents Alcohol and Drugs Project (Wallin, Lindewald & Andréasson, 2004). An attempt to introduce a control was made by comparing incidents that occurred in weekday and weekend periods, with any impact of the 3am lockout expected to be seen mainly on weekends when the number of clubbers in the entertainment district increases substantially (in comparison to weekdays).

9.3.4 Alcohol-related Violence and Injuries

As previously mentioned, police and ambulance data show that crime, violence and injuries are often centred around nightclubs in the entertainment district. It is therefore expected that the consumption of alcohol plays a prominent role in the occurrence of violence (for at least one participant) and injuries. However, the consumption of alcohol and the location of last drink (or venue where most alcohol was consumed) was rarely recorded.

9.3.5 The Lack of Information on Venue Size

As discussed by Eck, Clarke and Guerette (2007) the capacity of venues is important to consider in risky facilities analysis. Obtaining information on this for all venues in Surfers Paradise was difficult and whilst capacity information was able to be gathered for some locations, it has not been utilised in the risky facilities analysis. However, the sizes of the venues have been noted in the typologies and considered as an explanation for some venues being a hot spot.

9.4 Implications for Theory

Findings from both studies underline the importance of a number of key features in the hypothesised model. Study A results highlight the crime and place relationship.

Traditionally, routine activity theory stresses the function that the routine activities of the person have in the occurrence of crime. However, the results of this PhD research stress the important role that the routine activities of place have in crime occurring. In particular, special events have a significant impact on the ebbs and flows of a place over time, influencing the likelihood and frequency of motivated offenders converging with suitable targets. The organisation and management of such events impacts the number of handlers, guardians and place managers available to prevent crime. The density of venues in certain buildings in Surfers Paradise provide further support for routine activity theory by suggesting that high density and shared/close access ways creates opportunities that increase the likelihood and frequency of this convergence. Results also suggest that the routine of a place, and the likelihood and frequency of offender-target convergence is strongly affected by the network of travel pathways and activity nodes commonly used. The routine activities of place can affect the creation and maintenance of travel pathways and activities nodes, as is seen on the beach during the Schoolies festival. It is proposed that stable hot spots are maintained by the consistent routine of place and not person (particularly in a transient area such as Surfers Paradise).

The results of Study B support the conventional application of routine activity theory to the individual, showing that those that club frequently and drink more (possibly a sign of extended hours in venues) are more likely to be involved in violence. The most important link to acting violently in the hypothesised model is the offender's past experience with violence. Due to their higher levels of drinking per session, it is also likely that higher levels of intoxication could lead to acting violently. Study B results extend Neisser's cyclical model of perception, providing support for its application to violence in and around nightclubs. Results suggest that the development of perceptions of a bar environment is enhanced by experience in bar fights. Whilst fight participants and non-fight participants have similar perceptions of cues to violence, fighters may target these cues, particularly those that they associate with success from prior experience. This theory is supported by findings that suggest the motivations differ for fighters and non-fighters in their search for expected cues in their environment. Whilst fighters seek cues that imply there are opportunities for violence, non-fighters' motivation is controlled by fear, causing them to seek cues that evoke feelings of safety.

9.5 Implications for Social Policy

In response to Fillmore and Weafer's research (2004), Homel (2004) poses the following question 'Should those—like myself—who are interested in prevention concentrate on modifying physical and social environments or on controlling drinking itself?' In essence, findings from this PhD research suggest that both strategies are worthy of consideration for prevention responses and social policy debate.

9.5.1 Responsible Service of Alcohol

As of 1 January 2009, completion of responsible service of alcohol (RSA) training is a mandatory requirement for all staff supplying or serving alcohol in a Queensland licensed premise (Liquor Act 2008, 2008). However RSA training is not a new concept in Queensland or Australia. To have an optimal effect on violence and injuries, liquor licensing laws need to be adequately enforced (Stockwell, 1994; McKnight & Streff, 1994; Putnam, Rockett & Campbell, 1993; Lang *et al.*, 1998; Warpenius, Holmila & Mustonen, 2010). Descriptive results presented in chapter four of this thesis show that in the three years of data collected, only two licensees in Surfers Paradise were charged with irresponsible service of alcohol (for promoting the rapid consumption of alcohol), and only one licensee was charged with any other offence (failing to provide police with video footage of a bouncer perpetrating assault). In addition to a substantial number of good order charges for disorderly behaviour, approximately 100 liquor act charges were laid against patrons who were disorderly in a licensed premise, with no charges laid against the licensees despite many police reports noting the level of high intoxication or drunkenness of the offender. These results clearly reveal the laxness of regulation, thus encouraging heavy drinking by young people (particularly males) who are at high risk of fight participation.

Findings of significantly higher rates of assaults, head and neck injuries, and severe intoxication (requiring ambulance assistance) during months when special events in Surfers Paradise are held suggest that there should be consideration of special liquor licensing regulations for the duration of special events. This is particularly the case with Schoolies, when young, inexperienced school leavers experiment with alcohol and drugs, with many under legal drinking age. The second week of the festival presents specific

problems for on-site alcohol management, when school leavers from the states of NSW and Victoria, who are of legal drinking age, inundate nightclubs and bars.

9.5.2 Integrated Datasets from Multiple Agencies

This PhD research shows the value of combining ambulance data with police data, particularly with regards to identifying high risk venues likely to be serving irresponsibly. Weisburd, Telep and Braga's (2010) review of empirical research on the policing of hot spots suggests that integrating datasets can be highly effective in helping to reduce crime and disorder in local areas. The accuracy of targeted policing could be significantly improved by accessing information from other agencies and including such information in hot spot and risky facilities analyses. Data from other agencies can expand police understanding of the specific issues of crime, violence, injuries and intoxication rates at problematic venues. However, for targeted policing to be appropriately informed, the quality of data collected in Surfers Paradise, and almost certainly in many other parts of Australia, needs to be improved. Many of the difficulties experienced in coding and matching data in this research were related to the quality and accuracy of data recorded by police and ambulance officers. Data quality and capacity for integration could easily be improved through incident report training, better communication between agencies, and streamlining data collection and maintenance methods.

9.5.3 Best Practice for Action

According to Graham and Homel (2008), the lack of sustainable approaches to reducing alcohol-related violence has resulted in limited scientifically reliable evidence to direct policy. The lockout strategy was developed from a desire to reduce bar-hopping and intoxication by essentially limiting opening hours and alcohol accessibility. However such a strategy has the potential to lead to subsequent problems such as lingering on the streets, congestion at transport access points (e.g. taxi ranks), and the release of patrons into areas with poorer place management than earlier in the evening. Nightclub identification scanners are a more recent example of a poorly designed, unproven approach becoming common practice (Miller, Sonderlund & Palmer, 2010). Such strategies demonstrate a clear disconnect between theoretical research, empirical research, policy and practice.

Hot spots identified by the integration of datasets can be used to direct responsive regulation, a best practice approach to reducing violence in public drinking establishments

(Graham & Homel, 2008). As discussed in chapter two, Moffat *et al.'s* (2009) evaluation of the impact of responsive regulation in the night-time economy of NSW found targeting problematic licensed premises to be an effective approach to reducing rates of violence. However the dramatic reductions did not coincide with the introduction of restrictions but rather the publication of the top 100 list, and reductions were seen across all 100 publicly listed problem premises and not just the 48 targeted venues. Furthermore, there was no evidence of a reduction in premises reporting incidents of assault to police. These results suggest that publicly 'naming and shaming' problematic licensed premises, a tactic proposed by Graham and Homel (2008) can effectively trigger self-regulation. When combined with liquor licensing enforcement such a tactic may reduce the number of alcohol-related assault incidents.

Another explanation for the reduction in violence at the top 100 venues can be developed from the findings of Study B. These findings suggest that the naming and shaming of the top 100 venues would lead patrons that do not get involved in fights to avoid these risky facilities. A further issue is that whilst the drastic liquor licensing restrictions placed on the top 48 venues in NSW are a step in the right direction, this approach raises a number of red flags (to be discussed below) that require consideration in planning a targeted policing operation for a place like Surfers Paradise.

Consideration of venue size

The 'top 48' approach fails to acknowledge the size of the venues, a point emphasised by Eck, Clarke and Guerette (2007). The pub ranked first on the NSW top 100 list for 2007-2008 was Penrith Rugby League Club, a venue with a 1500 patron capacity. With such a large capacity it is unlikely that this venue will get off the list if it continues to be based on the number of assaults unstandardised for the average number of patrons. As already discussed, the same point probably applies to Melba's in Surfers Paradise.

Holistic targeted policing

Police are in a unique position to deter crime in entertainment districts through enforcing liquor licensing laws within nightclubs and acting as place managers, capable guardians, and handlers on the streets. Their mere presence in and around problematic venues sends a clear message of disorder intolerance to club staff and patrons. Evidence suggests that

targeted policing in entertainment districts can significantly reduce crime and disorder in and around nightclubs (Wiggers, 2007).

The strategies combined in the 'top 48' approach appear to be targeting only alcohol accessibility. According to Graham and Homel (2008), targeted policing should also focus on environmental, staff and patron risk factors. A thematic analysis of the clubs that are to be targeted (as conducted in this PhD research) would allow police to have a better understanding of the specific problems that need to be addressed at each hot spot venue, whilst also identifying locations that are managed well and may be hot spots due to good reporting practices. This is particularly the case when combining multiple agencies data, which as previously mentioned, can provide further information on specific locations that put patrons at risk of assault and other public health problems such as injury and severe intoxication.

All entertainment districts have hot spots

The 'top 48' approach does not address localised problems. It is likely that all entertainment districts have hot spot locations that need to be addressed but by taking a macro, state-wide approach rather than micro approach at the district level, entire districts could be ignored, particularly if the bars and clubs are small in size. The success of the Queensland Safety Action Projects (Homel *et al.*, 1994), and more recently strategies implemented in Newcastle (Jones *et al.*, 2009), show that a community based approach to addressing hot spot venues can successfully be orchestrated by local police and council, and liquor licensing authorities.

A micro level hot spot analysis including thematic analyses is most feasible when conducted by local authorities rather than by state governments. Much of the thematic analysis could be conducted at the stage of data entry through variable coding. Without a community based approach, clubs neighbouring each other may focus on getting off the list rather than the bigger picture of reducing violence in their community. This may cause competition between venues, increasing the risk of illegitimate practices such as not radioing other bars to warn of problematic patrons (essentially increasing the risk to other bars) and offering assault victims incentives (such as free drinks or V.I.P. areas) to not report the assault to police.

Police and ambulance reports used in this PhD research have not only highlighted weaknesses in liquor licensing enforcement, but as previously discussed, have also highlighted weaknesses in the management of entertainment districts and violent, intoxicated patrons, particularly during special events. As proposed by Doherty and Roche (2003) police may benefit from further training and education, particularly in the area of liquor licensing. In addition, risky facilities should be required to conduct staff training on managing and preventing violence in and around their establishment, especially research based programs such as 'Safer Bars' (Graham *et al.*, 2004). As with targeted policing, this training should at a minimum be targeted towards locations deemed to be problematic through the completion of a risky facilities analysis.

9.6 Implications for Future Research

9.6.1 Lockout

The 'top 48' approach combines the lockout, which this PhD research has found to be ineffective, with other strategies in a large operation. Utilising individual strategies for which there is no evidence of effectiveness may lead to false claims that it is successful as a stand-alone strategy. In Study A, the lockout was found to have no impact in Surfers Paradise, a place inundated with national and international tourists who would likely be unaware of the terms of the lockout (with no thanks to the confusing and poorly placed street advertisements). But it is not known whether or not the lockout is effective in smaller districts or towns, where the population is less transient, there are fewer bars and clubs, and related problems such as lack of transport do not exist (reducing lingering). There are a number of suburbs and towns (discussed in chapter two) that introduced a lockout as a stand-alone strategy prior to 2004, offering many opportunities for an evaluation of its effectiveness across numerous settings.

9.6.2 Holistic Targeted Policing Experiment

This research has a number of implications for the management of the night-time economy. An experiment could test the effectiveness of some of the suggestions made such as localised development of integrated datasets, risky facilities and thematic analyses of data, holistic targeted policing combined with responsible service of alcohol and Safer Bars training, and the public exposure of problematic venues. Earlier closing times for

problematic venues would automatically create staggered closing hours in entertainment and other districts.

9.6.3 Evaluation of Low Risk Facilities

Research efforts are often concentrated on the risky facilities and the problematic people. However, as discussed by Eck, Clarke and Guerette (2007), there are often key differences in how place managers of high risk facilities and place managers of low risk facilities manage their venues. Good place managers are an under-used resource in entertainment districts (Graham & Homel, 2008). An evaluation of low risk facilities may reveal what these locations are doing right and what management practices they believe work in reducing violence, intoxication and injuries.

9.6.4 Fight Participants

One of the limitations of this study is the inability to measure the effects of alcohol on survey participants. Whilst there is evidence (including the results of this PhD research) that fight participants are generally heavy drinkers, there is little evidence on whether or not fight participants would be involved in fights regardless of alcohol consumption. Furthermore, being a heavy drinker does not necessarily mean that fight participants become involved in fights at the peak of their blood alcohol levels. With fights peaking around 1am, it is likely that fight participants that are not arrested continue to drink after the fight. Further research could focus on the number of drinks consumed at the time of altercation to develop a better understanding of the intoxication rates associated with violence and inform responsible service of alcohol practices.

9.7 Conclusions

This research aimed to respond to an overarching research question ‘what is it about the environment of an entertainment district that encourages aggressive and violent behaviour?’ The studies reported in this thesis suggest that the broad critical factors that encourage violence and aggression are the management of the night-time economy through liquor licensing regulations and policing, specific environmental factors, and features of individual venues. New findings include: the long-term ineffectiveness of the 3am lockout; the perceptual differences between fight participants and non-fight participants; the significant relationships between bouncers, temperature and patron sex

composition, and perceived crime and injuries (when experimentally manipulated); and, the high proportion of ambulance assault cases not recorded by police.

These findings have important theoretical and social policy implications. In particular, they highlight the usefulness of routine activity theory in understanding violence and injuries in and around nightclubs by stressing the role that *the routine activities of a place* have on the occurrence of crime. They also underline the importance of developing better theoretical models of how consumers in the night-time economy perceive their environment, particularly focusing on the role of prior fight experience in the development of the fighter's perceptual model. Policy implications relate to all aspects of the management of the night-time economy. While a number of specific suggestions for better policy have been proposed, the overall thrust of the research points in the direction of using high quality integrated databases to develop and rigorously evaluate local strategies that change both the routine activities of people and places. The aim should be to reduce access to alcohol and limit the harm it causes in interaction with the modification and intelligent regulation of identified criminogenic features of the physical, social and perceived environments.

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APPENDICES

Appendix 1: Total crime incident rates for weekdays and weekend from July 2003 to June 2006 (police data).

Month	No. of w/days	Total crime w/days	Crime rate / w/day	No. of w/e days	Total crime w/e days	Crime rate / w/e day	Total days	Total crime incidents
1	19	44	2.32	12	52	4.33	31	96
2	16	22	1.38	15	95	6.33	31	117
3	18	40	2.22	12	80	6.67	30	120
4	18	40	2.22	13	110	8.46	31	150
5	16	120	7.50	14	240	17.14	30	360
6	19	150	7.89	12	165	13.75	31	315
7	17	63	3.71	14	93	6.64	31	156
8	16	25	1.56	13	75	5.77	29	100
9	19	50	2.63	12	104	8.67	31	154
10	17	17	1.00	13	70	5.38	30	87
11	17	40	2.35	14	88	6.29	31	128
12	18	25	1.39	12	79	6.58	30	104
13	17	28	1.65	14	104	7.43	31	132
14	18	35	1.94	13	100	7.69	31	135
15	18	38	2.11	12	82	6.83	30	120
16	16	58	3.63	15	198	13.20	31	256
17	18	173	9.61	12	252	21.00	30	425
18	18	89	4.94	13	227	17.46	31	316
19	17	42	2.47	14	126	9.00	31	168
20	16	13	0.81	12	70	5.83	28	83
21	19	36	1.89	12	74	6.17	31	110
22	16	24	1.50	14	84	6.00	30	108
23	18	26	1.44	13	70	5.38	31	96
24	18	27	1.50	12	64	5.33	30	91
25	16	14	0.88	15	78	5.20	31	92
26	19	24	1.26	12	45	3.75	31	69
27	17	13	0.76	13	66	5.08	31	79
28	17	28	1.65	14	156	11.14	31	184
29	18	203	11.28	12	292	24.33	30	495
30	17	71	4.18	14	185	13.21	31	256
31	18	42	2.33	13	96	7.38	31	138
32	16	18	1.13	12	51	4.25	28	69
33	18	28	1.56	13	61	4.69	31	89
34	16	29	1.81	14	74	5.29	30	103
35	19	29	1.53	12	47	3.92	31	76
36	17	19	1.12	13	59	4.54	30	78

Appendix 2: Violent incident rates for weekdays and weekend from July 2003 to June 2006 (police data)

Month	No. of w/days	Total violence w/days	Violence rate / w/day	No. of w/e days	Total violence w/e days	Violence rate / w/e day	Total days	Total violent incidents
1	19	14	0.74	12	18	0.95	31	52
2	16	7	0.44	15	29	1.81	31	95
3	18	17	0.94	12	26	1.44	30	80
4	18	9	0.5	13	26	1.44	31	110
5	16	30	1.88	14	39	2.44	30	240
6	19	16	0.84	12	24	1.26	31	165
7	17	17	1	14	16	0.94	31	93
8	16	8	0.5	13	23	1.44	29	75
9	19	12	0.63	12	28	1.47	31	104
10	17	9	0.53	13	23	1.36	30	70
11	17	8	0.47	14	23	1.36	31	88
12	18	8	0.44	12	26	1.44	30	79
13	17	11	0.65	14	25	1.47	31	104
14	18	12	0.67	13	27	1.5	31	100
15	18	7	0.39	12	25	1.39	30	82
16	16	19	1.19	15	44	2.75	31	198
17	18	29	1.61	12	57	3.17	30	252
18	18	14	0.78	13	33	1.83	31	227
19	17	17	1	14	43	2.53	31	126
20	16	7	0.44	12	25	1.56	28	70
21	19	9	0.47	12	29	1.53	31	74
22	16	10	0.63	14	24	1.5	30	84
23	18	9	0.5	13	22	1.22	31	70
24	18	15	0.83	12	23	1.28	30	64
25	16	6	0.38	15	28	1.75	31	78
26	19	10	0.53	12	14	0.74	31	45
27	17	6	0.33	13	23	1.28	31	66
28	17	14	0.82	14	27	1.59	31	156
29	18	34	1.89	12	43	2.39	30	292
30	17	12	0.71	14	39	2.29	31	185
31	18	22	1.22	13	15	0.83	31	96
32	16	5	0.31	12	22	1.38	28	51
33	18	8	0.44	13	17	0.94	31	61
34	16	10	0.63	14	19	1.19	30	74
35	19	12	0.63	12	18	0.95	31	47
36	17	4	0.24	13	22	1.29	30	59

Appendix 3: Hourly crime rates per day in July to September in 2003, 2004 and 2005 (police data)

Hour	2003		2004		2005	
	Total incidents	**Daily rate**	**Total incidents**	**Daily rate**	**Total incidents**	**Daily rate**
0	41	0.45	52	0.57	32	0.35
1	66	0.72	73	0.79	39	0.42
2	63	0.68	52	0.57	41	0.45
3	43	0.47	53	0.58	28	0.30
4	41	0.45	42	0.46	31	0.34
5	13	0.14	23	0.25	5	0.05
6	3	0.03	2	0.02	2	0.02
7	0	0.00	0	0.00	0	0.00
8	0	0.00	0	0.00	0	0.00
9	0	0.00	1	0.01	0	0.00
10	1	0.01	0	0.00	1	0.01
11	2	0.02	2	0.02	1	0.01
12	1	0.01	0	0.00	1	0.01
13	2	0.02	2	0.02	1	0.01
14	3	0.03	4	0.04	1	0.01
15	1	0.01	1	0.01	1	0.01
16	3	0.03	5	0.05	2	0.02
17	1	0.01	2	0.02	2	0.02
18	1	0.01	4	0.04	3	0.03
19	3	0.03	2	0.02	5	0.05
20	5	0.05	7	0.08	2	0.02
21	12	0.13	13	0.14	3	0.03
22	14	0.15	19	0.21	23	0.25
23	14	0.15	28	0.30	16	0.17

Appendix 4: Total ambulance incident rates for weekdays and weekend from December (partial) 2003 to June 2006.

Month	No. of w/days	Total incident w/days	Incident rate / w/day	No. of w/e days	Total incident w/e days	Incident rate / w/e day	Total days	Total incidents
6	15	26	1.73	9	32	3.56	24	58
7	17	32	1.88	14	43	3.07	31	75
8	16	13	0.81	13	39	3.00	29	52
9	19	14	0.74	12	38	3.17	31	52
10	17	24	1.41	13	30	2.31	30	54
11	17	13	0.76	14	30	2.14	31	43
12	18	18	1.00	12	25	2.08	30	43
13	17	11	0.65	14	38	2.71	31	49
14	18	10	0.56	13	25	1.92	31	35
15	18	5	0.28	12	17	1.42	30	22
16	16	12	0.75	15	42	2.80	31	54
17	18	51	2.83	12	58	4.83	30	109
18	18	23	1.28	13	47	3.62	31	70
19	17	11	0.65	14	32	2.29	31	43
20	16	15	0.94	12	38	3.17	28	53
21	19	21	1.11	12	37	3.08	31	58
22	16	21	1.31	14	35	2.50	30	56
23	18	22	1.22	13	28	2.15	31	50
24	18	25	1.39	12	20	1.67	30	45
25	16	11	0.69	15	38	2.53	31	49
26	19	8	0.42	12	31	2.58	31	39
27	17	16	0.89	13	34	2.62	31	50
28	17	21	1.24	14	54	3.86	31	75
29	18	77	4.28	12	82	6.83	30	159
30	17	30	1.76	14	55	3.93	31	85
31	18	22	1.22	13	44	3.38	31	66
32	16	7	0.44	12	25	2.08	28	32
33	18	11	0.61	13	34	2.62	31	45
34	16	13	0.81	14	27	1.93	30	40
35	19	10	0.53	12	10	0.83	31	20
36	17	9	0.53	13	23	1.77	30	32

Appendix 5: Total head and neck injury rates for weekdays and weekend from December (partial) 2003 to June 2006 (ambulance data)

Month	No. of w/days	Total injuries w/days	Injury rate / w/day	No. of w/e days	Total injuries w/e days	Injury rate / w/e day	Total days	Total injuries
6	15	7	0.47	9	10	1.11	24	17
7	17	10	0.59	14	11	0.79	31	21
8	16	5	0.31	13	18	1.38	29	23
9	19	3	0.16	12	19	1.58	31	22
10	17	8	0.47	13	15	1.15	30	23
11	17	2	0.12	14	8	0.57	31	10
12	18	9	0.50	12	8	0.67	30	17
13	17	4	0.24	14	11	0.79	31	15
14	18	3	0.17	13	13	1.00	31	16
15	18	1	0.06	12	6	0.50	30	7
16	16	6	0.38	15	22	1.47	31	28
17	18	6	0.33	12	16	1.33	30	22
18	18	13	0.72	13	13	1.00	31	26
19	17	3	0.18	14	12	0.86	31	15
20	16	1	0.06	12	18	1.50	28	19
21	19	6	0.32	12	10	0.83	31	16
22	16	8	0.50	14	9	0.64	30	17
23	18	10	0.56	13	10	0.77	31	20
24	18	7	0.39	12	7	0.58	30	14
25	16	5	0.31	15	16	1.07	31	21
26	19	3	0.16	12	11	0.92	31	14
27	17	4	0.22	13	16	1.23	31	20
28	17	7	0.41	14	12	0.86	31	19
29	18	22	1.22	12	18	1.50	30	40
30	17	9	0.53	14	9	0.64	31	18
31	18	8	0.44	13	11	0.85	31	19
32	16	4	0.25	12	11	0.92	28	15
33	18	7	0.39	13	11	0.85	31	18
34	16	5	0.31	14	12	0.86	30	17
35	19	8	0.42	12	4	0.33	31	12
36	17	4	0.24	13	10	0.77	30	14

Appendix 6: Assault rates for weekdays and weekend from December (partial) 2003 to June 2006 (ambulance data)

Month	No. of w/days	Total assaults w/days	Assault rate / w/day	No. of w/e days	Total assaults w/e days	Assault rate / w/e day	Total days	Total assaults
6	15	7	0.78	9	5	0.56	24	12
7	17	7	0.50	14	8	0.57	31	15
8	16	4	0.31	13	16	1.23	29	20
9	19	4	0.33	12	15	1.25	31	19
10	17	8	0.62	13	12	0.92	30	20
11	17	3	0.21	14	18	1.29	31	21
12	18	6	0.50	12	7	0.58	30	13
13	17	4	0.29	14	11	0.79	31	15
14	18	2	0.15	13	12	0.92	31	14
15	18	1	0.08	12	4	0.33	30	5
16	16	4	0.27	15	17	1.13	31	21
17	18	5	0.42	12	15	1.25	30	20
18	18	12	0.92	13	9	0.69	31	21
19	17	3	0.21	14	17	1.21	31	20
20	16	1	0.08	12	12	1.00	28	13
21	19	7	0.58	12	6	0.50	31	13
22	16	4	0.29	14	11	0.79	30	15
23	18	8	0.62	13	7	0.54	31	15
24	18	6	0.50	12	7	0.58	30	13
25	16	3	0.20	15	18	1.20	31	21
26	19	3	0.25	12	11	0.92	31	14
27	17	5	0.38	13	16	1.23	31	21
28	17	5	0.36	14	13	0.93	31	18
29	18	17	1.42	12	16	1.33	30	33
30	17	9	0.64	14	9	0.64	31	18
31	18	6	0.46	13	8	0.62	31	14
32	16	4	0.33	12	9	0.75	28	13
33	18	7	0.54	13	8	0.62	31	15
34	16	6	0.43	14	8	0.57	30	14
35	19	7	0.58	12	2	0.17	31	9
36	17	4	0.31	13	11	0.85	30	15

Appendix 7: Severe intoxication rates for weekdays and weekend from December (partial) 2003 to June 2006 (ambulance data)

Month	No. of w/days	Total intox w/days	Intox rate / w/day	No. of w/e days	Total intox w/e days	Intox rate / w/e day	Total days	Total intox
6	15	5	0.33	9	8	0.89	24	13
7	17	8	0.47	14	11	0.79	31	19
8	16	5	0.31	13	8	0.62	29	13
9	19	2	0.11	12	9	0.75	31	11
10	17	1	0.06	13	6	0.46	30	7
11	17	3	0.18	14	11	0.79	31	14
12	18	4	0.22	12	7	0.58	30	11
13	17	3	0.18	14	20	1.43	31	23
14	18	4	0.22	13	5	0.38	31	9
15	18	2	0.11	12	9	0.75	30	11
16	16	4	0.25	15	15	1.00	31	19
17	18	19	1.06	12	17	1.42	30	36
18	18	5	0.28	13	21	1.62	31	26
19	17	4	0.24	14	10	0.71	31	14
20	16	3	0.19	12	9	0.75	28	12
21	19	3	0.16	12	9	0.75	31	12
22	16	5	0.31	14	14	1.00	30	19
23	18	4	0.22	13	8	0.62	31	12
24	18	8	0.44	12	4	0.33	30	12
25	16	0	0.00	15	12	0.80	31	12
26	19	3	0.16	12	11	0.92	31	14
27	17	5	0.28	13	11	0.85	31	16
28	17	8	0.47	14	20	1.43	31	28
29	18	36	2.00	12	39	3.25	30	75
30	17	9	0.53	14	13	0.93	31	22
31	18	9	0.50	13	12	0.92	31	21
32	16	1	0.06	12	12	1.00	28	13
33	18	3	0.17	13	17	1.31	31	20
34	16	6	0.38	14	12	0.86	30	18
35	19	1	0.05	12	6	0.50	31	7
36	17	3	0.18	13	13	1.00	30	16

Appendix 8: Vignettes for study B

1A (friendly bouncer)

It's 10 pm on a Saturday night and you line up to go into a bar. The bouncer nicely asks you for I.D which you then show him. He hands back the I.D saying 'have a great night.'

1B (unfriendly bouncer)

It's 10 pm on a Saturday night and you line up to go into a bar. The bouncer sternly says 'I.D ' which you then show him. He hands back the I.D. with a grunt.

2A (majority male patrons)

When you get inside the bar, you notice that the majority (about 2/3) of patrons are male.

2B (majority female patrons)

When you get inside the bar, you notice that the majority (about 2/3) of patrons are female.

3A (hot)

You also notice that the temperature is uncomfortably hot and sweaty.

3B (comfortable)

You also notice that the temperature is cool and comfortable.

Appendix 9: Study B experimental groups

Experimental variables:

Bouncer friendly (1) / unfriendly (0)

Majority patrons male (1) / female (0)

Temperature hot and sweaty (1) / cool and comfortable (0)

Bouncer friendly Majority male Hot and sweaty	Bouncer friendly Majority male Cool & comfortable	Bouncer friendly Majority female Hot and sweaty	Bouncer friendly Majority female Cool & comfortable
Bouncer unfriendly Majority male Hot & sweaty	Bouncer unfriendly Majority male Cool & comfortable	Bouncer unfriendly Majority female Hot and sweaty	Bouncer unfriendly Majority female Cool & comfortable

Appendix 10: Study B online questionnaire

PART A

For questions 1 – 6 please rate what you believe would be your level of fear of the following incidents occurring to you at the scenario venue on a scale of 1 – 5. 1 means you would not be afraid at all and 5 means you would be very afraid.

In this venue, how afraid would you be of :

1. having your drink spiked?

	1	2	3	4	5	
Not at all afraid						Very afraid

2. being attacked by someone without a weapon (ie. being punched, pushed, kicked, etc.)?

	1	2	3	4	5	
Not at all afraid						Very afraid

3. being attacked by someone with a weapon (ie. broken glass, knife, baton, etc.)?

	1	2	3	4	5	
Not at all afraid						Very afraid

4. being robbed?

	1	2	3	4	5	
Not at all afraid						Very afraid

5. being sexually harassed?

	1	2	3	4	5	
Not at all afraid						Very afraid

6. being verbally abused?

	1	2	3	4	5	
Not at all afraid						Very afraid

For questions 7 – 13 please rate what you believe the likelihood is of the following incidents occurring in the scenario venue on a scale of 1 - 5. 1 means you believe the likelihood of the incident occurring is not at all likely, whilst 5 means you believe the likelihood of the incident occurring would be very likely.

In this venue, how likely do you think it is that the following would occur:

7. drink spiking?

1	2	3	4	5
Not at all likely				Very likely

8. an attack on someone without a weapon (ie. punching, kicking, pushing, etc.)?

1	2	3	4	5
Not at all likely				Very likely

9. an attack on someone with a weapon (ie. broken glass, knife, baton, etc.)?

1	2	3	4	5
Not at all likely				Extremely likely

10. robbery of a patron?

1	2	3	4	5
Not at all likely				Extremely likely

11. a rape or sexual assault?

	1	2	3	4	5	
Not at all likely						Extremely likely

12. sexual harassment?

	1	2	3	4	5	
Not at all likely						Extremely likely

13. verbal abuse?

	1	2	3	4	5	
Not at all likely						Extremely likely

For questions 14 -20, please rate what you believe the frequency is of the following incidents occurring in the scenario venue on a scale of 1 - 5. 1 means you believe the frequency of the incident occurring is never, whilst 5 means you believe the frequency of the incident occurring would be very often.

In this venue, how frequently do you think the following would occur:

14. drink spiking?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

15. an attack without a weapon (such as a punch)?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

16. an attack with a weapon (such as a stabbing or glassing)?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

17. robbery of a patron?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

18. rape or sexual assault?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

19. sexual harrassment?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

20. verbal abuse?

1	2	3	4	5
Never	Yearly	Monthly	Weekly	Daily

For question 21 please rate how serious you believe injuries would be as a result of an assault occurring in the scenario venue on a scale of 1 - 5. 1 means you believe the physical injuries would be minor or non-existent, whilst 5 means you believe the injuries would be very serious (ie. injuries that would result in permanent damage).

21. If a physical assault occurred in this venue, how serious do you believe the injuries would be?

1	2	3	4	5	
Not at all serious (eg. minor bruising)					Very serious (eg. permanent damage such as loss of eyesight, brain damage, etc.)

22. Given the opportunity, how regularly would you choose to drink in this bar?

1	2	3	4	5	
Never	A few times a year	Monthly	Fortnightly	Weekly	

PART B

23. How old are you? _____

24. How often do you go out to bars and/or nightclubs?

☐ 2 or more times/week ☐ Weekly ☐ Fortnightly

☐ Monthly ☐ Twice a year ☐ Less than twice a year

25. Which of the following bars/clubs in Surfers Paradise do you go to most often? (choose no more than 5).

☐ Rose & Crown ☐ Melba's ☐ Shooters ☐ Cocktails & Dreams ☐ Bourbon Bar ☐ My Bar ☐ Surfers Paradise Beer Garden

☐ The Bedroom ☐ Hollywood Showgirls ☐ Crazy Horse

☐ Ruby Tramp ☐ The Clock Tower ☐ Titanium Bar

☐ Elsewhere ☐ The Drink ☐ Gilhooleys

☐ The Avenue ☐ O'Malleys ☐ Other: _____

26. How frequently do you consume alcohol?

☐ 4 or more times/week ☐ 2 or more times/week ☐ Weekly

☐ Fortnightly ☐ Monthly ☐ Less than once a month ☐ Never

27. How many alcoholic drinks do you consume in an average drinking session?

☐ None ☐ 1-3 ☐ 3-6

☐ 7-10 ☐ 10-15 ☐ >15

28. Have you witnessed a bar fight in the past 2 years?

☐ Yes ☐ No ☐ Don't know

If answered yes, do you consider witnessing fights as part of the night's entertainment?

☐ Yes ☐ No ☐ Don't know

29. Have you intentionally physically hurt someone in a bar fight in the past 2 years?

☐ Yes ☐ No ☐ Don't know

If you answered 'yes ' to the last question (question 30) please proceed. If you answered 'no ' or 'don't know ' you are not required to answer the following questions.

30. How many times has this occurred in the past 2 years? _____

31. Considering the last bar fight in which you intentionally hurt someone:

a. would you view yourself as starting the fight?
☐ Yes ☐ No ☐ Don't know

b. do you believe you were the aggressor or the victim?
☐ Aggressor ☐ Victim ☐ Both ☐ Don't know

c. how many bar patrons (including yourself) were actively involved in the fight?
☐ 2 ☐ 3 ☐ 4 or more

d. describe how the fight began:

_____

_____

_____

e. describe how the fight ended:

_____

_____

_____

PART C

Question 31 – 45 enquire about some of your attitudes, beliefs, and opinions. As such, there are no right or wrong answers, only your responses. For each item you will be asked to indicate how much you agree or disagree with the statement listed in that item.

1	2	3	4	5
Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree

31. I don't usually discuss my feelings and emotions with others.
32. I don't devote much time to intimate relationships.
33. I try to be in control of everything in my life.
34. I am not the type of person to self-disclose about my emotions.
35. I don't involve myself too deeply in loving, tender relationships.
36. I make sure that I ‘call all the shots ‘ in my life.
37. I don't often talk to others about my emotional reactions to things.
38. I don't become very close to others in an intimate way.
39. I don't take orders (or advice) from anybody.
40. In general, I avoid discussions dealing with my feelings and emotions.
41. I don't often tell others about my feelings of love and affection for them.
42. I don't let others tell me what to do with my life.
43. I don't often admit that I have emotional feelings.
44. I tend to avoid being in really close, intimate relationships.
45. I don't allow others to have control over my life.

Appendix 11: Study B online questionnaire participant conditions

The following questionnaire has been designed to help inform current Griffith University research on young males perceptions on crime and violence in Surfers Paradise

To be involved:

- you must be legally able to enter a licensed premises
- you must have been out for a night in Surfers Paradise (visiting at least 1 club) at least once in the last 2 years
- you must be male
- You must be aged 18-30.

How long will the questionnaire take?

- the questionnaire has been designed to take 10-15 minutes to complete.

Participants will receive the chance to win a Nintendo Wii Sports Pack.

Research project: Violence in Paradise: The physical, social and perceived environments in a beachside entertainment district.

Contact: Dominique Murray

PhD Student – Criminology and Criminal Justice

Email: dominique.murray@griffith.edu.au

Appendix 12: Study B online questionnaire consent form

By agreeing to participate, you will be confirming that:

- You understand what participation in this research entails:
    - Answering questions regarding a hypothetical scenario set in a bar.
    - Answering questions regarding which clubs and bars you frequent.
    - Answering questions regarding your general experiences of drinking and violence in Surfers Paradise.
    - Answering questions regarding your own general opinions and behaviours;
- You understand that if you have any additional questions you can contact Dominique Murray via email at dominique.murray@griffith.edu.au or via phone on (07) 3735 6806;
- You understand that the survey is anonymous;
- You understand that 'Survey Wizard' is a company separate to the University that has created this survey and is collecting the data for this Griffith University research project, but has no rights to the data or its use following collection;
- You understand that the entries to the competition are kept completely separate from the survey. Once you have completed the survey you will be redirected to a form that you may fill in. On submission of this form, an email will be sent to researcher with contact details that you have filled in on the form. The contact details that you enters for the competition are not stored, will not be used for any purpose other than to contact you if you are the winner, will not be release to a third party and cannot be matched to your specific survey;
- You understand that you are free to withdraw at any time, without comment or penalty; and
- You understand that you can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3875 5585 (or research-ethics@griffith.edu.au) if you have any concerns about the ethical conduct of the project.

Terms and Conditions of Competition Entry

1. When you enter the competition, you accept these terms and conditions of entry.
2. Employees of Griffith University ('the University') and their immediate families are ineligible to enter.
3. Entry into the competition is by:
    a. giving a completed consent to undertake research by ticking the agreement box at the bottom of this page.
4. The first random drawn entry will receive a Nintendo Wii console, Wii sports disk and one remote.
5. The decision of the University is final and no correspondence will be entered into.
6. The prize is not transferable and cannot be redeemed for cash. The prize is not refundable.
7. The winner releases the University from any and all causes of action, losses, liability, damage, expense (including legal expenses) cost or charge suffered, sustained or in any way incurred by the winner as a result of any loss or damage to any physical property of the winner, or any injury to or death of any person arising out of, or related to or in any way connected with the University or the prize.
8. Any winner drawn for the prize who is unable to fulfil all of these terms and conditions will forfeit the prize and another winner will be drawn.
9. The winner will be notified by phone by no later than 30 September 2008.
10. The competition opens to entries at 9am, 7 April 2008 and the competition closes at 5pm, 5 September 2008. The competition is drawn at 11am, 8 September 2008, Griffith University, Mt. Gravatt Campus. You do not have to be present at the draw to win.
11. The prize will be available for collection by the winner at Griffith University, Mt. Gravatt Campus, School of Criminology and Criminal Justice, immediately after the draw.

☐ I agree to participating in this research and to the above terms and conditions.