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PREFACE

The seemingly high rates of assault and robbery committed in the Sydney Police District (bounded by the Rocks in the North, Kings Cross in the East, Redfern in the South and Darling Harbour in the West) have been the focus of long-standing public concern. From a purely statistical point of view it is impossible to say to what extent this concern is warranted. The Sydney Police District has a very high transient population which is not able to be taken into account in its crime rate calculations. The official crime figures therefore give an exaggerated picture of the risks of assault and robbery.

Observations such as this, however, are cold comfort to victims of crime or to tourists and others who wish to enjoy the amenities of the city. Regardless of the actual risks of assault and robbery, the fact that more than 3,000 assaults and 1,400 robberies are recorded in the Sydney Police District each year inevitably poses a threat to the reputation of the city as a safe and enjoyable place in which to work or visit. An unsafe reputation, even if not entirely deserved, is inimical to both business and tourism. The question arises, then, as to what steps might be taken to reduce the incidence of assault and robbery in the inner city.

In the last decade or so criminologists have increasingly come to appreciate the importance of a detailed understanding of the geography of crime to crime prevention. Just as a small proportion of offenders have long been known to account for a disproportionate amount of offending, so a small proportion of addresses in an area has been found in numerous studies to account for a disproportionate amount of its crime. Information about the kinds of activity which take place or the types of premises which are located at these addresses often gives great insight into how crime might be reduced.

The present study was undertaken with this in mind. By mapping the precise locations of assaults and robberies it sought to identify the 'Hot Spots' of crime in the Sydney District Police Patrol. Information on these Hot Spots was combined with data from a victim survey and from police crime incident reports to identify some of the key risk factors for assault and robbery. The results show just how helpful this sort of analysis is to crime prevention planning. The difficulties in obtaining the required information, however, also highlight the need for more accurate recording of crime incident data by police if the crime prevention potential of geographic analysis is to be fully exploited.

Dr Don Weatherburn

Director

August 1997

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EXECUTIVE SUMMARY

This report presents the results of an analysis of 4,472 assault and robbery incidents recorded by police in Sydney Police District between July 1995 and June 1996. Sydney Police District comprises the Police Patrols of Broadway, City of Sydney, Kings Cross, Redfern, Surry Hills and The Rocks.

The police data were supplemented with contextual information about assault and robbery incidents provided by 259 respondents to a Victim Survey conducted between March 1996 and January 1997.

Spatial distribution of assaults and robberies

Street level crime maps show that the distribution of assault and robbery incidents in Sydney was not random. Five major Hot Spot Zones featuring clusters of offences were identified. Offence clusters tended to be associated with main streets - particularly busy commercial streets accommodating entertainment premises, licensed premises or transport facilities. In Sydney District 48.1 per cent of assaults occurred outdoors, mainly on the street or on the pavement. In some areas, licensed premises accounted for up to 33.2 per cent of the assaults in the area. Three-quarters of robbery incidents occurred outdoors in a public place.

Temporal distribution of assaults and robberies

Assault and robbery incidents were more prevalent in the summer months. Peak periods for assaults and robberies were in the early hours of the morning on weekends, that is, between 0001 and 0300 on Saturdays and Sundays. Assault and robbery rates during these times were more than twice the average rates.

Persons involved in assault incidents

Assault offences generally involved young men who became engaged in personal disputes after consuming some quantity of alcohol. Two-thirds of assault incidents involved a male victim and a male offender. The Victim Survey revealed that over 40 per cent of assault victims had consumed alcohol shortly before the incident. Other than young males, groups of people such as bar staff, sex workers, and gay men were identified as frequent targets of assault. Assault incidents typically involved a single offender who was previously unknown to the victim.

Modus operandi in robbery incidents

A number of offender techniques (modus operandi) were identified for robberies. These included demanding money with menaces, approaching under the pretext of asking for something and bag snatching. Robbery victims were often alone and carrying something of value, and were generally robbed at places with low levels of guardianship. Of the robbery victims surveyed, 25 per cent indicated that they had consumed some alcohol prior to the incident. A smaller proportion of victims were injured in robberies involving weapons (19%) than in unarmed robberies (50%). More than one-third of robbery victims were not injured at all. Robbery offenders were just as likely to act alone as in pairs or groups and were often described by the victims as 'drug addicts', 'homeless' or 'alcoholic'.

Implications for crime prevention

Amongst the crime prevention programs that have proved effective are those that increase police patrols at high crime Hot Spots at 'hot times'. The report suggests that the ability to identify crime Hot Spots provides a foundation for intelligence-based policing. This concept suggests that police patrol resources should be allocated according to risk factors.

To reduce alcohol-related violence in and around licensed premises, the report stresses the need for stricter enforcement of liquor licensing legislation. Effective 'place management' has been shown to reduce crime. As 'place managers', licensees are encouraged to ensure that they regulate behaviour within their establishments. Other broader, macro-level 'place management' initiatives are also encouraged.

In reducing the incentives for robbery, the income need generated by heroin dependence is recognised. The expansion of Methadone Maintenance Treatment, which has been shown to reduce property crime rates amongst dependent heroin users, can be regarded as an effective crime control measure.

Other crime prevention strategies such as 'crime prevention through environmental design' that increase the scope of surveillance, enhance citizens' sense of personal safety and limit opportunities for offending at particular locations are also advocated.

1. INTRODUCTION

1.1 TRENDS IN ASSAULT AND ROBBERY IN NSW

In New South Wales (NSW) in 1996 there were 47,944 assault incidents reported to and recorded by police, a rate of 784 per 100,000 population (NSW Bureau of Crime Statistics 1997). The Australian Bureau of Statistics (ABS) conducted a household survey in April 1996 asking people whether they had been victims of particular crimes in the previous year and whether they had reported the crime to police. According to the survey results, 3.0 per cent of the NSW population had been the victim of an assault, although only 32.2 per cent of these had reported the offence to the police (Australian Bureau of Statistics 1996).

The latest available crime statistics show a statistically significant upward trend in the recorded numbers of assault incidents in NSW (NSW Bureau of Crime Statistics 1997). Between January 1995 and December 1996 there was an increase of 22.5 per cent. The extent to which the increase in reported assaults is influenced by the willingness of the public to report crimes to police, or the ease with which police are now able to record crimes (using improved technology) has not yet been adequately determined.

What is known, however, is that assaults are not evenly distributed across the State. A regional breakdown of the assault figures shows that in 1996 almost 60 per cent of reported assault incidents occurred in the Sydney Statistical Division (SD). More specifically, the Inner Sydney Statistical Subdivision (SSD) exhibited the highest number of assault incidents (5,471) and by far the highest rate of assault (2,187 per 100,000 population), a rate more than two and a half times higher than the average rate for NSW. This situation has persisted for at least as long as the NSW Bureau of Crime Statistics and Research (the Bureau) has reported figures on regional crime rates.

Also of concern is the number of robberies that take place in NSW. Between January and December 1996 police recorded 7,587 robbery incidents across the State (NSW Bureau of Crime Statistics 1997). The numbers of robbery incidents within NSW have also shown a statistically significant increase since January 1995 - up by 13.9 per cent from January 1995 to December 1996. According to the ABS Crime and Safety survey, 0.5 per cent of the NSW population had been a victim of a robbery in the 12 months prior to April 1996 (Australian Bureau of Statistics 1996). The percentage of robbery victims who reported the offence to police was 57.5 per cent. Police crime statistics indicate that, of these reported robbery incidents, 26 per cent (1,965) took place in the Inner Sydney SSD which has a robbery rate of 786 per 100,000 population, more than six times higher than the rate for the State as a whole (124 per 100,000 population). As with assaults, this situation has persisted at least as long as the NSW Bureau of Crime Statistics and Research has kept figures on regional crime rates.

Admittedly, the recorded crime rates for all offences in Inner Sydney SSD are somewhat artificially inflated because the area has a high transient population which is not reflected in the denominator of the rates. Nevertheless, regardless of whether the rate is increasing or decreasing or influenced by a low resident population base, the high absolute number of assaults and robberies in the Inner Sydney area is of great concern. Moreover, given that Sydney is due to play host to the Olympic Games in 2000, the imperatives to reduce the incidence of all violent crimes in Sydney can be well appreciated.

Given the possibility of a real increase in the rate of assault and robbery across the State, together with a consistent concentration of these offences in Inner Sydney, the NSW Bureau of Crime Statistics and Research was prompted to investigate the nature of assaults and robberies in Inner Sydney in greater detail. Sydney District, the police district which encompasses the police patrols of Broadway, City of Sydney, Kings Cross, Redfern, Surry Hills and The Rocks was chosen as the target area for the study.

1.2 AIMS OF THIS RESEARCH

This study has three major objectives:

- (1) to determine the location of assault and robbery 'Hot Spots' in Sydney District;
- (2) to identify the characteristics of persons who are particularly at risk of assault and robbery; and,
- (3) to identify the factors which place these persons at risk.

Before proceeding to a description of the study we first consider some theoretical perspectives on the relationship between crime and place. The report then presents a brief overview of the uses of crime mapping and provides detailed definitions of the offences of assault and robbery which are examined in this study.

1.3 THEORIES OF CRIME AND PLACE

A useful overview of the theories of crime and place has recently been set forth by Eck and Weisburd (1995). The summary that follows draws from this overview. According to Eck and Weisburd, theories of crime can be divided into those that seek to explain the development of offenders, and those that seek to explain the development of criminal events. While research has traditionally been focused on offender motivations, more attention has recently been devoted to explaining the actual criminal events, concern with place being central to this approach. To describe how crime and place interact, the authors review three perspectives which suggest that 'place' is of primary importance in understanding crime: rational choice theory, routine activity theory and crime pattern theory.

1.3.1 Rational choice theory

Rational choice theory considers place to be important in a criminal event as it suggests that offenders select targets and determine a means to commit an offence in a way that can be rationally explained (Cornish & Clarke 1986). In other words, offenders make a rational choice about when, where, how and against whom they commit an offence. For example, robbery offenders may choose to maximise their chances of success (and minimise their risk of apprehension) by selecting lucrative victims, who they think they can easily overpower, and by attacking them in dark, secluded places.

1.3.2 Routine activity theory

According to routine activity theory crime requires a confluence of motivated offenders and suitable targets in the absence of capable guardians (Cohen & Felson 1979). In the most recent form of this theory there must also be an absence of 'controllers' of which there are three main types (Eck 1994). The first two types of controllers, introduced by Felson (1986) are 'handlers' and 'guardians'.

'Handlers' can be considered to be people who have direct personal influence over an offender. In the presence of such people, potential offenders are less likely to commit crimes (Eck & Weisburd 1995). Handlers can be people such as parents, teachers, coaches, friends and employers. 'Guardians' on the other hand are people who protect potential targets or victims. Guardians may be friends (for example when two or more people walk together to protect each other) or formal authorities such as security guards or police.

Building on Felson's work, and integrating place into the routine activity approach, Eck (1994) proposed a third type of controller, 'place managers'. Place managers effectively take care of particular places by regulating behaviour at the locations they control (for example bouncers, hotel managers). According to Felson (1995, p. 55) 'crime opportunity is least when targets are directly supervised by guardians; offenders, by handlers; and

places, by managers ... an offender has to get loose from his handlers then find a target unprotected by guardians, in a place free from intrusive managers'. Hence, the presence of any of these controllers can inhibit criminal behaviour and their absence may promote it.

1.3.3 Crime pattern theory

The third perspective considered by Eck and Weisburd is crime pattern theory which combines rational choice theory and routine activity theory to help explain the distribution of crimes across places. It suggests that the manner in which victims and locations come to the attention of offenders influences the distribution of crime events over time and space (Brantingham & Brantingham 1993). Crime pattern theory argues that rational offenders, while engaging in their routine activities, will note places without guardians or managers. The theory therefore concerns itself with the interactions of offenders and their physical and social environments. The concept of place thus becomes essential to crime pattern theory, for not only are places logically required for a criminal event, but the characteristics of a place may influence the likelihood of a crime occurring (Eck & Weisburd 1995). For example, a place conducive to crime may be characterised by features such as licensed premises, public housing, high schools, or abandoned buildings (Block & Block 1995). This, however, does not necessarily imply that places with licensed premises *cause* crime per se, but rather provide locations that tend to *host* crimes because of the routine activities and social interactions that occur in and around these premises. For instance, Rossmo and Fisher (1993, p.11) point out that 'bars and nightclubs in close proximity and with simultaneous closing times can create crowd effects that lead to disturbances, crime and violence'. Hence, the social activities surrounding a place interact simultaneously with the physical environment of a place to influence the probability of a crime occurring.

1.3.4 Crime 'Hot Spots'

Extensive research has shown that occurrences of crime tend not to be randomly scattered in space, but are clustered in certain areas (Block & Block 1995, p.147). At every level of aggregation some areas have more crime than others (Brantingham & Brantingham 1982).

Appreciating the importance of place in understanding crime, a number of successful crime prevention studies have recently taken the approach of targeting small discrete areas of crime, 'Hot Spots'. Sherman (1995, p.36) defines a crime 'Hot Spot' as 'a small place in which the occurrence of crime is so frequent that it is highly predictable, at least over a one year period'. He points to studies which show that the concentration of crime in a few Hot Spots seems even greater when it is compared with the concentration of crime among individuals. For example, a cohort study by Wolfgang, Figlio and Sellin (1972) found that in Philadelphia 18 per cent of individuals produced over 50 per cent of the arrests. In Minneapolis, 50 per cent of calls for police came from just 3 per cent of 'places'. Noting this finding, Sherman (1995, p.36) remarks: 'This comparison raises profound questions for both criminological theory and crime control policy. For if future crime is six times more predictable by the address of occurrence than by the identity of the offender, then why aren't we doing more about it. Why aren't we thinking more about wheredunit, rather than just whodunit?'

Sherman's point is well taken and provides a reason for believing that mapping the locations of crime and examining crime Hot Spots can be of great benefit in exploring the relationship between crime and place.

1.4 CRIME ANALYSIS THROUGH COMPUTER MAPPING

Our ability to study crime and place has recently been advanced through the advent of automated or computerised mapping software. The widespread availability of

sophisticated personal computer based mapping packages now enables us to readily map criminal incidents with a high level of precision. The potential for the institutionalised use of mapping software is probably of greater use to police departments than to any other organisations involved in crime control (Rich 1995). The address data used to locate (geocode) crimes on an electronic computer map are, in fact, a by-product of the information routinely collected by police in their day-to-day activities. When mapped and visualised, these data can assist police departments in strategic planning, operations and crime analysis. Crime mapping can also help community groups, local government and other agencies with responsibility for managing geographical locations to protect these locations from crime.

McEwan and Taxman (1995) detail how this rapidly developing technology can be applied in policing. They classify computer mapping techniques into three general categories: descriptive, analytical and interactive mapping.

Descriptive mapping is the most basic type used and can be used to replicate the pin maps that police departments have used for many years. Descriptive maps usually display shaded areas which show varying crime rates, and can also show the individual locations of incidents or illustrate the proximity between crimes and particular premise types (for example convenience stores and robberies, or licensed premises and assaults). Continually updated descriptive street-level crime maps are now being used effectively in cities such as New York and New Orleans in the United States to pinpoint crime trouble spots and drive intelligence-based police resource deployment. (Remnick 1997, p.108). Other uses of descriptive maps include measurement of the displacement effects of police operations by constructing 'before' and 'after' maps to examine the effects of enforcement strategies.

Analytical mapping enhances the interpretive utility of maps by including information that is helpful in understanding the incidence and distribution of crime. It provides a means of developing models for exploring data trends and testing hypotheses about the underlying relationships between crime and social demographic or geographic features. (See, for example, the use of 'spatial and temporal analyses of crime' (STAC) by Block & Block 1995 and 'crime risk profiling' by Hirschfield & Bowers 1997). A good overview of analytical mapping techniques including STAC can be found in McEwan and Taxman (1995) and Block, Dadoub and Fregley (1995).

A third class of mapping techniques, **interactive mapping**, involves the two former techniques in a way which allows the operator to ask hypothetical questions and see the results instantaneously. An example cited by McEwan and Taxman is Hypercube III, which assists police departments in forming beat patrols. Based on screen map results the user can experiment with various beat configurations. Another example is an inquiry system developed to assist investigators in solving drug trafficking cases in Pittsburgh. This system allows information about people and places to be integrated and records satisfying a particular inquiry can be displayed as a screen map (McEwan and Taxman 1995).

Despite the various levels of sophistication, crime mapping is entirely dependent on the quality of incident location data and the accuracy of the underlying geographic features. These issues are discussed in the crime mapping methodology section later in this report.

The use of crime mapping in Australia is still in its early stages. However its potential value to law enforcement and criminological study is immense. This study takes a small step in its development by using a descriptive mapping approach to show spatial and temporal distributions of assaults and robberies at street level in Inner Sydney. A contextual dimension is added to the maps by supplementing the spatial patterns with data from police reports and crime victim surveys.

1.5 DEFINITIONS OF ASSAULT AND ROBBERY

1.5.1 *Assault*

An assault essentially involves threatening another person with force or actually applying force against another person. Assaults can vary significantly in terms of their nature and severity and so, in order to differentiate between different types, they are often classified into two basic varieties: common assaults and aggravated assaults.

Common assaults form the less serious group. According to the *Crimes Act 1900* (NSW) s. 4., any application of force which does not result in 'actual bodily harm' can be interpreted as a form of common assault. While the unlawful contact may be slight, it should not be considered to be trivial (Brown et al. 1996). The definition of a common assault can be extended to include such behaviour as spitting upon another person or simply pushing someone.

Assaults causing actual bodily harm are included in the category of aggravated assaults. The offence requires that the defendant's conduct amounts to a common assault and that it causes 'actual bodily harm'. Actual bodily harm 'includes any hurt or injury calculated to interfere with the health or comfort of [the victim]. Such hurt or injury need not be permanent but must, no doubt, be more than merely transient or trifling' (Gillies 1993, p.554).

Another offence within the aggravated assault category is an assault causing grievous bodily harm. As the terminology implies, grievous bodily harm is a more serious type of injury and while it is usually inflicted by a weapon or other instrument, there is no legal obstacle to it being inflicted by fists (Gillies 1993). Grievous bodily harm may include any 'permanent or serious disfiguration' of a person or 'any bodily injury of such nature as to endanger or be so likely to endanger life or cause or be likely to cause permanent injury to health' (Brown et al. 1996, p.782).

Despite these legal definitions, police generally have broad discretion in whether to classify an offence as a common assault or an aggravated assault. Their decisions are often made not on a single criterion of injury but on a range of contributing factors (Robb 1988; Bonney & Kery 1991).

1.5.2 *Robbery*

'Robbery' means theft of money or property from a person (or in the presence of a person having its control) accompanied by the threat or use of physical force. Robbery is therefore an offence against the person as well as an offence against property. So, while the element of confrontation distinguishes robbery from other forms of theft, actual violence is not required to constitute the offence (NSW Bureau of Crime Statistics 1987). Another type of offence, 'demand money with menaces' is closely akin to robbery, as offences in this classification also involve personal confrontation. However, as the offender often fails to obtain money or uses only verbal threats against the victim, minor demand money with menaces offences are not included amongst the robbery offences examined in this report. A third offence often confused with robbery is that of 'steal from person'. This too is a form of personal theft and is deemed not to involve injury, struggle or threat of violence.

Under the relevant statutory laws, a robbery offence becomes more serious (and carries higher penalties) where an injury is inflicted or a weapon carried. Police classify robberies as either robbery, robbery with striking, robbery with wounding or armed robbery. In order to be consistent with the Australian Standardised Offence Classification (ASOC) compiled by the ABS, the NSW Bureau of Crime Statistics and Research reclassifies robbery offences into three distinct types, each of which is self-explanatory: robbery without

a weapon, robbery with a weapon other than a firearm, and robbery with a firearm. Robbery with a weapon other than a firearm includes robberies committed with knives, iron bars, sticks, syringes, bricks and other objects. Where robberies are divided into categories in this report, the three above mentioned ASOC classifications are used.

2. METHODOLOGY

2.1 DATA SOURCES

Data for this study were derived from two main data sources: (i) Police data and (ii) Victim Survey data.

2.1.1 Police data

All incidents reported to, and recorded by, NSW police are entered into a database known as the Computerised Operational Policing System (COPS). As it is possible for there to be more than one victim and/or more than one alleged offender per criminal incident, the database is set up as a relational database. For the purposes of this study, three files within this relational database were of interest: the Incident File, the Victim File and the Offender File. Victims and offenders can be linked to the incidents in which they were involved by matching the *incident number* contained within each of these three files. From the COPS Incident, Victim and Offender Files, data extractions were performed isolating records for assault and robbery incidents that occurred in Sydney District (police district covering the inner city area of Sydney) between July 1995 and June 1996. The extraction produced 4,472 criminal incident records of which 3,060 were assaults and 1,412 were robberies. For these incidents, victim data were available for at least one victim for each incident and data on at least one offender were available for almost half (49.5%) of the incidents. The victim and offender data were used to generate the general characteristics of victims and offenders. The data extracted from the Incident File (i.e. address details) were used to construct the crime maps in this report.

2.1.2 Victim Survey data: Assault and Robbery Victim Survey

The second source of data was a data set derived from information collected through a survey of assault and robbery victims. The survey data were collected between 15 March 1996 and 16 January 1997, during which time 259 eligible victims responded to the survey: 142 victims of assault and 117 victims of robbery. The survey was conducted with assistance from each of the five Police Patrols in Sydney District as well as from St Vincent's Hospital Emergency Department.

St Vincent's Emergency Department treats patients suffering from accidents and deals with other medical or surgical emergencies (Cuthbert, Loveday & Fulde 1991). The hospital, which is located within one kilometre of Kings Cross and Taylor Square, has, over the years, treated many patients presenting with injuries sustained as a result of violence in the surrounding area; many of these patients do not report the violence to police. The methodology used to collect information through the survey is described below.

2.2 ASSAULT AND ROBBERY VICTIM SURVEY METHODOLOGY

2.2.1 Approaching eligible respondents

Respondents were approached to participate in the survey in one of two ways. Firstly, eligible respondents were informed about the Victim Survey by police when they attended a police station to report an assault or a robbery or when they were assisted by police who were on the beat.¹ They were asked by a police officer whether they would be willing to participate in the survey by completing a questionnaire at the station, or by taking a questionnaire home to complete and mail back to the Bureau using a reply-paid envelope. In many cases police assisted the respondents by reading out the questions and recording the responses for them on the questionnaire form. Questionnaires completed at the station were sealed and subsequently mailed to the Bureau.

Secondly, to obtain information from a sample of victims who may not have reported to the police, survey questionnaires were offered to persons who were treated at St. Vincent's Emergency Department for injuries sustained as a result of an assault or robbery.² When any persons treated at the hospital's Emergency Department were identified as having sustained injuries as a result of an assault or a robbery, they were asked by a triage nurse whether they would be willing to participate in the survey. In many cases nursing staff assisted the respondents by reading out the questions and recording the responses on the survey form. Where the respondents were too badly injured or too intoxicated to respond, they were offered a questionnaire to take home and mail back using a reply-paid envelope.

2.2.2 The survey questionnaire

The questionnaire was devised to collect information about the personal characteristics of victims and sought information about what had happened to them when they were attacked. The questionnaire was designed for self-completion but was also suitable to be used in face-to-face interviews or telephone interviews.

The questionnaire contained both open-ended and pre-coded, closed-ended questions, which, for ease of completion, contained a list of response alternatives which could simply be ticked. The questionnaire was designed to take about 10 minutes to complete. Most of the questionnaire forms were printed in English, although Japanese and Mandarin versions were also made available. These languages were nominated by the Sydney District Office as the most useful for the areas being surveyed.³ (See Victim Survey Questionnaire in Appendix 1.)

2.2.3 Piloting the questionnaire

The questionnaire was tested with the following objectives: (i) to determine whether the questions in the survey were easily understood by respondents, (ii) to assess whether the questions captured the information for which they were designed, and (iii) to estimate how long it would take for a respondent to complete the questionnaire.⁴

Piloting was conducted using face-to-face interviews. Respondents for the pilot were approached by a researcher stationed at the City of Sydney and Kings Cross police stations during times when assault or robbery victims were expected to arrive, that is, Friday and Saturday nights between 10 pm and 4 am. Two nights were spent in each station and six pilot interviews were conducted over four nights. All six respondents approached agreed to be interviewed. Following the evaluation of the questionnaire, necessary adjustments were made. For example, filter (contingency) questions were eliminated to avoid confusion as to which questions were applicable to individual respondents. Rather, the responses were pre-coded so that all questions could be attempted and a 'not applicable' box ticked where appropriate.

2.2.4 Distribution of questionnaires

Stocks of questionnaire forms together with reply-paid envelopes were regularly delivered to each police station in Sydney District throughout the data collection period. Questionnaires, which were kept at the front desk of each police station or in the shift supervisor's office, were offered to eligible victims who presented themselves at the counter to make a report. At some patrols police officers kept questionnaires in their patrol cars so that they could issue them to victims whom they encountered on the beat. At the Redfern and City of Sydney patrols, Intelligence Officers mailed out questionnaires to victims as part of their 'Victim Care' follow-up procedure. Posters were pinned on the notice boards at each police station to encourage assault and robbery victims to inquire about the survey.

Questionnaires were made available at the selected police stations between 15 March 1996 and 16 January 1997. To assist police in the administration of the survey, instruction sheets were also supplied informing police on types of eligible victims and how to encourage their participation in the survey.

Stocks of questionnaires envelopes and instruction sheets for nurses were located in the triage area of St. Vincent's Emergency Department. Questionnaires were made available to victims between 26 August 1996 and 16 January 1997. Posters were pinned on notice boards in all Emergency Department waiting areas in order to promote awareness of and encourage participation in the survey.

2.2.5 Encouraging compliance

An important factor in achieving a high response rate for the survey was to ensure that as many victims as possible were issued with questionnaires. As the Bureau was reliant on police officers to distribute these, an effort was made to raise the level of awareness amongst police officers about the study. Therefore, regular communication was maintained between Bureau researchers and police officers in each patrol. Moreover, feedback on the number of surveys received from each patrol was provided regularly to the District Commander and to intelligence officers from each patrol who played a key role in taking ownership of the study. Internal memos were circulated by police to draw attention to the study.

Similarly, at St. Vincent's Hospital, briefing sessions outlining the aims of the study were held with nursing staff. Presentations were then given to nursing staff to provide feedback on information collected during the course of the data collection period.

An estimate of the overall response rate was determined by calculating the number of respondents who were offered a survey form by police and completed the survey, as a percentage of all assault and robbery incidents reported to police during the same period. On this basis, it is estimated that 4.4 per cent of assault victims and 6.9 per cent of robbery victims who reported assaults or robberies to police during the survey period were surveyed. However, as not all eligible respondents were offered the opportunity to participate (for a variety of reasons),⁵ the response rate from those who were approached is probably substantially higher.

2.3 CRIME MAPPING METHODOLOGY

This section briefly outlines the method used to create crime maps showing the spatial distribution of all assault and robbery incidents that occurred in Sydney District between July 1995 and June 1996. As the full methodology is technical, a comprehensive account of the mapping process is detailed in Appendix 2 and a summary overview is presented below.

Essentially, the mapping process entails 'geocoding' crime incidents to a map. Geocoding involves assigning X and Y coordinates to incidents on a mapping grid. The process was, in this case, hampered by the paucity of the incident location data available for assaults and robberies. It became evident during this exercise that location data were not systematically determined and entered into COPS by operational police, nor accurately verified by police supervisors. For example, there were often missing *street numbers* or *street names* and sometimes only reference to an encoded *intersection number* was given. Sometimes only the *property name* was recorded and in some cases there was no address information in the *address fields* at all. It was also discovered that address location information was sometimes included in the narrative section of the report rather than in the assigned address fields. Consequently, a number of enhancements had to be made to improve the address information prior to geocoding. To do this the incidents were categorised according to the type of address information present. Then, more accurate address data were obtained in one of three ways: by electronically decoding information relating to intersection numbers, by looking up specific *property names* in telephone directories, or by reviewing incident narratives directly from the COPS system.

After the addresses were ascertained and stored in a suitable format, the geocoding process allowed for 4,233 incidents (95 per cent of the original 4,472 criminal incidents reported to police) to be placed on a map. Where two or more incidents occurred at the same place they were dispersed around the location point on the map to avoid their being visually indistinguishable. Other adjustments were made to enhance the map's accuracy. For instance, where incidents were geocoded to intersections, and it became evident from the police data that the incidents actually occurred a specified distance and direction away from the intersection, these incidents were moved accordingly.

3. RESULTS

3.1 CHARACTERISTICS OF ASSAULT AND ROBBERY VICTIMS

In this section, data from both sources, recorded criminal incidents (police data) and the Assault and Robbery Victim Survey (Victim Survey) are used to determine the characteristics of assault and robbery victims.

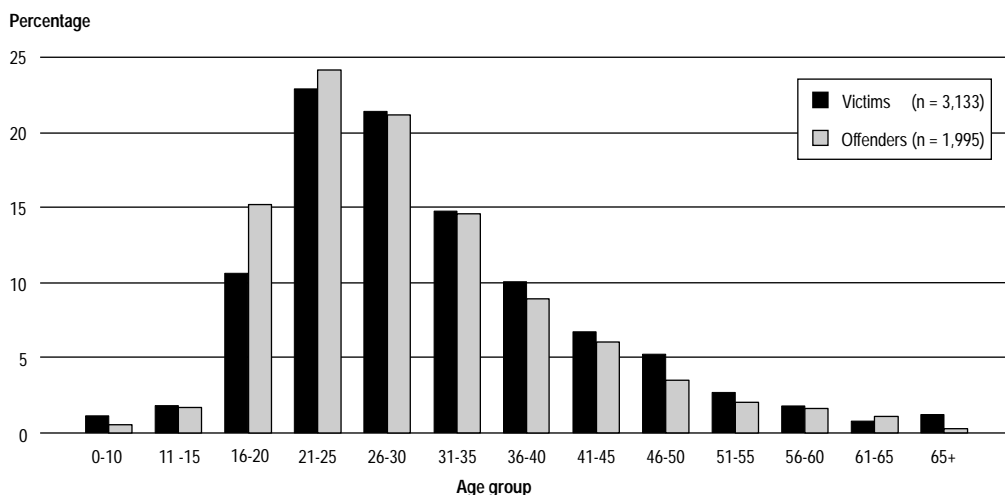
3.1.1 Age of victims

Assaults

The age distribution of assault victims and offenders recorded by police for incidents recorded during the 12-month period July 1995 to June 1996 is shown in Figure 1. The figure shows that 14 per cent of the 3,133⁶ recorded victims of assault in Sydney District were aged 20 years or less. The age group that exhibited the highest proportion of victims was the 21 to 25 year old age group (23%) followed by the 26 to 30 year old age group (21%). For persons aged over 25 years, the proportion of victims in each age group declined gradually with increasing age. The average age of assault victims in Sydney District was 30.9 years with a standard deviation (s.d.) of 11.1. The offenders' age distribution shown in Figure 1 will be discussed in the section dealing with characteristics of offenders.

The Victim Survey revealed a similar age distribution for assault victims with the average age of respondents being 30.6 years (s.d. = 11.5).

Figure 1: Age of assault victims and assault offenders, Recorded criminal incidents, Sydney District, July 1995 to June 1996



Robberies

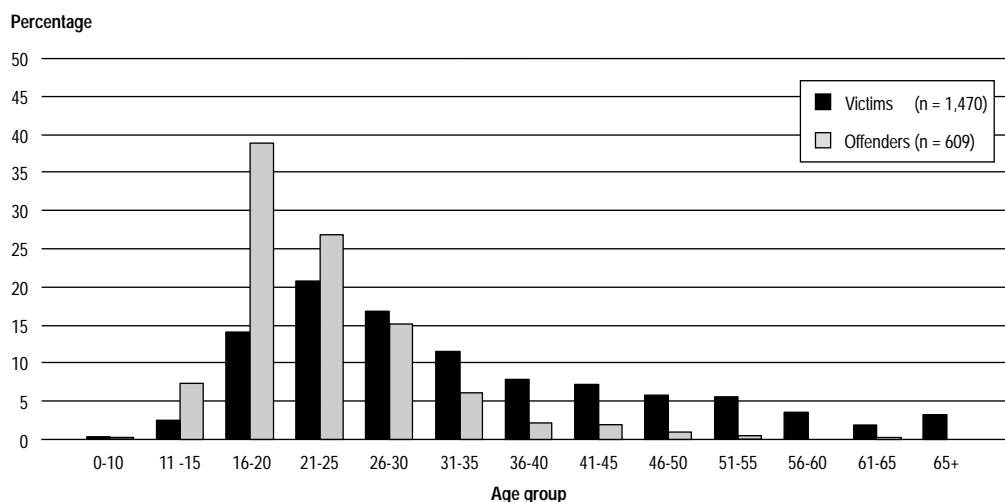
The age distribution of robbery victims and offenders recorded by police is shown in Figure 2. The figure shows that 18 per cent of the 1,470⁷ recorded robbery victims in Sydney District were aged 20 years or less. The age group that exhibited the highest proportion of robbery victims was the 21 to 25 year old age group (21%) followed by the 26 to 30 year old age group (17%). As with assaults, the proportion of people in each age group declined gradually with increasing age for persons aged over 25. The average age of robbery victims was 33.2 years (s.d. = 14.3), slightly older than the average for assault victims.

The sample of robbery victims who responded to the Victim Survey had an average age of

34.6 years (s.d. = 13.8), marginally older than the average age of victims in the criminal incidents recorded by police.

In general, the age distributions of assault and robbery victims shown in Figure 1 and Figure 2 were remarkably similar. The offenders' age distribution shown in Figure 2 will be addressed in the section dealing with characteristics of offenders.

Figure 2: Age of robbery victims and robbery offenders, Recorded criminal incidents, Sydney District, July 1995 to June 1996



3.1.2 Gender of victims

Assaults

According to the police data, the majority of assault victims were male (68.9%). Females accounted for 26.1 per cent. The victim's gender was unknown in 5.0 per cent of the cases.⁸

There was a similar gender split amongst Victim Survey respondents where 70.1 per cent of assault victims were males.

Robberies

The gender distribution for robberies (according to police data) showed a slightly lower proportional representation of males as victims (62.5%) with 27.1 per cent being female. The victim's gender was unknown in 10.5 per cent of cases.⁹ The Victim Survey data showed that 71.3 per cent of robbery victims were male. It is possible, then, that males made up a large proportion of the robbery victims whose gender was not recorded by police in the official statistics.

Compared with NSW as a whole, the proportion of female victims recorded in Sydney District was notably lower. According to the NSW Crime and Safety Survey conducted by the ABS, 35.1 per cent of assault victims (in the 12 months to April 1996) were female. The Crime and Safety Survey also indicated that 40.6 per cent of robbery victims in NSW were female (Australian Bureau of Statistics 1996).

3.1.3 Number of victims per incident

Assaults

An analysis of the 3,060 assault incidents recorded by police showed that 87.5 per cent of the incidents involved only one victim. A further 10.2 per cent involved two victims, 1.5

per cent involved three victims and 0.8 per cent involved four or more victims. In the event that an assault victim was accompanied by others who did not become assault victims, the police generally record those persons as witnesses rather than victims. The above figure is based on the number of victims recorded in an incident and may therefore over-estimate the number of people who appear to have been alone.

The Victim Survey, however, specifically asked the victims whether they were accompanied when they were assaulted. The results revealed that almost half (47.9%) of the assault victims were alone when assaulted. A further 21.8 per cent reported being accompanied by one friend or acquaintance and 30.3 per cent said they were accompanied by two or more friends or acquaintances.¹⁰

Robberies

An analysis of the 1,412 robbery incidents recorded by police showed that 82.9 per cent of the incidents involved only one robbery victim, 14.2 per cent involved two victims, 2.1 per cent involved three victims and 0.9 per cent involved four or more victims.

The Victim Survey supported the notion that robbery victims were far more likely to be victimised when alone than in the company of others. In fact, more than two-thirds (70.9%) of the robbery victims reported being alone when attacked, while 20.5 per cent reported being accompanied by one friend or acquaintance and 8.5 per cent said they were accompanied by two or more friends or acquaintances.¹¹ Hence, both data sources show that robbery victims were much more likely to be alone than in company.

3.1.4 Ethnicity of victims

Assaults

The Victim Survey included a question designed to determine victims' ethnicity. A list of ethnicities with corresponding check boxes was provided for respondents to select and tick. No information on the ethnicity of victims was available from police victim data.

Of the 131 assault victims who responded to the ethnicity question in the Victim Survey, 84.0 per cent indicated that they were Caucasian. The next most common ethnicity was Asian (7.6%) and then Indian (2.3%) and Aboriginal (2.3%). Other ethnicities made up the remaining 3.8 per cent.

Robberies

Of the 111 robbery victims who responded to the ethnicity question in the Victim Survey, 74.8 per cent indicated that they were Caucasian. The next most common ethnicity was Asian (11.7%) and then Aboriginal (2.7%). Other ethnicities made up the remaining 10.8 per cent.

On the basis of this information, it appears that while victims of both assault and robberies were, for the most part, Caucasian, the proportion of non-Caucasian victims was higher for robberies than for assaults. Nevertheless, as there was seldom any evidence of racial vilification in cases of assault or robbery against non-Caucasian victims, it is possible that the victimisation levels of various ethnicities simply reflects the general populace present in Inner Sydney.

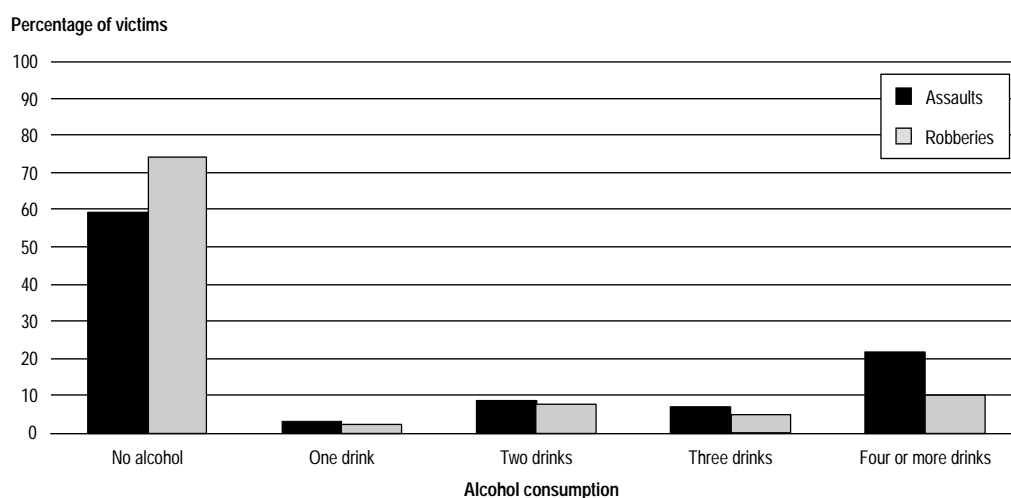
3.1.5 Alcohol consumption by victims

In order to obtain an indication of the level of intoxication of assault and robbery victims a question relating to alcohol consumption was included in the Victim Survey. The question was worded as follows: "About how many alcoholic drinks had you consumed in the 2 hours before the attack?" The responses to this question are shown in Figure 3.

Assaults

There were 140 victims who responded to the alcohol question. Figure 3 shows that 40.7 per cent of these 140 assault victims had consumed alcoholic drinks in the two hours before the attack. In terms of the quantity consumed, 2.9 per cent reported that they had consumed one drink, 8.6 per cent had consumed two drinks, 7.1 per cent had consumed three drinks and 22.1 per cent indicated that they had consumed four drinks or more. The remaining 59.3 per cent indicated that they had not consumed any alcohol.

Figure 3: Percentage of assault and robbery victims who reported consuming alcohol in the two hours before the attack, Victim Survey



Robberies

Consumption of alcohol by robbery victims in the two hours before the attack is also shown in Figure 3. The figure shows that one-quarter of the 117 respondents (25.6%) indicated that they had consumed some alcohol with 2.6 per cent reporting that they had only consumed one drink. A further 7.7 per cent had consumed two drinks, 5.1 per cent had consumed three drinks and 10.2 per cent had consumed four or more drinks. Clearly, alcohol consumption was higher amongst assault victims than amongst robbery victims.

3.1.6 Injuries sustained by victims

In the Victim Survey, respondents were asked to indicate the extent of the injuries that they sustained during the attack by ticking one of the three categories provided (i) Not injured at all, (ii) Minor bruises / abrasions / cuts (not requiring stitches) and (iii) Serious injuries, for example broken bones, concussion, wounds (requiring stitches).

Assaults

Of the 136 assault victims who responded to this question in the Victim Survey, 8.8 per cent indicated that they were not injured at all, 51.5 per cent indicated minor bruises, abrasions or cuts while 39.7 per cent claimed to have suffered serious injuries.

Robberies

Of the 115 robbery victims who responded to this question in the Victim Survey, 37.4 per cent indicated that they were not injured at all, although some who were not physically injured reported that they had suffered from shock. Minor injuries were reported by almost half of the victims (47.0%) and a further 15.7 per cent indicated that they had suffered serious injuries.

Police data on injuries

A second source of data relating to victims' injuries, the police data extracted from COPS victim files, was also examined. Police officers catalogue a victim's injuries by selecting from a list of injury descriptions displayed on their COPS entry system. A maximum of five selections can be entered into the system to describe a victim's injuries, that is, up to five types of injury per person. Table 1 summarises the police injury data for assault and robbery victims in Sydney District. Note that, as there may have been more than one victim per incident and more than one injury per victim, the total number of victims and injuries examined in Table 1 exceeds the total number of incidents. Also, for some victims, no injury data were recorded.

**Table 1: Types of injuries sustained by assault and robbery victims
Recorded criminal incidents, Sydney District, July 1995 to June 1996**

<i>Injury</i>	<i>Assault victims</i>		<i>Robbery victims</i>	
	<i>Percentage of all assault victims (n = 3,541)</i>	<i>Percentage of injured assault victims only (n = 2,462)</i>	<i>Percentage of all robbery victims (n = 2,462)</i>	<i>Percentage of injured robbery victims only (n = 662)</i>
Not injured	30.5	–	61.5	–
Bruising	28.3	40.7	19.3	50.0
Bleeding	22.5	32.4	12.9	33.5
Minor lacerations	22.4	32.3	14.0	36.3
Red marks	18.2	26.1	10.3	26.7
Swelling	16.1	23.2	9.1	23.6
Fractures	4.5	6.5	2.5	6.5
Severe lacerations	4.1	5.9	1.2	3.2
Shock	2.3	3.2	3.5	9.1
No visible injuries	10.4	15.0	4.4	11.5
Other*	7.6	10.9	4.1	10.6

Percentages do not sum to 100 as victims may have sustained more than one type of injury.
* 'Other' includes: internal injuries, torn or sprained muscles, spinal injuries, burns and unconsciousness.

The first feature to note in Table 1 is that 61.5 per cent of robbery victims were not injured at all, compared with only 30.5 per cent of assault victims who were not injured. The assault victims who were injured suffered mainly bruising (40.7%), bleeding (32.4%), minor lacerations (32.3%), red marks (26.1%) and swelling (23.2%). The corresponding percentages for robbery victims who were injured was similar, with half (50.0%) experiencing bruising and one-third (33.5%) suffering bleeding or minor lacerations.

Comparing the injury data from the police records with the Victim Survey data, it is evident that a much higher percentage of assault and robbery victims in the Victim Survey sample reported being injured (91.2 per cent and 62.6 per cent respectively) than were recorded in police statistics (69.5 per cent and 38.5 per cent respectively). Given that one-third of the Victim Survey sample originated from St Vincent's Emergency Department and that victims suffering injuries were more likely to present themselves at police stations (hence having a higher likelihood of being approached by police to participate in the Victim Survey) this finding is not surprising.

Further analysis of the police injury data for robberies showed that a smaller proportion of victims were injured in robberies where weapons were involved (19.0%) than in unarmed robberies (where 50.3 per cent of victims were injured).¹² This result probably indicates that weapons are more likely to be used to threaten than to injure victims.

3.1.7 Victim activities

In the Victim Survey, victims were asked to indicate the main reason why they were in the area where they were attacked.

Assaults

The most common response from assault victims was that they were in the area for entertainment, recreation or to eat out (42.3%). The next most frequent answer was that they were at work or on business (23.9%). A number of the assault victims lived in the area (15.5%) and others were just travelling through (12.7%).

Robberies

The activities of robbery victims differed somewhat with only 21.6 per cent responding that they were in the area for entertainment, recreation or to eat out. The greatest proportions of robbery victims were those at work or on business (27.6%) and those who lived in the area (25.9%). A further 16.4 per cent replied that they were travelling through the area when they were robbed.

3.1.8 Possessions carried by robbery victims

In the Victim Survey, robbery victims were asked to indicate what they were wearing or carrying which could have made them a possible target. From the Victim Survey it was ascertained that most victims (75.0%) had carried a wallet or purse at the time of the attack. Other commonly cited items were: handbags or briefcases (21.6%), expensive watches or jewellery (19.0%), mobile phones (19.0%) and backpacks (6.0%). Some robbery victims may have been in possession of one or more of the above items at the time of the attack.

When asked what the attackers stole or tried to steal, the most frequent response was money (74.4%), followed by wallets and purses (49.6%), handbags and briefcases (12.9%), expensive watches or jewellery (8.6%), mobile phones (8.6%) and jackets (6.0%). Some respondents reported more than one of the above items stolen.

3.2 CHARACTERISTICS OF ASSAULT AND ROBBERY OFFENDERS

The same data sources, police data and Victim Survey data, are used to examine the characteristics of assault and robbery offenders.

3.2.1 Age of offenders

Assaults

The age distribution of assault victims and offenders, based on police statistics is shown in Figure 1.¹³ Having already considered the age distribution of victims earlier in the report we turn our attention to the offenders. Figure 1 shows that the age distribution for assault offenders almost mirrors the age distribution for assault victims, the only notable difference being the higher proportion of offenders in the 16 - 20 year age group (15% of offenders). The age group exhibiting the greatest proportion of offenders was the 21 - 25 age group (24%) followed by the 26 - 30 year age group (21%). As with assault victims, the proportion of offenders in each age group declined gradually with increasing age after 25 years of age. The average age of assault offenders in the Sydney District was 29.5 years (s.d. = 10.2).

Robberies

The age distribution of robbery victims and offenders is shown in Figure 2. There was considerable disparity in the age distributions of robbery victims and offenders. The average age of robbery offenders was 22.7 years - about 10 years younger than the

average for robbery victims (33.2 years).¹⁴ Figure 2 shows that the greatest proportion of offenders were in the 16 - 20 years old group (39%). The proportion of offenders declined with increasing age from 20 years onwards with the 21 - 25 year old group accounting for 27 per cent and the 26 - 30 year old group accounting for 15 per cent of offenders.

A comparison of the age distributions of assault and robbery offenders in Figures 1 and 2 shows that the age distribution for robbery offenders has a higher proportion of younger offenders whereas the age distribution of assault offenders is more evenly distributed. The average age of robbery offenders was lower than the average age of assault offenders by about 7 years.

3.2.2 Gender of offenders

Assaults

According to police data, most of the assault offenders were male (87.2%) while 12.8 per cent were female.¹⁵

Robberies

Of the 1,412 robbery incidents recorded by police, offender data were present for just 361 of the incidents (25.6%). However, as there was often more than one offender per incident, gender information was obtained for 609 robbery offenders. The gender distribution for these robbery offenders indicates that males accounted for 90.6 per cent of the robbery offenders while females accounted for only 9.4 per cent.

Table 2 summarises the gender relationship between assault and robbery victims and offenders.¹⁶

Table 2: Gender relationship between victims and offenders, assault and robbery
Recorded criminal incidents, Sydney District, July 1995 to June 1996

<i>Assault (n = 2,478)</i>			
<i>Gender of offender (%)</i>			
<i>Gender of victim</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Male	64.6	5.8	70.4
Female	22.0	7.6	29.6
Total	86.6	13.4	100.0

<i>Robbery (n = 708)</i>			
<i>Gender of offender (%)</i>			
<i>Gender of victim</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Male	66.1	4.5	70.6
Female	25.1	4.2	29.4
Total	91.2	8.8	100.0

Table 2 shows that assaults and robberies were predominantly male on male offences. The male victim - male offender combination accounted for 64.6 per cent of assaults and 66.1 per cent of robberies. The second most common combination was a male offender - female victim, as was the case in 22.0 per cent of assaults and 25.1 per cent of robberies. Table 2 also shows that female assault offenders were more likely to assault other females (7.6%) than males (5.8%).

3.2.3 Number of offenders per incident

Assaults

Offender details were recorded by police in 60.5 per cent of the 3,060 assault incidents examined. An analysis of these incidents showed that 84.7 per cent involved only one offender. A further 10.5 per cent involved two offenders, 3.0 per cent involved three offenders and 1.8 per cent involved four or more offenders. The Victim Survey data shows quite a different result. There was a greater proportion of multiple offender assaults in the Victim Survey data (32.8%) than was recorded in police statistics police (15.3%). This discrepancy might be explained in a number of ways. Firstly, because details are obtained by police for one particular offender in an incident, this does not necessarily mean that that offender acted alone, but that the victim could only furnish details on that particular person. Secondly, in nearly 40 per cent of assaults, there was no offender information at all. It is possible that amongst these incidents were a number that involved multiple offenders.

Robberies

Offender details were obtained by police in only 25.5 per cent of the 1,412 robberies examined. On the basis of the available police data, it appears that robbery offenders were just as likely to operate alone as in groups of two or more, with 53.2 per cent of robbery incidents involving only one offender. Offenders operating in pairs accounted for 29.1 per cent of robbery incidents, three offenders were reported in a further 10.5 per cent and 7.2 per cent involved four or more offenders. The Victim Survey showed similar results for offenders working in pairs and in threes, but indicated a higher proportion of involvement by four or more offenders (15.8%) and hence an overall higher proportion of multiple offender involvement (59.6%). The discrepancy between this finding and the police data can be explained in much the same way as for assaults.

3.2.4 Level of acquaintance between victims and offenders

The Victim Survey required respondents to select the category which best described their level of acquaintance with the offender(s).

Assaults

For assaults the most common response was that the attacker was a total stranger (80.0%); hence in the other 20.0 per cent of cases, the offender was in some way known to the victim. In 8.6 per cent of cases, the victim indicated that the offender was a prior acquaintance, in 4.3 per cent of assaults the attacker was a relative or friend, in 3.6 per cent the attacker was the victim's partner or ex-partner, in 2.9 per cent a person that the victim had met that day, and in 0.7 per cent a work colleague. (These percentages are based on 140 respondents because two victims did not respond to this question.)

Robberies

In the case of robberies, the respondents to the Victim Survey indicated that almost all the offenders were total strangers (94%). However there were three cases where the attacker was a prior acquaintance, three cases where the victim and offender had met that day and one case where the robbery was perpetrated by the victim's partner or ex-partner. (These percentages are based on 116 respondents because one victim did not respond to this question.)

3.2.5 Types of offenders

In the Victim Survey, a list of possible offender categories (for example junkies, alcoholics, homeless persons etc.) were presented and respondents were asked to indicate whether they thought the offender matched any of these categories. Respondents could answer

‘yes’, ‘no’ or ‘maybe’ to each category. Table 3 summarises the results of the victims subjective responses to these questions. ‘Yes’ and ‘maybe’ responses have been grouped together.

Table 3: Types of offenders as perceived by victims of assault and robbery, Victim Survey

<i>Assault offenders</i>		
<i>Type of offender</i>	<i>Yes / maybe (%)</i>	<i>No (%)</i>
Junkie (drug addict)	26.8	73.2
Mentally ill person	31.7	68.3
Alcoholic	40.1	59.9
Homeless person	16.2	83.8
Taxi driver	2.8	97.2
Bouncer / doorman	6.3	93.7

<i>Robbery offenders</i>		
<i>Type of offender</i>	<i>Yes / maybe (%)</i>	<i>No (%)</i>
Junkie (drug addict)	53.8	46.2
Mentally ill person	7.7	92.3
Alcoholic	21.4	78.6
Homeless person	30.8	69.2
Taxi driver	2.6	97.4
Bouncer / doorman	3.4	96.6

The percentages are based on 142 assault victims and 117 robbery victims. Note that the column percentages do not sum to 100 as multiple responses were allowed. The data in this table were derived from the Assault and Robbery Victim Survey.

Assaults

About 40 per cent of the assault victims responded that they thought that their attackers might have been alcoholics (i.e. answered ‘yes’ or ‘maybe’ to this category), 31.7 per cent said the attackers may have been mentally ill, and 26.8 per cent thought that their attackers might have been junkies.

Robberies

Robbery victims on the other hand indicated that they thought their attackers were junkies in over half of the robbery incidents (53.8%) and also indicated that they thought their attackers might have been homeless in 30.8 per cent of cases; 21.4 per cent of the victims said they thought the attacker(s) might have been alcoholics.

These victim assessments should be treated with caution because in most cases they are subjective perceptions of the offender based on physical appearance alone.

3.3 CHARACTERISTICS OF ASSAULT AND ROBBERY OFFENCE LOCATIONS

This section examines the spatial patterns of offences. Other characteristics of offences will be dealt with later. Map 1 represents a map of Sydney District. The map shows the spatial distribution of assaults and robberies recorded by police in Sydney District between July 1995 and June 1996. Only those offences for which accurate location information was obtainable were mapped, but this map includes 95 per cent (4,233) of the assault and robbery incidents reported to police in Sydney District over the 12-month period in question.

Within Sydney District, five Hot Spot Zones have been identified by visual inspection. The selected Hot Spots are areas which display relatively high concentrations of assaults and robberies in close proximity. The selected Hot Spot Zones are outlined with frames in Map 1 and are centred around the following landmarks:

- Hot Spot Zone 1 - Darlinghurst Rd, King Cross,
- Hot Spot Zone 2 - Oxford St, Darlinghurst,
- Hot Spot Zone 3 - George St, Sydney Central Business District (CBD),
- Hot Spot Zone 4 - George St, Wynyard / The Rocks, and
- Hot Spot Zone 5 - Redfern Station, Redfern.

Each Hot Spot Zone is examined in detail through the construction of a series of magnified crime maps.

In the first map for each Hot Spot Zone (Maps 2a, 3a, 4a, 5a and 6a) small circular symbols are used to represent assault incidents. The symbols are colour-coded to distinguish weekday from weekend assaults. Assaults recorded as having occurred on weekdays (from Mondays to Fridays) are represented by red symbols while assaults that occurred on weekends (Saturdays or Sundays) are represented by blue symbols.

Similarly in the second map for each Hot Spot Zone (Maps 2b, 3b, 4b, 5b and 6b), coloured circular symbols are used to differentiate assaults according to the time of day of occurrence. Assaults that occurred between 6 pm and 6 am (night-time) are represented by black symbols while assaults that occurred between 6 am and 6 pm (daytime) are represented by yellow circular symbols.

Following the two assault maps, the spatial patterns of robberies are examined. Small square symbols are used to depict robbery incidents. The third map for each Hot Spot Zone (2c, 3c, 4c, 5c and 6c) depicts robberies that occurred on weekdays with red squares and robberies that occurred on weekends with blue squares.

The fourth map for each Hot Spot Zone (Maps 2d, 3d, 4d, 5d and 6d) shows the time of day distributions for robberies. Black squares represent night-time offences and yellow squares represent daytime offences. Legends are included in all maps to assist in their interpretation.

3.4 HOT SPOT ZONE 1 - DARLINGHURST RD, KINGS CROSS

3.4.1 Location description

The first Hot Spot Zone to be examined in greater detail is the 0.1 km² zone centred around Darlinghurst Rd, Kings Cross. Darlinghurst Rd runs diagonally through Kings Cross supporting two-way traffic between William St and Macleay St. The Darlinghurst Rd strip is the centre of activity in the Kings Cross area and is highly commercialised, accommodating a number of hotels, restaurants, bars, cafes, adult night-spots, banks, take-away food outlets, a supermarket, a railway station, a taxi rank as well as many other types of businesses. Darlinghurst Rd is therefore also a major pedestrian thoroughfare. Activity in Kings Cross continues almost 24 hours a day, the area being famous for its night life. It is especially busy on Friday and Saturday nights and in the early hours of the mornings. Kings Cross is a major tourist attraction and is also the most famous red light district in Sydney. The area has a reputation for high levels of drug usage and dealing.

3.4.2 Spatial patterns of assault

The assault patterns in the Kings Cross Hot Spot Zone are shown in Maps 2a and 2b. The maps show 425 individual assaults recorded by police in the zone occurred between July 1995 and June 1996. There was, on average, at least one assault per day in this zone over the 12-month period.

Of all the Hot Spot Zones to be considered, the Kings Cross Hot Spot Zone represents the area with the highest concentration of assaults in the Sydney District. The main assault cluster within King Cross is elongated and is located along the centre of Darlinghurst Rd. Smaller clusters are visible at the northern end where Darlinghurst Rd becomes Macleay St, on Bayswater Rd (between Kellett St and Ward Ave), and at the southern end of Kings Cross near the intersection of Victoria St and William St.

The analysis of localised police data (see Table 6) indicates that almost half (47.5%) of the assaults in the area occurred outdoors, that is, on the street or on the pavement. As the main street contains many licensed premises, a large proportion of 'on the street' assaults took place in close proximity to licensed premises such as hotels, pubs, nightclubs, adult nightspots and licensed restaurants. The majority of offences within the clusters around the Springfield Mall area (at the northern end of Darlinghurst Rd) and near the intersection of Victoria St and William St to the south, occurred outdoors.

Licensed premises featured prominently amongst assault locations in this area with one-third (33.1%) taking place inside licensed premises. Moreover, a disproportionate number of assaults occurred in just a few specific licensed premises. In excess of 20 per cent of all the assaults recorded in the Kings Cross Zone occurred in just three specific licensed premises, a bar/restaurant, a bar/nightclub and a bar/strip club.¹⁷ Other commercial premises (mainly eat-in and take-away food outlets, cafes and newsagents) accounted for a further 8.0 per cent of the assaults while 5.9 per cent occurred in residential dwellings. The residential dwellings in which assaults were reported were mainly located in the side streets to the east and west of Darlinghurst Rd.

3.4.3 Spatial patterns of robbery

There are 117 incidents of robbery displayed in the Kings Cross Zone detailed in Maps 2c and 2d. An average of one robbery occurred every three days in this zone between July 1995 and June 1996. There were only about one-third as many robberies as assaults. Robberies were concentrated along the main street, namely Darlinghurst Rd, with other small clusters visible at the intersection of Kings Cross Rd and McElhone St and around Springfield Mall. The robbery incidents did not appear to be associated with licensed premises and were curiously absent in and around Kings Cross railway station.

3.5 HOT SPOT ZONE 2 - OXFORD ST, DARLINGHURST

The second Hot Spot Zone is a 0.7 km² area centred around Oxford St in Darlinghurst. The zone extends from the south eastern corner of Hyde Park down to the northern ends of Bourke and Flinders streets.

3.5.1 Location description

Oxford St is a major traffic artery between the eastern suburbs and the city of Sydney and has a high traffic flow, often becoming quite congested during peak hours. Oxford St supports a huge variety of commercial operations including clothing boutiques, cafes, fast food outlets, bookshops, music shops, cinemas, hotels, and even a Saturday market. Residential apartments are located above many of the stores along Oxford St. In addition to this, Oxford St is one of the most popular (and trendy) locations for night-time entertainment in Sydney with numerous pubs and nightclubs attracting patrons from all over Sydney. On busy nights, queues of people can be seen congregating outside the more well known clubs. Oxford St is unique in that it is also the centre of social activities for the gay community in Sydney. Oxford street is bounded by the densely populated terraced suburbs of Paddington, Darlinghurst and Surry Hills.

3.5.2 Spatial patterns of assault

Maps 3a and 3b display 376 assaults recorded by police as having occurred in the Darlinghurst Zone between July 1995 and June 1996. This amounts to, on average, one assault per day within the zone over the 12-month period. In Map 3a, a number of offence clusters are visible. The first major cluster on Oxford St is situated between Brisbane St and Pelican St. A second cluster is visible near the intersection of Oxford St and Burton St and further south-east there is a third cluster near Riley St. Each of these clusters correspond with the locations of major nightclubs. The two clusters near the intersection of Oxford and Crown streets occurred around a fast food outlet and a major pedestrian intersection. Still further south-east at Taylor Square (at the intersection of Bourke and Oxford streets) is the largest cluster, with most offences there occurring in and around a group of licensed premises. To the west of Taylor Square is another offence cluster near Crown and Campbell Streets and to the south of Taylor Square assault clusters are visible on Bourke St and on Flinders St.

3.5.3 Spatial patterns of robbery

Compared with the frequency of assaults, robberies occurred far less frequently than assault in the Oxford St Zone with 124 being recorded between July 1995 and June 1996 (compared with 376 assaults). Hence, about one robbery occurred every three days in the zone over the 12-month period. Maps 3c and 3d show that unlike assaults, robberies were not as concentrated along Oxford St, but rather appeared to be dispersed in the back streets of Darlinghurst and Surry Hills. Only one specific location emerged as exhibiting a relatively high density of robberies, namely Green Park, which is enclosed between Victoria St and Burton St - opposite 'The Wall'¹⁸ and adjacent to St Vincent's public hospital.

3.6 HOT SPOT ZONE 3 - GEORGE ST, SYDNEY CBD

3.6.1 Location description

Hot Spot Zone 3 covers a 0.9 km² area which includes a substantial proportion of Sydney's CBD. Other than the Hyde Park area, the zone is heavily developed with a multitude of high rise buildings. The majority of the buildings are office blocks, many of which accommodate shopping centres on the lower levels. Other buildings are leased exclusively as shopping centres. The CBD also accommodates a number of major hotels and residential apartment blocks. A large variety of retail stores line most streets in the CBD, with George St and Pitt St probably exhibiting the greatest concentration of retail shops.

The CBD also contains numerous entertainment venues including restaurants, pubs, clubs, theatres and cinemas. The busiest section of the entertainment strip on George St is between Park St and Liverpool St which features many cinemas, video-game parlours pool halls, fast food outlets and other entertainment venues, drawing large crowds of young people at night.

Town Hall Railway Station is the busiest station in the CityRail network with almost one million passenger interchanges taking place there each week. The station is situated below Town Hall to the east of George St between Druiett St and Bathurst St. The city is mainly populated by office workers and shoppers during the day and by those seeking entertainment at night.

3.6.2 Spatial patterns of assault

Maps 4a and 4b show the spatial and temporal patterns for assaults in the Sydney CBD Zone. There are 384 assault incidents mapped in this zone - all occurred between July 1995 and June 1996. Hence, on average, one assault per day occurred within the zone over the 12-month period.

The most notable characteristic of Map 4a is the array of offence clusters along George St between Market St at the northern end and Liverpool St to the south. Another visible assault cluster is situated at Town Hall Railway Station. There is also a discernible trail of assaults down Pitt St with the cluster north of Park St representing a nightclub, and the next cluster, further north, showing the location of the Hilton Hotel. A number of assaults were dispersed around Hyde Park.

3.6.3 Spatial patterns of robbery

Map 4c shows 209 robberies recorded by police in the Sydney CBD Zone between July 1995 and June 1996. In a similar fashion to the distribution of assaults, robberies tended to be located along the main streets, especially George St. Two clusters of robberies are visible at the lower end of George St between Bathurst and Liverpool streets. This area corresponds with the popular city cinema complexes and video-game venues. About one-quarter of the robberies in this zone were dispersed around Hyde Park; these occurred mainly at night.

3.7 HOT SPOT ZONE 4 - GEORGE ST, WYNYARD / THE ROCKS

3.7.1 Location description

This Hot Spot Zone covers the southern part of The Rocks, Circular Quay and most of Wynyard. It covers an area of approximately 1.3 km². Most of the area is also considered to be part of Sydney's CBD and is heavily populated with office workers and shoppers during the day. There are two railway stations in the area, Wynyard and Circular Quay. Wynyard has over half a million passenger interchanges per week and Circular Quay about 160,000. The main street running through the zone is George St which features a number of well-patronised pubs and licensed restaurants. Night life is especially busy on Thursday, Friday and Saturday nights in the area. The Rocks is a popular tourist destination featuring historic buildings and museums. Circular Quay is also a popular tourist destination with many restaurants along the Quay side. The Quay serves as point of departure for harbour ferries and other cruises.

3.7.2 Spatial patterns of assault

Maps 5a and 5b show an enlarged representation of The Rocks Hot Spot Zone, an area of 1.3 km². The maps show the spatial distribution of 227 assaults recorded as occurring between July 1995 and June 1996, fewer than one per day on average. Most of the offences were located along George St which is the main street running through the area. Three major offence clusters were located in or around licensed premises identified as being at the intersection of Argyle and George St, at the intersection of George St and Crane Pl and near Macquarie Place Park off Loftus St. There was also a scattering of assaults along the paved walkway extending across the Circular Quay wharves and a cluster of assaults at Wynyard Railway Station situated beneath Wynyard Park on York St.

Assaults inside licensed premises accounted for 19.8 per cent of assaults in this zone. A disproportionate number of assaults emanated from a few licensed premises. In fact 23.3 per cent of all assaults in the area occurred inside or just outside three well known licensed venues.¹⁹ Other business and commercial premises accounted for 13.2 per cent of the assaults, and transport premises (mainly Wynyard Railway Station) accounted for a further 6.2 per cent of assaults.

3.7.3 Spatial patterns of robbery

Compared with the frequency of assaults, robberies occurred far less frequently than assaults in the Wynyard / The Rocks Zone, with 48 being recorded between July 1995 and June 1996 (about one robbery per week on average). While there are an insufficient number of points in Maps 5c and 5d to establish spatial patterns which reveal definite offence clusters, it appears that robberies within this zone commonly occurred most frequently at the southern end of George St and in the vicinity of Circular Quay.

3.8 HOT SPOT ZONE 5 - REDFERN STATION, REDFERN

The last Hot Spot Zone to be examined in detail is the 0.7 km² zone centred around Redfern Railway Station in Redfern. The zone includes the lower part of Chippendale and Broadway north of Cleveland St and extends south beyond Redfern Railway Station.

3.8.1 Location description

Redfern is an inner city residential suburb. Its northern border is delineated by Cleveland St, a major traffic artery running east-west from Sydney University to South Dowling St. Redfern has a large railway station located between Little Eveleigh St, Lawson St and Gibbons St. There are approximately 300,000 passenger interchanges at Redfern Railway Station each week. The station is a busy interchange station with 12 platforms, two underground and ten outdoors. Regent St to the east of the Station contains a large number of retail businesses.

Redfern has a diverse ethnic population. The suburb is especially well known for its small but concentrated Aboriginal community who reside in and around what is called 'The Block' (a series of semi-detached houses managed by the Aboriginal Housing Company). The Block is bounded by Vine St, Eveleigh St, Caroline St and Eveleigh Lane. Although there are a few pubs in the area Redfern is not considered to be a major entertainment location like other Hot Spots investigated so far. Recent reports indicate, however, that there is a high level of heroin usage in the vicinity of The Block.²⁰ Redfern has historically been a very poor area with an 'unsavoury' reputation but is in the process of being gentrified.

3.8.2 Spatial patterns of assault

Maps 6a and 6b show 180 assaults recorded by police as occurring in the Redfern Zone between July 1995 and June 1996. This represents an average of one assault every two days. Two major offence clusters are present, one inside Redfern Railway Station premises and another just outside the station at the corner of Lawson and Eveleigh St.

3.8.3 Spatial patterns of robbery

All of the Hot Spot Zones investigated thus far exhibited greater numbers of assaults than robberies. The Redfern Zone, however, had a greater number of robberies than assaults, with 195 robberies recorded between July 1995 and June 1996, on average, at least one reported robbery every two days. Map 6c and 6d show that robberies were not concentrated inside the railway station premises (like assaults) but formed a cluster at the Lawson St entrance to the station (corner Eveleigh St). Another robbery cluster was present at the corner of Caroline and Eveleigh Streets and a third near the intersection of Lawson and Abercrombie Streets and in Ivy Lane near Edward St.

3.9 CHARACTERISTICS OF ASSAULT AND ROBBERY OFFENCES

The information presented in this section is drawn from police data.

3.9.1 Offence severity and weapon usage

Assaults

Police incident data relating to assaults are categorised according to their level of severity. The number and percentage of incidents within each assault sub-category was determined for each Hot Spot Zone and is shown in Table 4. The data relates to all assault incidents recorded by police in Sydney District between July 1995 and June 1996.

Table 4: Number and percentage of assaults by offence sub-category, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

<i>Hot Spot Zones</i>	<i>Offence sub-category</i>							
	<i>Common assault</i>		<i>Assault causing actual bodily harm</i>		<i>Assault causing grievous bodily harm</i>		<i>Total (all assaults)</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
1 - Kings Cross	283	66.6	114	26.8	28	6.6	425	100.0
2 - Darlinghurst	268	71.3	93	24.7	15	4.0	376	100.0
3 - Sydney CBD	255	66.6	88	23.0	40	10.4	383	100.0
4 - Wynyard/The Rocks	159	70.0	60	26.4	8	3.5	227	100.0
5 - Redfern	123	68.3	52	28.9	5	2.8	180	100.0
Sydney District	2,137	69.8	742	24.2	181	5.9	3,060	100.0

Table 4 shows that common assaults were by far the most prevalent category of assaults, making up 69.8 per cent of all those recorded in Sydney District over the 12-month period. About a quarter of the assaults (24.2%) were classified as assaults occasioning actual bodily harm and a small percentage (5.9%) as causing grievous bodily harm. Further analysis of these assault incidents showed that common assaults rarely involved weapons: they were present in just 7.7 per cent of common assault cases. Weapon usage in assaults causing actual bodily harm was also fairly unusual (12.8% involved weapons). However almost half of the assaults resulting in grievous bodily harm did involve some type of weapon (47.5%).

Of the 346 assaults (11.3%) which did involve weapons, the most commonly used weapons were knives (used in 43.5 per cent of the assaults involving weapons). Blunt objects (including bricks, iron bars and tools) were present in 26.6 per cent, glasses or bottles were recorded in 22.9 per cent, firearms in 4.8 per cent and syringes in 2.2 per cent of assaults involving weapons.

The proportion of common assaults in each Hot Spot Zone did not vary greatly and ranged from 66.6 per cent in the Kings Cross and Sydney CBD Zones to 71.3 per cent in the Darlinghurst Zone. The relative variation between Hot Spot Zones for assaults causing actual bodily harm was not great although the Redfern Hot Spot Zone showed the highest proportion (28.9%). For assault causing grievous bodily harm, however, the Sydney CBD Zone showed a particularly high percentage (10.4%) almost double the percentage for Sydney District as a whole (5.9%).

Robberies

Police incident data relating to robberies can also be categorised according to the level of severity. The number and percentage of incidents within each robbery sub-category were determined and are listed in Table 5. The data relates to all robbery incidents recorded by police in Sydney District between July 1995 and June 1996.

Table 5: Number and percentage of robberies by offence sub-category, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

	<i>Offence sub-category</i>							
	<i>Robbery without a weapon</i>		<i>Robbery with a weapon, not a firearm</i>		<i>Robbery with a firearm</i>		<i>Total (all robberies)</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Hot Spot Zones								
1 - Kings Cross	99	84.6	16	13.7	2	1.7	117	100.0
2 - Darlinghurst	91	73.4	30	24.2	3	2.4	124	100.0
3 - Sydney CBD	157	75.1	41	19.6	11	5.3	209	100.0
4 - Wynyard/The Rocks	34	70.8	14	29.2	0	0.0	48	100.0
5 - Redfern	148	75.9	42	21.5	5	2.6	195	100.0
Sydney District	1,069	75.7	293	20.8	50	3.5	1,412	100.0

Table 5 shows that over three-quarters of the robbery incidents (75.7%) did not involve any weapons. A weapon other than a firearm was present in a further 20.8 per cent of robberies. Of these robberies involving weapons other than a firearm, knives accounted for 74.3 per cent of weapons used, syringes accounted for 12.0 per cent, blunt objects (such iron bars or tools) accounted for 9.9 per cent and glasses or bottles accounted for 3.8 per cent. There were 50 robberies involving firearms recorded in Sydney District between July 1995 and June 1996 (3.5%).

Among the Hot Spot Zones there was some variation in the proportion of robberies in each robbery sub-category. For example in the Kings Cross Zone, 84.6 per cent of the robberies did not involve a weapon and 13.7 per cent involved a weapon other than a firearm. In the Wynyard / The Rocks Zone on the other hand, weapons other than firearms were more prevalent being used in 29.2 per cent of robberies. While there were no recorded robberies involving firearms in the Wynyard / The Rocks Zone, 11 were recorded in the Sydney CBD Zone (5.3%).

3.9.2 Location of offences - premise types

Assaults

The nature of the location of each assault and robbery incident occurring in Sydney District between July 1995 and June 1996 was determined. The percentage of assault incidents that occurred in each premise type in each Hot Spot Zone is presented in Table 6.

Table 6 shows that almost half of the 3,060 assaults in the Sydney District took place outdoors (48.1%). The majority of these occurred on the street or on footpaths, although 76 assaults were reported as having occurred in parks. Licensed premises were the location for 16.8 per cent of assaults, these premises being mainly hotels, pubs and nightclubs and, to a lesser extent, licensed restaurants and adult entertainment venues. It is apparent from the crime maps though, that many of the assaults that occurred outdoors, took place within close proximity of licensed premises. Residential premises, predominantly unit blocks and occasionally terrace houses were found to be the location of a further 14.0 per cent of assaults. Business and commercial premises accounted for

Table 6: Percentage of assaults by premise type, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

<i>Hot Spot Zone</i>	<i>Premise type</i>						<i>Number (N)</i>
	<i>Outdoors (on the street) (%)</i>	<i>Licensed premises (%)</i>	<i>Commercial premises (%)</i>	<i>Transport premises (%)</i>	<i>Residential premises (%)</i>	<i>Other premises (%)</i>	
1 - Kings Cross	47.5	33.2	8.0	2.6	5.9	2.8	425
2 - Darlinghurst	48.9	25.3	8.8	0.3	10.4	6.4	376
3 - Sydney CBD	54.9	12.5	15.1	8.6	1.0	7.8	384
4 - Wynyard/The Rocks	53.3	19.8	13.2	6.2	1.8	5.7	227
5 - Redfern	57.8	4.4	7.2	14.4	8.9	7.2	180
Sydney District	48.1	16.8	9.3	4.7	14.0	7.2	3,060

9.3 per cent of assaults and these were mainly cafes, restaurants and retail shops. Of the 4.7 per cent of assaults that occurred in transport premises, the majority were at railway stations.

The location of assault by premise type varied across the Hot Spot Zones. About half of the assaults in each Zone occurred outdoors. One-third (33.2%) of the assaults in the Kings Cross Zone were in licensed premises, as were 25.3 per cent in the Darlinghurst Zone and 19.8 per cent in the Wynyard / The Rocks Zone. Commercial premises were targeted more in the Sydney CBD and Wynyard / The Rocks Zones (15.1% and 13.2% respectively), while transport premises accounted for a relatively large proportion of assaults in the Redfern Zone (14.4%). The highest proportion of assaults recorded as occurring in residential premises was in the Darlinghurst Zone (10.4%).

Robberies

The percentage of robbery incidents that occurred in each premise type in each Hot Spot Zone is shown in Table 7. The table shows that three-quarters (75.3%) of the 1,412 robberies that occurred in Sydney District took place outdoors, mainly on the street or footpath (although 92 robberies were recorded as having occurred in parks). Business and commercial premises were the next most common location for robberies (10.9%) with businesses such as clothing shops, banks, newsagents, jewellery stores, and general stores being targeted most frequently.

Table 7: Percentage of robberies by premise type, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

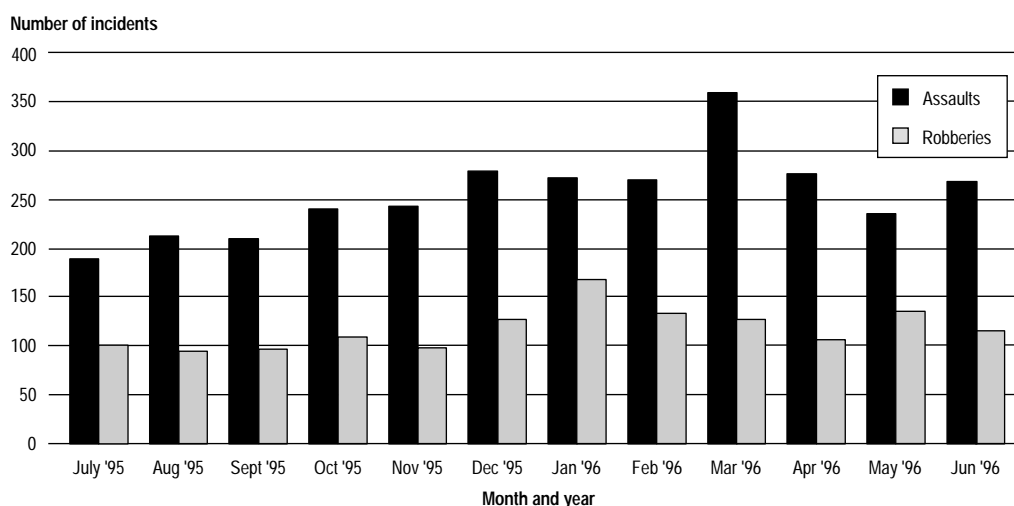
<i>Hot Spot Zone</i>	<i>Premise type</i>						<i>Number (N)</i>
	<i>Outdoors (on the street) (%)</i>	<i>Licensed premises (%)</i>	<i>Commercial premises (%)</i>	<i>Transport premises (%)</i>	<i>Residential premises (%)</i>	<i>Other premises (%)</i>	
1 - Kings Cross	73.5	13.6	10.3	0.0	1.7	0.9	117
2 - Darlinghurst	80.6	0.8	7.3	0.0	7.3	4.0	124
3 - Sydney CBD	74.6	1.4	16.7	1.9	0.5	4.9	209
4 - Wynyard/The Rocks	56.3	2.1	31.3	6.3	2.1	2.1	48
5 - Redfern	88.7	2.6	2.1	3.6	1.0	2.1	195
Sydney District	75.3	2.8	10.9	3.0	3.3	4.7	1,412

While the vast majority of robberies took place outdoors in each Hot Spot Zone, the Wynyard / The Rocks Zone presented an anomaly with only 56.3 per cent occurring outdoors. In this zone, a much larger proportion occurred in commercial and transport premises than elsewhere (31.3% and 6.3% respectively). The highest proportion of outdoor offences was in the Redfern Zone (88.7%). As with assaults, the Kings Cross Zone showed the greatest proportion of robberies in licensed premises (13.6%), while the Darlinghurst Zone showed the greatest proportion of robberies in residential premises (7.3%).

3.9.3 Seasonal variations

The number of assaults and robberies that occurred in Sydney District each month between July 1995 and June 1996 is shown in Figure 4.

Figure 4: Monthly variations in assault and robbery incidents, Recorded criminal incidents, Sydney District, July 1995 to June 1996



The above figure shows that the rate of assault was generally lower in the winter months - May to September - and higher in the summer months - December to April.

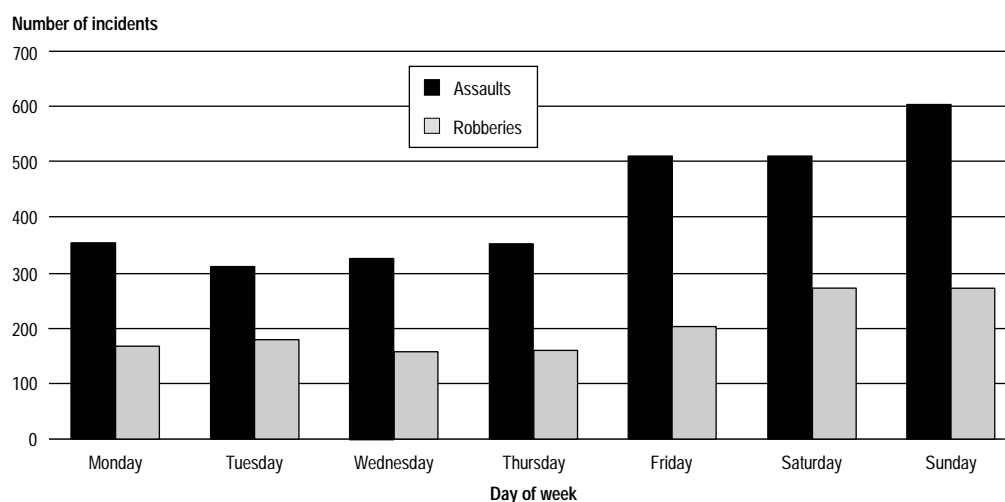
For robberies, Figure 4 also shows higher levels in the summer months, notably December through to March. The month of May also had a relatively high robbery rate.

Given that about half of the assaults and three-quarters of the robberies in the Sydney District occurred on the street, a possible explanation for a higher rate during the warmer months is that the weather is more conducive to outdoor activities and that people out for entertainment tend to walk around the streets more and perhaps linger in the city for longer and till later. Furthermore, given that a considerable number of assaults occur in and around licensed premises, warmer weather may encourage drinking and intoxicated persons are more likely to interact both in and around licensed premises. The month exhibiting the greatest number of assaults was March. This high rate may be associated with annual events that take place in Sydney during this month, namely the Gay and Lesbian Mardi Gras and Royal Easter Show. Summer months also represent the cricket season where thousands of spectators gather at the Sydney Cricket Ground (situated just outside Sydney District) each weekend. Many of these sports patrons move through the city on their way to and on their way home from events.

3.9.4 Variations by day of week

Figure 5 shows the distribution by day of week for assault and robbery incidents in the Sydney District between July 1995 and June 1996.

Figure 5: Distribution of assaults and robberies by day of week, Recorded criminal incidents, Sydney District, July 1995 to June 1996,



Assaults

In general, the rate of assault was lower on weekdays than on weekends. According to the police data, the total proportion of assaults occurring on weekends (Saturdays and Sundays) made up 47.7 per cent of the total. The number of assaults recorded from Monday through to Thursday was, on average, equivalent to 6.5 assaults per day for each of these weekdays. The rate of offending began to rise towards the end of the week with an average of 9.8 assaults occurring each Friday. The highest rates of assault occurred on Saturdays and Sundays, 11.6 assaults per day, which was almost twice as high as the weekday (Monday to Thursday) rates. The average rate of assaults per day was 8.4.

Table 8 shows the percentage of assaults that occurred on each day of the week in each Hot Spot Zone. The Kings Cross, Darlinghurst and Sydney CBD Zones experienced the highest proportion of assaults on the weekends (Saturdays and Sundays) while the Wynyard / The Rocks Zone experienced the highest proportions on Fridays and Saturdays and the Redfern Zone on Fridays. In explaining why Sunday should exhibit the highest numbers of assaults overall it would be reasonable to assume that many of the offences occurring on Sunday result from Saturday night activities spilling over into the early hours of Sunday morning. Similarly, many offences occurring on Saturday would be those sequential to Friday night activities. This daily temporal pattern becomes evident when we examine time of day distributions later in Figure 6 and Table 10.

Table 8: Percentage of assaults by day of week, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

Hot Spot Zone	Day of week							(N)
	Monday (%)	Tuesday (%)	Wednesday (%)	Thursday (%)	Friday (%)	Saturday (%)	Sunday (%)	
1 - Kings Cross	10.1	8.7	9.2	11.8	12.5	21.6	26.1	425
2 - Darlinghurst	13.3	6.9	8.8	12.0	13.8	19.9	25.3	376
3 - Sydney CBD	9.1	8.6	12.5	10.7	16.9	23.2	19.0	384
4 - Wynyard / The Rocks	12.3	7.0	7.5	12.3	19.4	22.5	18.9	227
5 - Redfern	12.8	11.7	11.1	9.4	22.8	17.8	14.4	180
Sydney District	11.5	10.1	10.7	11.6	16.6	19.6	19.8	3,060

Robberies

The distribution of robberies by day of week is shown in Figure 5. Mondays to Thursdays averaged 3.2 robberies per day while Fridays experienced 209 robberies over the 12-month period, equivalent to 3.9 per day. The highest rate of robbery, which occurred on Saturdays and Sundays, was equivalent to 5.2 robberies per day. The average rate of robbery per day of 3.9, was less than half the average rate of assault (8.4 per day).

Table 9 shows the percentage of robberies that occurred on each day of the week in each Hot Spot Zone. All Hot Spot Zones experienced the highest proportion of assaults on the weekends (Saturdays and Sundays) with the exception of the Wynyard / The Rocks Zone which had a low rate on Sundays and an unusually high rate on Mondays.

Table 9: Percentage of robberies by day of week, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

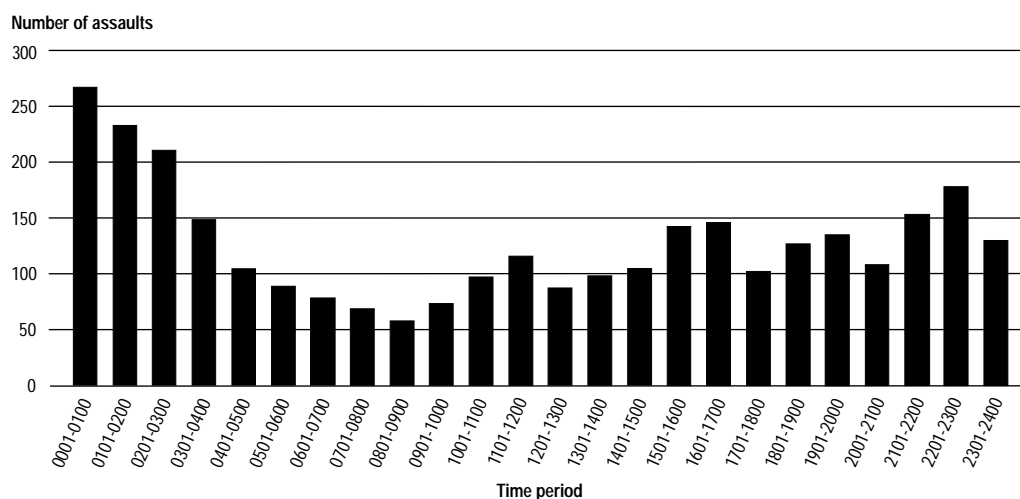
Hot Spot Zone	Day of week							(N)
	Monday (%)	Tuesday (%)	Wednesday (%)	Thursday (%)	Friday (%)	Saturday (%)	Sunday (%)	
1 - Kings Cross	11.1	9.4	10.3	10.3	17.1	21.4	20.5	117
2 - Darlinghurst	8.1	15.3	10.5	12.1	12.1	21.0	21.0	124
3 - Sydney CBD	5.3	13.9	11.0	12.4	14.8	21.1	21.5	209
4 - Wynyard / The Rocks	18.8	8.3	16.7	8.3	16.7	22.9	8.3	48
5 - Redfern	11.3	16.4	9.2	8.7	10.8	22.1	21.5	195
Sydney District	11.1	12.8	11.1	11.3	14.4	19.3	19.3	1,412

3.9.5 Variations by time of day

Assaults

The distribution of assaults that occurred in Sydney District by time of day are shown in Figure 6 using hourly intervals. The figure shows considerable variation in offending across time. Starting at the morning period, 0801 - 0900, assaults were at their lowest level. By midday the number had doubled but then declined briefly and began to rise again after 1501 after which time it remained fairly high till 1700. The next notable increases

Figure 6: Distribution of assaults by time of day, Recorded criminal incidents, Sydney District, July 1995 to June 1996



were at 2100 and again after 2200. Following a slight lull, the number of assaults peaked between 0000 and 0100 and although dropping off gradually, remained relatively high till around 0400. Overall, a greater proportion of assaults occurred after dark between 6 pm and 6 am (61.3%) than during daylight hours, 6 am to 6 pm (38.7%).

Table 10: Percentage of assaults by time of day, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

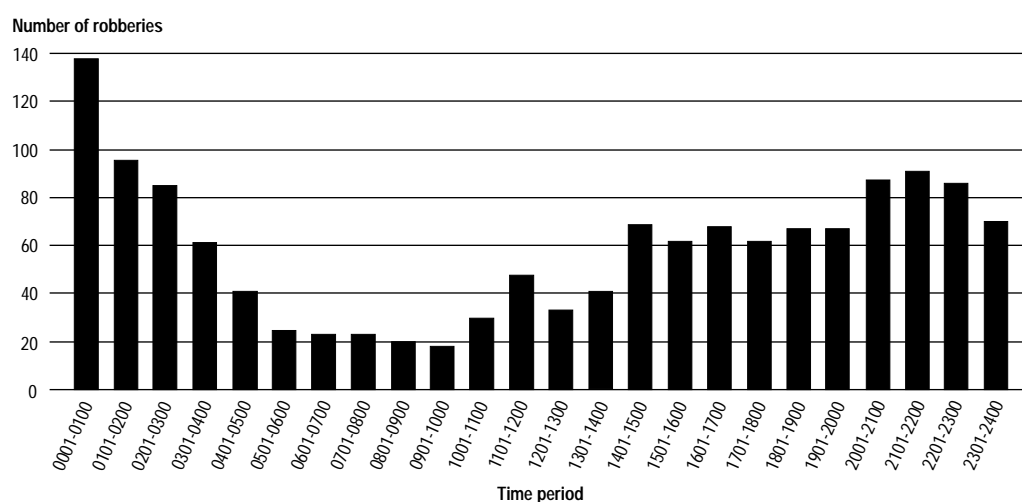
Hot Spot Zone	Time period								Number (N)
	0001-0300 (%)	0301-0600 (%)	0601-0900 (%)	0901-1200 (%)	1201-1500 (%)	1501-1800 (%)	1801-2100 (%)	2101-2400 (%)	
1 - Kings Cross	33.6	25.2	10.6	4.2	3.8	5.6	7.3	9.6	425
2 - Darlinghurst	30.3	16.5	9.0	6.6	7.7	7.7	10.4	11.7	376
3 - Sydney CBD	24.7	10.2	3.6	10.9	12.5	12.5	11.2	14.3	384
4 - Wynyard / The Rocks	29.1	8.8	4.4	8.8	5.3	18.5	8.8	16.3	227
5 - Redfern	8.3	6.1	9.4	14.4	15.0	13.9	18.3	14.4	180
Sydney District	23.2	11.2	6.7	9.4	9.5	12.7	12.1	15.1	3,060

Table 10 shows the percentage of assaults in each Hot Spot Zone by time of day using three-hour time intervals. In all Hot Spot Zones except for the Redfern Zone, the proportion of assaults peaked dramatically in the 0001 to 0300 period. This is not surprising given that the Kings Cross, Darlinghurst, Sydney CBD and the Wynyard / The Rocks Zones are all entertainment districts. That is to say, the assault peaks in each of the entertainment zones roughly correspond with the closing times of licensed premises. The Redfern Zone which is centred around a railway station had a more even distribution with stable but relatively high rates from 0900 through to 2400. The rate of assault was highest from 1800 to 2100 which corresponds with the peak commuting period. After 6 pm one would expect many commuters to be passing through the station entry and egress points, which are known offence cluster locations.

Robberies

The distribution of robberies by time of day are shown in Figure 7 using hourly intervals.

Figure 7: Distribution of robberies by time of day, Recorded criminal incidents, Sydney District, July 1995 to June 1996



The offending pattern for robbery is highly correlated with that of assaults ($r = 0.89$). Starting in the morning period from 0501 to 1000 the number of robberies was very low. However, the number had doubled by 1200 but then declined again shortly afterwards. The number of robberies rose between 1400 and 1500 and remained at that level till 2000 where it increased by almost one-third, remaining fairly high before dropping between 2301 and 2400. The peak periods for robberies were between 0001 and 0100 and 0101 and 0200. The number of robberies then decreased in the early hours of the morning. Overall, offences that occurred after dark (between 6 pm and 6 am) accounted for 64.8 per cent of the robberies while daylight robberies accounted for the remaining 35.2 per cent.

Table 11: Percentage of robberies by time of day, Recorded criminal incidents, Hot Spot Zones and Sydney District, July 1995 to June 1996

Hot Spot Zone	Time period								Number (N)
	0001-0300 (%)	0301-0600 (%)	0601-0900 (%)	0901-1200 (%)	1201-1500 (%)	1501-1800 (%)	1801-2100 (%)	2101-2400 (%)	
1 - Kings Cross	38.5	21.4	8.5	4.3	9.4	5.1	2.6	10.3	117
2 - Darlinghurst	27.4	12.9	7.3	5.6	4.0	8.1	9.7	25.0	124
3 - Sydney CBD	21.5	11.0	1.4	5.3	11.0	16.7	15.8	17.2	209
4 - Wynyard / The Rocks	22.9	0.0	0.0	4.2	18.8	27.1	14.6	12.5	48
5 - Redfern	12.3	8.2	9.2	5.1	8.7	15.4	17.4	23.7	195
Sydney District	22.6	9.1	4.7	6.8	10.1	13.6	15.7	17.5	1,412

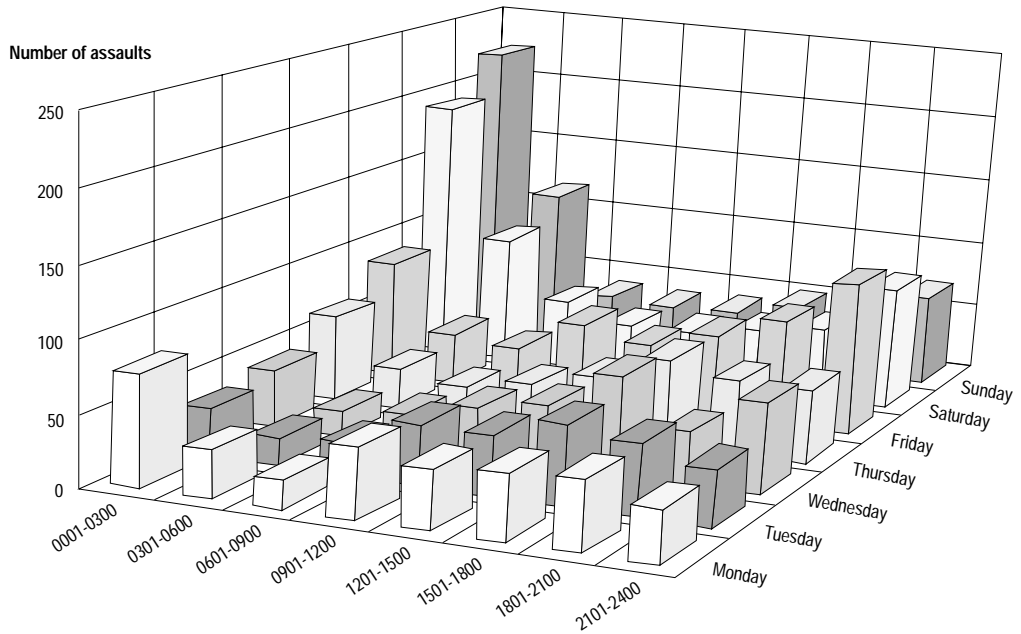
Table 11 shows the percentage of robberies in each Hot Spot Zone by time of day using three-hour time intervals. In the Kings Cross Zone, 38.5 per cent of robberies occurred between 0001 and 0300 and a further 21.4 per cent between 0301 and 0600. In the Darlinghurst Zone the robbery rate was high between 2101 and 2400 and also peaked between 0001 and 0300 (27.4%). A similar pattern was present in the Sydney CBD Zone although the rate began to rise much earlier in the day and the peak was not as pronounced. The Wynyard / The Rocks Zone showed peaks in robberies corresponding with the peaks in assault, that is, between 1501 and 1800 and again between 0001 and 0300. The Redfern Zone was the only zone that showed a drop in the rate of robbery after 0001 with the highest proportion of robberies occurring between 2101 and 2400.

3.9.6 Variations by day of week and time of day

The general temporal pattern of assaults and robberies can be obtained by merging the day of week and time of day distributions from Tables 8 to 11 into three-dimensional graphs. Accordingly, Figures 8 and 9, respectively, show the frequency of assaults and robberies in Sydney District by day of week and time of day simultaneously.

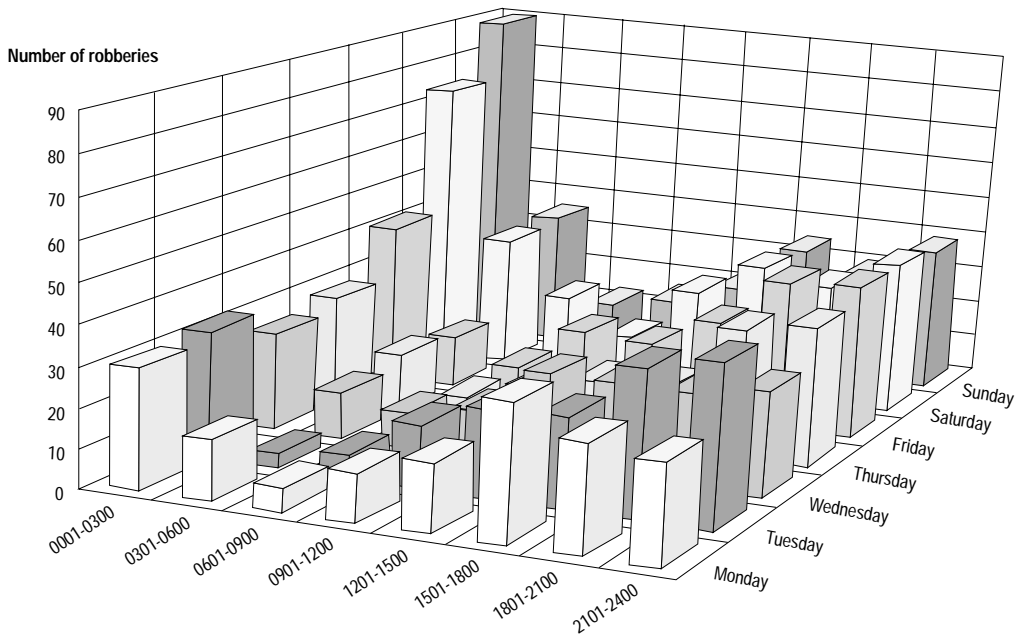
The temporal distribution for assaults in Figure 8 shows that each day exhibits a unique offending pattern according to the time of day. While weekdays such as Tuesdays and Wednesdays showed their highest frequency during the daytime hours between 0601 and 1800, peak periods occurred later in the day towards the end of the week. On Fridays, for instance, the number of offences built up gradually from 0601 onwards, peaking between 2101 and 2400. A continuation of this increase is reflected in the high number of assaults in the 0001 to 0300 periods early on Saturday mornings. Following this high rate after 2400, assault remained fairly high till 0600. The build up during the daylight period on Saturdays was similar, increasing steadily from midday till it eventually peaked in the early hours of Sunday mornings between 0001 and 0300. Assaults remained at a relatively high level on Sunday mornings until 0600. To illustrate the scale of the assault peaks, the period from midnight to 0300 on Saturdays and Sundays (6 hours) accounted for only 3.6 per cent of weekly time but accounted for 13.4 per cent of recorded assault incidents. The rate of assault per hour during these times (0.65 assaults per hour) was almost twice the average rate (0.35 assaults per hour).

Figure 8: Distribution of assaults by day of week and time of day, Sydney District, July 1995 to June 1996



The temporal distribution for robberies in Figure 9 also shows considerable variation. In general, each day exhibited a gradual increase in the frequency of robberies from 6 am onwards with the number being highest between 0900 and 2400 (Tuesdays and Thursdays) or between 2400 and 0300 (Mondays, Wednesdays, Fridays, Saturdays and Sundays). The magnitude of the peaks were far greater on Saturdays and Sundays. Weekend days also showed substantially higher rates of robbery in the early hours of the

Figure 9: Distribution of robberies by day of week and time of day, Sydney District, July 1995 to June 1996



morning between 0300 and 0600. The peak offending times, Saturday and Sunday mornings from midnight to 0300 (6 hours) accounted for 3.6 per cent of week time and 11.5 per cent of robbery offences. The rate of robbery offending per hour (0.52 robberies per hour) during these periods was more than three times higher than the average rate (0.16 robberies per hour).

The temporal pattern for robberies by time of day and day of week was similar to that of assaults. Both offences generally showed very low levels of offending in the daylight hours of the morning but then increased as the day progressed. Both offences exhibited peaks on Friday, Saturday, and Sunday between 0001 and 0300.

3.10 FACTORS EMERGING FROM VICTIM ACCOUNTS OF ASSAULTS AND ROBBERIES

In this section, the information provided by victims through the Victim Survey is considered in detail. In addition to the demographic information acquired, particular attention has been paid to the narrative section of the Victim Survey where the victims provided a brief description of the incident. The survey responses of 142 assault victims and 117 robbery victims were examined in this analysis.

Not all victim reports were useful, as around 15 per cent of the narratives contained little relevant information. Nevertheless, the victims' self-reports that were comprehensively completed revealed a number of themes relating to the way in which assaults and robberies occurred.

The emerging themes can generally be distinguished by their contributory factors. These factors are associated with either: the victims and their activities, the offenders and their activities, the physical and social environment of the crime location itself, or some combination of each of the above. Many of the incidents reviewed show evidence of interplay between a number of these factors, none of which can be deemed, with any degree of certainty, to be the most significant. In most cases, though, the victim accounts highlight new information not previously apparent in the spatial and statistical analyses presented earlier and therefore elucidate and provide context to the events. In the analysis that follows, victim scenarios are drawn upon to illustrate typical sets of circumstances.

3.10.1 Assaults arising from personal conflict

In the majority of assault cases, the brief description of events provided by the victims revealed some evidence of conflict between victims and those who assaulted them. However, when asked to select from a list of possible motivations for the attack (multiple responses were permitted), only 23.2 per cent of assault victims cited a 'personal dispute' as a reason for the attack, while 33.1 per cent indicated 'no reason'. 'Homophobia' was indicated as a motivation for the assault by 13.4 per cent of victims and 'racism' by 10.6 per cent. Furthermore, in responding to the question dealing specifically with the circumstances prior to the attack, less than one-third of victims (28.6%) reported having been engaged in some kind of argument or dispute with the offender before the incident - 68.4 per cent of assault victims reported the assault as being 'unprovoked'.

Where evidence of interpersonal conflict was evident from the victim accounts of assault, various common circumstances were frequently cited. A major theme was alcohol involvement, and the locations identified most frequently in alcohol-related assaults were licensed premises. In fact, over 42 per cent of survey respondents reported being assaulted just outside or inside hotels, pubs, clubs or nightclubs. The contexts in which these offences arose generally fell into one of three categories: disputes between patrons, disputes between bar staff and patrons, and disputes between door staff and patrons.

The most common category of alcohol-related confrontation in licensed premises involved social interactions between patrons. Some incidents involved disputes between intoxicated males who were previously acquainted with one another, but the vast majority

involved confrontations between strangers. Almost all involved alcohol and it was common for both the victims and the offenders to have consumed some quantity of alcohol. The environment inside the licensed premises was generally described by the victims as 'crowded' or with 'a few people around'. Some conflicts arose around pool tables, and on occasion nearby objects were used as weapons; three incidents involved beer glasses. Most incidents were between males, usually in their mid-twenties, and the source of the conflict often involved a dispute over a female. For example, on a Saturday night around 11:45 pm, a 22-year old male was injured in an assault in a pub. After consuming a few alcoholic drinks, the victim had apparently talked and danced with a girl who turned out to be someone else's girlfriend. Her boyfriend, who was highly intoxicated, head-butted him and then punched him twice in the face. The pub was crowded at the time.

More often than not, in situations involving bar staff and patrons, the bar staff became the victims in the incident. In most of these cases there was evidence of moderate to high levels of alcohol consumption by the offending patrons. These confrontations generally began with the refusal of bar staff to serve intoxicated persons, or with security being called to control rowdy or offensive behaviour inside the establishment. Five incidents of this nature were reported through the Victim Survey. It should be noted though, that as employees are more likely than intoxicated persons to report assaults to police (for reasons relating to workers' compensation), these types of incidents may be over-represented in the Victim Survey sample.

The third type of alcohol related confrontation that emerged at licensed premises was between bouncers and patrons. Five incidents were reported involving assaults by bouncers; most occurred in the early hours of the morning, between 3 am and 4 am. The victims appeared to have come from 'out of town' as none resided in or near the area in which they were assaulted. While bouncers and doormen have the right to restrict access to the premises at which they are employed, on occasion this right appeared to be enforced over-enthusiastically, especially when highly intoxicated patrons turned up at the door demanding entry. In these cases alcohol consumption also played a major role; all of the victims had consumed at least four drinks. The tendency of inebriated patrons to express themselves verbally in an unrestrained manner may have been a contributory factor leading to their victimisation. It should be noted though, that none of these victims was seriously injured.

There were occasions, however, where overzealous and unreasonable force was used by bouncers in reaction to rude behaviour by potential patrons. Victim reports supported claims that doormen and spruikers in Kings Cross are actually responsible for provoking and initiating assaults in some circumstances. For example, this type of situation is well illustrated by an account given by a 25-year old male who was assaulted at 1:45 am on a Sunday morning in a strip club. He had consumed six alcoholic drinks elsewhere earlier on that night and according to the victim: 'The doorman at the club asked me and my friend in for nothing. He said "Come inside, it's free". When inside the hallway the doorman said it would cost us \$25 each. I swore at him and walked out. As I reached the front doorway he punched me in the nose and left eye.'

Besides the alcohol-related incidents that escalated into violence in and around licensed premises, personal conflicts leading to assaults emerged in numerous other settings. There were at least two reported cases of assaults which involved motorists who become engaged in conflict whilst driving. Incidents were reported where minor episodes like negligent driving (without collision) resulted in threats and abuse being exchanged between motorists. In one case, a man became exceedingly aggressive and the incident became violent when he exited his car and proceeded to assault the other driver when the vehicles stopped.

Street prostitutes, through the nature of their work, appear to be a group highly susceptible to assault victimisation. In some cases intoxicated clients become violent when disputes arose over monies charged and services rendered. While only two

prostitutes (both from the Kings Cross area) responded to the Victim Survey, it is likely that because of their reluctance to deal with police, such victims were not well represented in the Victim Survey.

There were also 14 respondents to the Victim Survey who reported being assaulted in residential premises as a result of a personal dispute. Some reports were from respondents who were victims of domestic assaults and were involved in disputes with their partners or ex-partners. Others told of circumstances where arguments between relatives or friends had led to violent behaviour, and in a few cases arguments between neighbours over noise complaints eventuated in violence, some resulting in serious injuries. Almost all of these incidents involved a single offender and one victim who were alone at the time. One-third of these victims also reported that they had consumed some alcohol prior to the incident.

3.10.2 Assaults based on racism and homophobia

In indicating what they believed to be the motivation for the assault, 15 survey respondents (10.6%) indicated racism. However, in an examination of the other details provided by the victims, there was seldom any evidence of racial vilification or verbal racial abuse prior to the event. With few exceptions, it was unclear that racism was in fact the main motivation for these assaults as opposed to some conflict between the parties involved. In only a few cases was there any mention of the ethnicity of the offending party and only three of the victims who cited racism indicated that they were from ethnic backgrounds themselves, the rest reported being Caucasian.

About 13 per cent of assault victims indicated that they thought the motivation for the assault was homophobia. In these cases there was far more evidence that the motivation was in fact homophobic-related, as there was often homophobic verbal abuse directed towards the victims. These assaults all occurred outdoors or on the street and occurred mainly in Darlinghurst. The majority of the victims were male residents of the Darlinghurst or Kings Cross areas. The assaults occurred mostly at night or in the early hours of the morning and slightly more than half of the victims were alone when attacked. Both single and multiple attackers were involved, almost exclusively male.

A typical account of a homophobic-related assault was given by a male aged 33 who was assaulted outside a nightclub near the northern end of Oxford St at 8 am on a Saturday morning: 'I was walking along the main road with two friends and was being followed by one male who was yelling insults "Faggot, poofter etc." (The offender was apparently very intoxicated.) I crossed the road to lose him but he followed me then two more males joined him, grabbed me from behind and bashed me'.

A number of studies have attempted to gauge the extent of homophobic-related violence in NSW (Lesbian and Gay Anti Violence Project 1994, NSW Police Service 1995). The literature shows that compared with the assault rate for the general population, gays and lesbians experience significantly higher levels of victimisation (NSW Police Service & Price Waterhouse 1995). Other reports (see, for example, Anti-Discrimination Board of NSW 1994) cite evidence that assaults against gays and lesbians: are largely committed by males between the ages of 16 and 25 years, usually involve more than one attacker, are often accompanied by anti-gay/lesbian verbal abuse and occur mainly in public places on weekends, particularly along Oxford St in Darlinghurst and King St in Newtown.

3.10.3 Unprovoked assaults

In describing the circumstances leading to the attack, 68.4 per cent of assault victims indicated that they thought the incident was 'unprovoked'. One-third of the respondents (33.1%) indicated that they thought there was 'no reason' for the attack when selecting from the list of possible offender motivations.

These findings provide a basis for believing a fairly large proportion of assaults occur without provocation or interpersonal conflict. However, this result should be treated with caution because the fact that victims perceive 'no reason' for the attack, or consider

the attack to be unprovoked, could reflect that fact that these victims simply thought the attacks were unjustified given the circumstances and, even where there was some prior hostility between the parties, a physical assault was deemed to be an extreme response. Furthermore, we cannot necessarily infer from this finding that the victims were assaulted in the absence of some particular motivation on the part of the offender. In some attacks, the motivation for the allegedly 'unprovoked' attack may not have been apparent to the victim. From the evidence received, it appears as though at least four of the assaults that occurred on the street/pavement were attempted robberies where the victims were attacked but the offenders fled without taking anything.

Nonetheless, in a small number of assault reports received from victims, there was no evidence of interpersonal conflict nor any prior contact between the parties involved. Accounts of seemingly unprovoked attacks ranged from drunken people 'king-hitting' passers-by in crowded locations to verbal and physical abuse being directed towards bewildered victims by offenders often described as being 'alcoholic' or 'mentally ill'.

Unfortunately, the diverse nature of unprovoked assaults makes the task of isolating potential victimisation risk factors extremely difficult. It does appear, however, that these attacks were invariably perpetrated by total strangers and that the victims were unaccompanied in half of the incidents. Of the respondents who were assaulted on the street and indicated that the attacks were 'unprovoked', 40 per cent had consumed some alcohol - on average 3.6 drinks.

3.10.4 Robberies under pretext and demand money with menaces

In the Victim Survey, robbery victims were asked whether they were approached under some pretext prior to being robbed. Around 20 per cent of respondents said this was the case. The most common pretext involved the offender stopping the victim to request something. On four occasions, robbery victims were asked for directions, on three occasions they were asked for a cigarette, on two occasions they were asked for the time, on two occasions they were asked for money and on three occasions they were asked for the time and for money. Other examples of the pretexts cited were '[the offender] bought a soft drink first to scan the store before the robbery', '[the offender] made out as though he was making a claim over the counter', '[the offender] asked to hire an apartment for the night after a long drive down from Queensland'.

Being asked for change by strangers in the city is not an uncommon event but generally this activity is not associated with violence. However, in the reports received in the Victim Survey, demands for money escalated into robberies involving the threat or use of physical violence. Almost all of these incidents took place outdoors, at night and often occurred in poorly-lit places. Most of the victims were men and were either alone, or accompanied by one other person. Half of them were residents of the area in which they were robbed. The offenders in these types of events were usually young men 18 to 22 years of age. In one-third of the cases the offenders produced weapons, knives in each case, and half of the offenders were described by victims as possibly being junkies.

An example of the pretext approach in a 'demand for money' situation was provided by a 53-year old male victim. He recalls: 'I was coming home from work and crossed into Hyde Park at St James Railway Station. I walked past the Archibald fountain and then headed towards the traffic lights by St Mary's Cathedral. I noticed three youths lurking by the work shed in the park. They approached me and said "Do you have the time? Can you spare a dollar?" Then they said "Give me your wallet". One then struck me from the side and when I fell to the ground he asked me for my wallet. I gave him the contents of my wallet (\$70) while pleading for them not to hit me more.' The victim described the youths as 19 to 20 years old and possibly junkies.

3.10.5 Robberies involving groups of offenders

About 20 per cent of the victims in the Victim Survey reported being robbed by groups of offenders. This number includes a few cases where victims were approached under pretext, but most involved an immediate threatening confrontation by an average of five offenders.

In these types of robberies the offenders were almost exclusively male and were usually young, on average 16 to 19 years of age. Weapons (usually knives) were produced in only a small number of cases. The victims, who were also mostly male but older, around 30 years of age on average, were usually physically assaulted in some way during the robbery. The settings in which these incidents took place were described mainly as poorly-lit areas and incidents were reported as occurring mainly at night, Saturday nights being the most frequently cited.

In an example of this type of incident, a 29-year old Asian man and his wife were attacked on the way to their car after a night out in the city. It was around midnight on a Thursday night. The victim reported: 'We were walking down Sussex St towards our car in Hay St (Sydney CBD) when six or seven guys appeared from nowhere and grabbed my wife. They demanded my wallet and watch and asked what kind of car I drove. They took my wallet and watch, and kicked and punched me.'

3.10.6 Robberies involving bag snatches

A third theme to emerge from a review of the victim scenarios was robberies involving bag snatches. These made up about 12 per cent of the incidents reported by victims. Bag snatches involve an element of surprise in that there is no prior request or confrontation but rather a sudden grab for the victim's property. In almost all the cases reported in the Victim Survey there was also an associated assault (hence their classification as robberies). However, where injuries were sustained by the victims, the injuries were usually minor bruises or abrasions. None of the reported bag snatchings involved any weapons. The average age of a bag snatch victim was 44 and in all but one of these cases the victim was female. The offenders appeared to work alone in most cases, but sometimes the victims became aware of a second offender. The offenders themselves were mostly young males, on average 17 to 20 years of age, a number of whom were described as possible 'junkies'. Interestingly, all of the bag snatching incidents reported occurred on weekdays.

The Redfern area is one notoriously famous for bag snatching. Some incidents involved youths crossing the road at a pedestrian crossing to stop vehicles, and then reaching through the window to grab a bag from the seat. This crossing, adjacent to the Redfern Railway Station, was removed in February 1997 to avoid this problem and a narrow pedestrian island has been installed.

3.10.7 Commercial robberies

The Victim Survey was not initially designed to collect information specifically on commercial robberies as its focus was on personal robberies. However, where individuals were personally threatened in a commercial robbery which they reported to the police, they were invited to participate. Police data show that robberies of commercial premises made up over 10 per cent of all robberies in Sydney District between July 1995 and June 1996. A similar percentage was reflected in the Victim Survey (13%).

Previous analysis of robberies in NSW by the NSW Bureau of Crime Statistics found that, contrary to the commonly held view, commercial premises were not generally robbed by professional gangs who carefully planned their robberies or adhered to a strict division of labour (NSW Bureau of Crime Statistics and Research 1987). The majority of commercial robberies involved only one offender (62%) while another 30 per cent involved two offenders and 8 per cent three or more offenders. Commercial robberies were more likely to involve weapons than personal robberies, although many of the weapons produced were found to be fake. Ultimately though, in robberies where weapons were present they were rarely used to cause physical harm as their primary function was simply to enable the offender to assert authority (NSW Bureau of Crime Statistics and Research 1987).

These findings were supported by the Victim Survey responses in the present study where it was found the offenders operated mainly alone or in pairs. Almost all commercial robberies involved some type of weapon, such as a gun, knife, syringe or stick. Shops were the most common targets. In most cases, the offender(s) entered the premises and shouted instructions to the victims such as 'don't move', 'open the till' and 'hand over the money'.

Many of the victims thought that the offender could have been a junkie. For example, on a Saturday evening around 7 pm a pharmacy in Bourke St was robbed. According to the sales assistant the offender was armed with a meat cleaver. The victim, a female aged 26, recalls the offender saying 'Put your hands behind your head and open the till. Where are the S8²¹ drugs kept and the rest of the money.' Money and pharmaceutical goods were taken and the sales assistant was not hurt.

3.10.8 Robberies in private residences

In about five per cent of the robbery reports received through the Victims Survey, a residential premises was identified as the offence location. In half of these cases, the robbers were already inside the victim's home, probably committing a break and enter, when they were interrupted by the resident arriving home. They then threatened or assaulted the victim whilst making an escape. In other situations, the offenders pushed their way into the residences after knocking on the door, and demanded money and threatened the victim. Victims of residential robberies tended to be older (over 50) indicating that they may be purposefully targeted because of their vulnerability. Weapons were seldom produced in these cases.

3.10.9 Other factors leading to robbery victimisation

While it has been possible to identify some common themes in the offender's modus operandi from an examination of the robbery reports provided by victims in the Victim Survey, many incidents exhibited unique characteristics or what could be considered to be rare circumstances. It is therefore difficult to make generalisations about these types of incidents. However, in many of the incidents, it is possible that victims were perceived to have something of value to the offenders, or appeared to be vulnerable. For example, some victims were likely to have been perceived by offenders to have been in possession of relatively large amounts of cash, as was the case in the robberies of a taxi driver, pizza delivery man, and a businessman on his way to do the banking. Other victims were robbed while or shortly after withdrawing money from Automatic Teller Machines. In two of these cases, the offenders forced the victims to relinquish their Personal Identification Number and withdrew the money themselves. In three cases victims were robbed on their way to or just after visiting the Sydney Harbour Casino in Pyrmont.

There was also evidence from the scenarios that at least one-quarter of the robbery victims had consumed alcohol prior to becoming victimised; some had consumed quite large quantities. This may have placed them in danger as they were probably perceived to be vulnerable and their capacity to react may have been reduced. The following example illustrates some of the above-mentioned risk factors.

One respondent to the Victim Survey was a male aged 31. He sustained serious injuries in a robbery which occurred at 3 am on a Monday morning. During the evening he had consumed at least 12 alcoholic drinks. 'I had won \$9,000 at the casino in Darling Harbour. I was drunk. I was escorted to a taxi. That's all I remember. I awoke in an alley opposite the Novatel Darling Harbour with bruising to my head. My wallet, phone and \$9,000 was stolen'.

4. DISCUSSION

The notion that a criminal event results from the confluence of a set of circumstances was introduced in the introduction of this report. According to routine activity theory, a crime is thought to occur when a motivated offender and a desirable target come together in place and time in the absence of inhibitors or 'controllers'. Further, as suggested in crime pattern theory, the interaction between people and their physical and/or social environment influences criminality. In integrating these theories into an analysis of assaults and robberies in Sydney District, this study had the following objectives: to determine the location of assault and robbery Hot Spots in Sydney District, to identify the characteristics of persons who are particularly at risk of assault and robbery, and to identify the factors which place these persons at risk.

The results show that not all people in the population have an equal risk of becoming victims of assault. Assault victims were typically young, Caucasian males aged 21 to 25, out for entertainment late at night on weekends. Assault victims often consumed some alcohol before the incident and became involved in conflict in or near licensed premises. The assault offenders were also typically young males aged 21 to 25, who were unknown to their victims and generally acted alone having consumed some alcohol. In this study, other groups of people such as bar staff, sex workers and gay men²² were identified as frequent targets of assault, while bouncers were identified as perpetrators of assault in a number of cases.

Robbery victims were also typically young Caucasian males aged 21 to 25 who tended to be alone when attacked and were perceived to be in possession of money. They generally sustained minor injuries. Robbery offenders too were typically male and young (aged 16 to 20) and were generally younger than their victims. They were just as likely to operate in pairs as alone and were almost always unknown to their victims.

Assaults and robberies were also not evenly distributed across time. Data analysed in this report showed that assaults occur most frequently on weekends, late at night and in the early hours of the morning. The timing of these offences reflects the temporal patterns of night-time leisure activities, particularly activities involving public drinking. In the inner city, assaults generally increased after dark and reached a peak in the early hours of the morning, corresponding with the closing time of many licensed establishments.

It is also clear from the evidence presented in this report that assaults and robberies are not uniformly distributed spatially. Hot Spots of assault in Sydney District generally tend to be associated with main streets, particularly busy commercial streets featuring entertainment and licensed premises.²³ Amongst the numerous people attracted to busy places and venues are some who may be motivated offenders (Brantingham & Brantingham 1981), hence it is possible that places that attract large numbers of people will experience higher levels of victimisation. Other research has shown that the more people that pass a place, the greater the chances that the place will become a scene of a crime (Frisbie et al. 1977). However, while some places might exhibit high rates of assault, it does not necessarily follow that these places present high victimisation risk, as the number of crime opportunities (potential targets) needs to be taken into account in the denominator. For instance, while the number of assaults recorded by police in Sydney District in one year exceeds 3,000, more than half a million people visit the area administered by the Sydney City Council each day. The risk to each individual visiting the city is therefore extremely low. The same principle applies on a micro-level to busy Hot Spot locations.

Robbery shows a distinct spatial and temporal pattern which is similar to that of assault but not quite as predictable by time or place. The crime maps show that while Hot Spot Zones for assault generally correspond with Hot Spot Zones for robbery, the latter offences tended to be scattered slightly further away from the main streets (see, for example, the Darlinghurst Zone).

The routine activities of offenders are central to the understanding of robbery events, as offenders seem to exhibit rational and deliberate target-searching behaviour (Eck & Weisburd 1995). Offenders either actively seek out attractive targets with low guardianship or they chance upon such opportunities while engaged in routine non-criminal activities. Hence, in places that present many opportunities for crime, disproportionately high levels of crime are likely in the presence of motivated offenders. The incidence of robbery is also influenced, to some extent, by the characteristics of the targets themselves. That is, people who have things of value, who appear vulnerable and are in places that emit cues to the offender that the risk of apprehension is low, are more likely than others to be victimised. Intoxicated people, for instance, might be targeted because they are often unable to respond quickly to an attack and are prone to have vague recollections of events, therefore being less likely to positively identify their assailants.

From the Victim Survey, various offender techniques (*modus operandi*) were identified for robberies. These included demanding money with menaces, bag snatching and involvement by groups of offenders. Locations which are characterised by high levels of drug dealing and usage (such as Kings Cross and Redfern) tend to draw both motivated offenders and susceptible targets. It appears that the income need generated by drug use through the high price of illicit drugs induces the need for immediate cash, making personal robbery a lucrative option. Importantly, other robbery offenders (opportunists) appear not to have been motivated by such desperate needs but, rather, seem to have taken advantage of opportunities while participating in non-criminal routine activities.

4.1 IMPLICATIONS FOR CRIME PREVENTION

4.1.1 Intelligence-based policing

Often, as Buerger, Cohn and Petrosino (1995, p. 238) point out, 'the theoretical questions that motivate researchers are of little practical value to those engaged in the day-to-day response to criminal and disorderly behaviour, particularly street cops'. Research on the causes of involvement in crime seldom produces insights useful to patrol officers who must intervene to solve individual events. Research based on routine activity and rational choice theories, however, has shown that predatory offenders are sensitive to the perceived risk of apprehension. Police, as principal guardians of 'place' arguably provide one of the main sources of perceived risk to offenders. However, as Sherman points out: 'Whether additional police prevent crimes may depend on how well they are focused on specific objectives, tasks, places, times and people. Most of all, it may depend upon putting police where serious crime is concentrated, at the times it is most likely to occur' (Sherman 1997, p.1). In evaluating crime prevention programs in the United States Sherman (1997) found that amongst the few crime prevention programs that actually work are those that increase police patrols at high crime Hot Spots. The crime prevention effects of extra uniformed police at high crime areas at high crime times are evident in a number of studies evaluated by the US National Institute of Justice (Sherman 1997).

In Minneapolis, for example, having identified extreme concentrations in spatial and temporal distributions in crime, the police department implemented a strategy of directing patrols to Hot Spots during 'hot times'. Police patrols from low crime areas were reduced, and allocated to randomly selected high crime areas. Both 'extra-patrol' and 'no-extra-patrol' Hot Spots were then observed during randomly selected periods by researchers from the National Institute of Justice. The results showed a strong relationship between the length of each police patrol presence and the amount of time a Hot Spot was free from crime after the police left the scene (Koper's analysis cited in Sherman 1997); the longer the police stayed there, the longer the length of time until the first crime after they left. Comparing the extra-patrol and no-extra-patrol groups, Sherman and Weisburd (1995) found that half as much crime was experienced in Hot Spots which had twice as much police presence.

In this context it is worth noting the potential value of crime mapping technology to the policing of public places. As McEwan and Taxman (1995) note, crime maps are easy and inexpensive to produce and easy to understand. Previously daunting quantities of data can now quickly be transformed into useful and meaningful information of great value to law enforcement. Maps provide a far superior format of conceptualising crime patterns than reviewing written reports or statistical tables. Crime maps allow analysts to view patterns over extensive areas (for example at State level) but also provide the ability to 'zoom-in' on specific 'places' of interest as small as a street corner. Crime maps can display the incidence of different types of offences (for example assaults and robberies), or offences at different types of places (for example outdoors or in licensed premises). Police officers who are new to a patrol need spend only a short time viewing these maps to gain a good understanding of the spatial and temporal distribution of crimes on their beat. This enables them to plan effective patrol deployment arrangements even without the benefit of substantial personal experience of the topography of crime in a district.

It should be emphasised, however, that whilst this report demonstrates the value of a one-off project aimed at identifying Hot Spots over a set period, Hot Spots may shift and risk patterns may vary according to changes in the physical and social environment in and around a location. Crime Hot Spots may also disappear altogether or re-emerge at other locations as a result of the effects of a particular enforcement strategy. From a policing point of view it would be too impractical, expensive and time-consuming to base routine patrol and surveillance strategies on research projects such as the present one. To make effective use of crime mapping technology it must be continuous and it must be embedded in the routine performance management processes of individual districts and patrols.

The NSW Police Service has already acquired the capacity to perform spatial crime mapping analyses using the latest technology, but its effectiveness has been constrained by three factors. Firstly, if the Bureau's experience in mapping incidents in the Sydney District is any guide, the quality of the crime address data recorded by the NSW Police needs to be improved. Although the present research was able through painstaking work to identify the location of 95 per cent of the recorded incidents on the COPS system, on first inspection of the data only about 40 per cent of the addresses for assault and robbery offences could be found. Secondly, past attempts to exploit mapping technology for policing purposes have sometimes failed to appreciate the need to analyse data over a period of months rather than just days or weeks. Thirdly, senior police managers cannot easily examine the temporal and spatial pattern of offending in any chosen locality in NSW and ask local commanders to formulate and identify the strategies which are being put in place to deal with those patterns

The benefits of crime-mapping of course, can only be fully exploited if police are able to capitalise on the information it provides. There are two dimensions to this problem. The first is the usual one of ensuring that individual police districts are provided with resources commensurate with the size of the crime problems they face. This is a particularly important issue in the Sydney District because a large number of inner city based police are regularly called upon to oversee major events that take place in the city of Sydney such as marches, rallies, protests, and nearby major sporting events. These events can place a significant drain on the capacity of police in the city of Sydney to ensure a high level of visibility at peak times and places. The second dimension of the resource problem is the need for maximal use within a police patrol or district of the resources allocated to it. This cannot be achieved unless police managers are given the flexibility to set rosters in a way which ensures maximum police visibility at times and places of peak risk.

4.1.2 Licensing enforcement

In identifying the factors impacting on the susceptibility of a 'place' to crime, the social environment in and around that place is of major significance. In this study, licensed premises were identified as places exhibiting high frequencies of assaults. Licensed premises represent a type of semi-public place where strangers come together in a confined space and the consumption of alcohol by almost all patrons is customary (Block & Block 1995). Tomsen (1997), in an analysis of the culture of drinking violence in and around licensed premises, argues that while there is a high degree of correlation between assaults and the presence of alcohol, a direct causal relationship between alcohol and violence is difficult to prove. Nonetheless, he maintains that a complex and powerful link exists between numerous incidents of public violence and the social process of collective drinking.

The alcohol-violence nexus is a difficult one to unravel, as violence is usually characterised by subtle interactions of several variables. Homel and Clark (1995), for example, identified a number of social and environmental factors within licensed premises which influence violent behaviour. Foremost amongst these were groups of male strangers, low levels of comfort, high levels of boredom, high levels of drunkenness and aggressive and unreasonable bouncers and door staff. In fact, a major predictor of physical violence was staff intervention with intoxicated patrons, particularly refusal of service. Interestingly, they found that drunkenness *per se* only leads to violence when other risk factors such as aggressive bouncers or frustration due to lack of food are also present. Homel and Clark's analysis looks beyond the effects of alcohol (the substance) on violence, and focuses on the total environment of drinking. This approach provides evidence to argue that the responsibility of ensuring that a safe environment is offered to customers should be borne by 'place managers' who can regulate the environment within the establishment.

From a crime prevention perspective, a number of measures have been shown to reduce the level of violence in licensed premises: responsible serving of alcohol, absence of discount binge drinking promotions, and stringent enforcement of liquor licensing laws. These measures should continue to be advocated and more stringently enforced in NSW.

Police can effectively promote the enforcement of liquor licensing laws by increasing their presence in licensed premises. Jeffs and Saunders (1983) demonstrated a reduction in crime as a result of proactive police intervention in licensed premises. In their study, police officers visibly entered the premises, spoke to bar staff, and checked for under-age and intoxicated persons in a conspicuous and thorough manner. The effectiveness of the proactive policing strategy used by Jeffs and Saunders was presumably due to the police enforcement reducing the number of persons under the influence of alcohol, which in turn reduced the number of crimes committed by persons under the influence of alcohol (Burns & Coumarelos 1993).

There is strong evidence that there are indeed many breaches by licensees of the codes of conduct set out in the liquor licensing legislation in NSW. Police operations targeting the serving of alcohol to intoxicated persons in licensed premises have been highly successful. For example, in 1994 'Operation Chamberlain' (NSW) - which focused on enforcing laws restricting licensees from permitting intoxicated person into their premises and from selling alcohol to intoxicated persons - detected 121 intoxication offences at 38 premises. The effect of a targeted approach is evident as only two licensed premises had been reported for the same offence in the previous year (Police Service Weekly 1995). Police initiatives to utilise intelligence based strategies (such as Hot Spot mapping) to target licensed premises known to have alcohol-related violence problems could help to reinforce the message to patrons and licensees alike about the dangers of high levels of intoxication. Strategies encouraging licensees to comply with regulations and other obligations attached to licensing legislation should be more effectively implemented.

4.1.3 Place management

In criminological literature, people who take care of places are 'place managers' (Sherman 1995). Accordingly, says Sherman (p.45), 'Management can influence who the patrons are and how they behave. Good management ... can control disorder and reduce the risks of crime on or about the premises.' Effective place management enables motivated offenders and potential targets to come together in place and time without incident or, alternately, simply keeps the offenders away from those places. In practical terms, Eck (1995) suggests that the people who manage places, such as shop attendants, life guards, park rangers, airline attendants, school teachers, police, bouncers etc, can control crime by regulating the behaviour of those who use the places. For example lifeguards, in addition to preventing drownings, can enforce appropriate behaviour on the beach.

The domain of police as place managers is, to a degree, limited to public places. Many criminal incidents, however, occur at private venues where keeping the place free of crime becomes (or should become) the responsibility of the owners or employees of that facility. Eck and Weisburd (1995) cite a number of studies which show evidence that offenders avoid places with people trained to watch the environment and to intervene if criminal behaviour is suspected. Hannan (1982) showed that banks with security guards experienced fewer robberies. Landes (1978) showed a decrease in aeroplane hijacking following the introduction of armed personnel on aeroplanes. Homel and Clarke (1995) found that violence was more prevalent in licensed premises that had poor management practices. In general offenders tend to avoid places with signs of high guardianship or effective place management.

The concept of place management is not, however limited to small discrete locations. 'Place' can refer to a geographical area of any scope.²⁴ Another model of place management that is increasingly being trialed by Governments is a model that focuses on defined geographic areas and attempts to overcome the age-old problems with confused responsibilities between other agencies and different levels of Government.

The Kings Cross Place Management Project, which commenced in March 1997, is one example of this approach. It is a joint initiative between the NSW Premier's Department and South Sydney Council with responsibility for addressing the major issues that affect people who live, work, or visit Kings Cross.

The project is focused on four interrelated areas: (i) improving amenity and prosperity in the area (which includes developing responsible tourism strategies and improving the physical environment); (ii) enhancing the safety and security of the environment (which includes introducing a range of crime prevention initiatives), (iii) providing a more effective mix of services and facilities (which includes human services programs and improved transport and traffic management), (iv) creating a more responsible and harmonious community (which includes providing opportunities for stakeholders in the area to come together and resolve problem issues as a community). It is hoped that the model will prove effective in other complex locations in NSW.

4.1.4 Reducing incentives for crime

Evidence from the Victim Survey suggests that heroin addicts account for a large proportion of robbery offenders in Sydney District. Property crimes such as robbery, burglary, shoplifting and other forms of theft provide a substantial part of the cash income used for drug purchases (Johnson et al. 1985). In New York City, Johnson et al. estimated that 100 daily heroin users committed an average of 20,900 property offences in a year, inflicting substantial costs to the community. Given the estimated 59,000 dependent users in Australia (Hall 1996), the potential flow-on effects on property crime are probably very significant. Hall (1996) in his assessment of Methadone Maintenance Treatment (MMT) as a crime control strategy, promotes the expansion of MMT as a way of reducing heroin-related crime.²⁵ This view is supported by other overseas research which shows striking reductions in arrests following admission of heroin addicts to MMT (Ball & Ross

1991). There is consistent evidence that MMT reduces heroin use and crime while heroin-dependent persons receive adequate doses of methadone (Hall 1996). Combined with suitable rehabilitative services, MMT can be expected to have a significant impact on reducing robbery and other property crimes.

4.1.5 Crime prevention through environmental design

Given the variation in crime amongst different entertainment areas (for example, Darling Harbour has high patronage and low levels of crime, while Kings Cross has high levels of both), it is evident that there are important differences in the environmental and social structure of places that account for the differences in crime levels, even when controlling for the number of opportunities (Engstad 1975). We therefore need to consider which aspects of physical control may be present or absent in various places. For example, we should carefully consider which environmental features present at particular locations might attract or deter offending. While a detailed analysis of site features is beyond the scope of this research, a study of this nature could be extremely useful in devising crime prevention strategies based on principles of crime prevention through environmental design.

As Eck and Weisburd (1995, p.13) explain: 'The strategy of defensible space entails organising the physical environment to enhance people's sense of territoriality, make it possible for them to observe their environment, and communicate to would be offenders that they are being watched.' Improved site features can make places more difficult for offenders to avoid apprehension and hence become less desirable locations for crime. Site features such as improved street lighting in poorly lit areas, wider footpaths in entertainment precincts with high pedestrian flows, and closed circuit television at Hot Spot locations could render these places less desirable to offenders and increase public perceptions of personal safety.

4.1.6 Street-wise behaviour

Finally, in terms of robbery prevention, there may be merit in promoting public education in relation to street-wise behaviour. We have learned from the experiences of assault and robbery victims in the survey that there are particular types of situations which place persons at risk of robbery, for example, being stopped in dark secluded places late at night by people approaching under pretext of asking for change etc., displaying obvious signs of carrying cash in areas where there is a high level of drug usage, walking alone at high risk times after consuming alcohol, letting strangers into one's residence, or working in a shop without security devices that can be activated when threatened. There may be some opportunities to avert potential robberies through common sense approaches to street safety.

NOTES

- 1 To be eligible, the respondent would have been a victim of an assault or robbery within Sydney District during the survey period.
- 2 Prior to commencing the survey at the hospital, approval was obtained from the St Vincent's Hospital Research Ethics Committee.
- 3 In the months preceding the survey there had been reports of Japanese tourists being robbed in the Kings Cross and The Rocks areas. Further, a large proportion of people frequenting the Chinatown (Haymarket) area speak Mandarin and may not have been able to respond to the English version of the questionnaire.
- 4 Furthermore, but unrelated to the questionnaire design, was that piloting the questionnaires gave the researcher an opportunity to learn about the operations of a police station, specifically the procedures involved in handling an assault or robbery report. This information proved useful when setting up the methodology for the main study.
- 5 The reasons that some victims may not have been approached are that: some victims were deemed by police as being too intoxicated or uncooperative to participate, some victims reported the offence to general support officers or other officers who may not have been aware of the existence of the survey, some police may have been too busy to approach the victim, and victims who made their report to police on the beat were less likely to be offered a survey form than those who reported at a police station.
- 6 In total 3,541 victims were recorded by police for the 3,060 assault incidents. The ages of 3,133 of the assault victims were known.
- 7 In total 1,718 victims were recorded by police for the 1,412 robbery incidents. The ages of 1,470 of the robbery victims were known.
- 8 3,541 assault victims were recorded by police for the 3,060 assault incidents.
- 9 1,718 robbery victims were recorded by police for the 1,412 robbery incidents.
- 10 Based on a sample of 142 assault victims.
- 11 Based on a sample of 117 robbery victims.
- 12 Of the 1,412 robberies recorded by police there were 1,718 victims. Injury data were present for 1,596 of these victims.
- 13 Offender details were recorded by police in 1,853 of the 3,060 assault incidents. For some incidents more than one offender was recorded; hence the offender age distribution is based on 1,995 offenders.
- 14 Offender details were recorded by police in 361 of the 1,412 robbery incidents. For some incidents more than one offender was recorded; hence the offender age distribution is based on 609 offenders.
- 15 Offender details were recorded by police in 1,853 of the 3,060 assault incidents. For some incidents more than one offender was recorded; hence the offender gender distribution is based on 2,136 offenders.
- 16 Note that the percentages relating to victim and offender gender in Table 2 do not match the percentages cited previously in this report as they are drawn from a modified data set. In the modified data set, each victim record (where the gender of the victim was known) was matched to an offender record (where the gender of the offender was known). Furthermore, as offenders may be responsible for the assault or robbery of more than one victim in a particular incident, and as the table is victim based, some offenders are counted more than once.
- 17 Bourbon and Beefsteak - 45 assaults, Striperama - 25 assaults, Kings Cross Hotel - 18 assaults.
- 18 'The Wall' has notoriously been known as a site for male prostitution. The footpath area adjacent to 'The Wall' near Green Park is a popular hang-out for street kids and other homeless people. Needle exchange and benevolent organisations' vans regularly service this area.
- 19 Orient Hotel - 24 assaults, Paragon Hotel - 15 assaults, Jackson's on George - 14 assaults.

- 20 See for example Bearup, G. 1997, 'Tackling the Block, Police Move in on Redfern's Drugs and Crime', *Sydney Morning Herald*, 18 Jan., p. 33.
- 21 Prescription drugs.
- 22 In order to reduce the incidence of homophobia and homophobic-related violence in the community, a number of initiatives are currently being implemented in NSW. Education programs are being conducted in schools to reduce anti-gay sentiment, gay and lesbian liaison officers have been appointed by the NSW Police Service and publicity in gay media provides information on how to go about reporting homophobic-related violence and encourages and promotes such reporting. While these broad initiatives are extremely important, a useful strategy to tackle the immediate problem in the affected areas may be to increase police presence through beat policing.
- 23 The phenomenon of busy main streets with licensed premises emerging as assault Hot Spots appears to be common to most major cities in Australia. For example well known Hot Spots are Darlinghurst Rd in Sydney, King St in Melbourne, Brunswick St in Brisbane, Hindley St in Adelaide and the Fremantle Mall in Perth (Murphy 1994).
- 24 Place refers to a geographical area described by certain salient features such as location, boundaries, function, control and size (McEwan & Taxman 1995).
- 25 Methadone Maintenance Treatment involves the substitution of orally ingested methadone for heroin which is typically injected. '[Methadone] blocks the euphoric effects of injected heroin, thereby providing an opportunity for the individual to improve his or her social functioning' (Hall 1996, p. 3).

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APPENDIX 1 - VICTIM SURVEY QUESTIONNAIRE

SYDNEY DISTRICT SURVEY

VICTIMS OF ASSAULT AND VICTIMS OF ROBBERY

NSW BUREAU OF CRIME STATISTICS AND RESEARCH

Level 8, St James Centre, 111 Elizabeth Street, Sydney NSW 2000

PURPOSE OF THIS STUDY

The purpose of this study is to collect information about assaults and robberies that have occurred in Sydney in order to:

- i) determine the location of crime 'hotspots' in Inner Sydney;
- ii) identify the characteristics of persons who are particularly at risk of assault and robbery; and,
- iii) identify the factors which place these persons at risk.

CONFIDENTIALITY

Your completed questionnaire remains confidential to the NSW Bureau of Crime Statistics and Research. Your name will not appear in any report.

WHO SHOULD COMPLETE THIS SURVEY?

You are invited to participate in this survey if you have been a victim of an assault or a robbery. (see definitions of assault and robbery below)

Assault - an incident involving the use of physical force against you by another person where there was no attempt to steal anything from you.

POLICE OFFICERS NOTE:Eligible victims include victims of Domestic violence assaults, Grievous bodily harm, Malicious wounding, Actual bodilyharm, and Common assault.

Robbery - an incident involving the threat or use of physical force and where something was stolen from you or there was an attempt to steal something from you.

POLICE OFFICERS NOTE:Eligible victims include victims of Robbery with striking or wounding, Other robbery, Armed robbery, Demand money with menaces.

Note: if you are reporting a robbery of a commercial premises where you were not personally threatened, please forward this questionnaire to the person who was personally threatened or robbed.

SELF COMPLETION

You may complete this questionnaire now, and return it to the police officer dealing with this incident or complete the questionnaire later and mail it to: NSW Bureau of Crime Statistics and Research using the reply paid envelope provided. (GPO BOX 6, SYDNEY 2001).

Start Here

Please answer these questions if you have been a victim of an assault or robbery.

Date of offence:

 / /

Please indicate whether you were a victim of an assault or a robbery.

(see definitions on cover page)

(Please tick one box.)

Assault 1 Complete Section A only

Robbery 2 Complete Section A & Section B

Are you male or female?

(Please tick one box.)

Male 1

Female 2

Can you briefly describe what happened?

.....

.....

.....

.....

.....

.....

.....

.....

What did the attacker(s) say to you?

"

.....

.....

..... "

Section A - Assaults and Robberies

Please answer every question

1) What was your main reason for being in the area where you were attacked?

(Please tick one box. If you answer 'other' please give details.)

For entertainment / recreation / to eat out	<input type="checkbox"/>		1
Shopping/personal business	<input type="checkbox"/>		2
Live in the area	<input type="checkbox"/>		3
At work / on business in the area	<input type="checkbox"/>		4
Travelling through city to get to another destination	<input type="checkbox"/>		5
Other <i>(please give details)</i>	<input type="checkbox"/>		6
.....			

2) What sort of work were you doing at the time of the incident?

(Please tick one box. If you answer 'other' please give details.)

Not at work / not on business	<input type="checkbox"/>		1
Bouncer / doorman	<input type="checkbox"/>		2
Taxi driver	<input type="checkbox"/>		3
Bus driver	<input type="checkbox"/>		4
Shop attendant	<input type="checkbox"/>		5
Delivery / courier work	<input type="checkbox"/>		6
Office professional	<input type="checkbox"/>		7
Sex worker	<input type="checkbox"/>		8
Other <i>(please give details)</i>	<input type="checkbox"/>		7
.....			

3) What time did the incident take place?

(Please enter time in hours and minutes. Also, please tick either am or pm.)

For example: 06:30 am 11:45 pm	<input type="checkbox"/>	<input type="checkbox"/>	:	<input type="checkbox"/>	<input type="checkbox"/>
	Hours			Minutes	
(Midnight = 00:00 am Midday = 12:00 pm)	<input type="checkbox"/>			am	
	<input type="checkbox"/>			pm	

4) On what day of the week did the incident take place?

(Please tick one box.)

Monday	<input type="checkbox"/>	1
Tuesday	<input type="checkbox"/>	2
Wednesday	<input type="checkbox"/>	3
Thursday	<input type="checkbox"/>	4
Friday	<input type="checkbox"/>	5
Saturday	<input type="checkbox"/>	6
Sunday	<input type="checkbox"/>	7
Don't know	<input type="checkbox"/>	0

5) Did the incident happen...

*(Please tick one box.
If you answer 'In a park'
please give details.)*

	Indoors	
		1
	Outdoors	
On the street	<input type="checkbox"/>	2
On the pavement	<input type="checkbox"/>	3
In a park	<input type="checkbox"/>	4
In some other open space	<input type="checkbox"/>	5

.....

For outdoor incidents

6a) **What kind of premises was it near or directly outside?**

(Please tick one box and give name of premises if known.)

OR

For indoor incidents

6b) **Inside what particular kind of premises did the incident occur?**

(Please tick one box and give name of premises if known.)

Entertainment premises

- Pub 01
- Club / nightclub 02
- Restaurant 03
- Cinema / theatre 04
- Video arcade 05
- Other adult nightspot 06
- Other entertainment 07

Business premises

- Service Station 08
- Chemist 09
- Bank / ATM / Bureau de change 10
- Shop 11
- Other business 12

Accommodation premises

- House / unit 13
- Hotel / motel 14
- Hostel / boarding house 15
- Other accommodation 16

Unspecified

- Not inside or outside any specific premises 17
- Don't know 00

Please give name of premises if known

.....

7) In what type of transport vehicle did the incident occur?

(Please tick one box.)

Not in a transport vehicle	<input type="checkbox"/>	1
Train	<input type="checkbox"/>	2
Bus	<input type="checkbox"/>	3
Taxi	<input type="checkbox"/>	4
Car/ van / truck	<input type="checkbox"/>	5
Other	<input type="checkbox"/>	6

8) At what type of transport stop or station did the incident occur?

(Please tick one box and give name of stop or station.)

Not at a transport stop / station	<input type="checkbox"/>	1
Train station	<input type="checkbox"/>	2
Bus stop	<input type="checkbox"/>	3
Taxi stand	<input type="checkbox"/>	4
Ferry wharf	<input type="checkbox"/>	5
Other	<input type="checkbox"/>	6

Please give name of transport stop or station

eg. Town Hall station, Circular Quay wharf

9) What was the address where the incident took place?

(Please fill in street address and tick one suburb.)

Address of incident

No.

Street

Nearest cross street

Suburbs

- Darling Harbour 01
- Darlinghurst 02
- Elizabeth Bay 03
- Haymarket/ Chinatown 04
- Kings Cross 05
- Millers Point 06
- Moore Park / SCG / showground 07
- Potts Point 08
- Pymont 09
- Redfern 10
- Rushcutters Bay 11
- Surry Hills 12
- Sydney CBD 13
- The Rocks 14
- Ultimo 15
- Woolloomooloo 16
- Other 17
- Don't know 00

10) Which of the following best describes the physical environment at the time of the attack? Was it...

(Please tick one box.)

- Nighttime / poorly lit 1
- Nighttime / well lit 2
- Daytime 3

11) Would you describe the area at the time of the attack as...

(Please tick one box.)

- Secluded 1
- A few people around 2
- Crowded 3
- Don't know 0

12) How many people threatened or attacked you?

(Please enter the number of attackers; E.g. 00 for don't know, 01 for one attacker, 02 for two attackers etc.)

13) How many of the **at-tackers were male?**

(Please enter number of male attackers. E.g. 01 for one male attacker, 02 for two male attackers and 00 if there were no males.)

Number of male attackers

For one attacker

14a) **About how old do you think the attacker was?**

(Please enter approximate age of attacker. E.g. 18 to 19 years.)

OR

For multiple attacker

14b) **How old do you think the attackers were?**

(Please enter approximate age of the attackers or main attacker. E.g. 18 to 19 years.)

Age of attacker(s) to years

15) **Not including the attacker(s), how many friends /acquaintances were with you?**

(Please enter number of friends /acquaintances who were with you. E.g. enter 00 for none, 01 for one, 02 for two, etc.)

Number of friends / acquaintances with you

16) How many of the friends / acquaintances with you were males?

(Please enter number of male friends/acquaintances with you. E.g. enter 00 if there were none, 01 for one, 02 for two, etc.)

Number of male friends / acquaintances with you

For one attacker

17a) Which of the following best describes your level of acquaintance with the attacker?
Was the attacker a...

(Please tick one box.
If you answer 'other' please give details.)

----- OR -----

For multiple attackers

17b) Which of the following best describes your level of acquaintance with the attacker you knew best?
Was the attacker a...

(Please tick one box.
If you answer 'other' please give details.)

Total stranger	<input type="checkbox"/>	1
Person you met that day or night	<input type="checkbox"/>	2
Prior acquaintance	<input type="checkbox"/>	3
Relative / friend	<input type="checkbox"/>	4
Partner / ex-partner	<input type="checkbox"/>	5
Other (please give details)	<input type="checkbox"/>	6

.....

For one attacker

18a) Do you think the attacker was a...

(Please tick YES, MAYBE or NO for each of the 7 categories of attackers.
If you answer 'other', please give details.)

----- OR -----

For multiple attackers

18b) Do you think that any of the attackers was a...

(Please tick YES, MAYBE or NO for each of the 7 categories of attackers.
If you answer 'other', please give details.)

Attacker categories	Yes	Maybe	No
1. Junkie (drug addict)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
2. Mentally ill person	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
3. Alcoholic	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
4. Homeless person	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
5. Taxi driver	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
6. Bouncer / doorman	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
7. Other (please give details)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

.....

19) Did you have any kind of dispute or argument with the attacker(s) before the incident occurred?

(Please tick one box.)

- No, the attack was unprovoked 1
- Yes, they offended / insulted me 2
- Yes, I offended / insulted them 3
- Yes, we argued with each other 4

20) What type of weapon did the attacker(s) use or threaten to use against you?

(Please tick one box. If you answer 'other', please give details.)

- No weapon involved 1
- Gun 2
- Knife 3
- Hypodermic needle 4
- Other sharp object 5
- Blunt object 6
- Other *(please give details)* 7

.....

21) Did the attacker(s) do any of the following to you?

(Please tick YES or NO for each of the 5 categories. If you answer 'Handle you in any other way', please give details.)

- | Categories | Yes | No |
|--|----------------------------|----------------------------|
| 1. Grab | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| 2. Push | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| 3. Punch | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| 4. Kick | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| 5. Handle you in any other way
<i>(Please give details)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |

.....

22) To what extent were you physically injured?

(Please tick one box. If you answer 'other' please give details.)

Not at all	<input type="checkbox"/>	1
Minor bruises / abrasions / cuts (not requiring stitches)	<input type="checkbox"/>	2
Serious injuries, e.g. broken bones, concussion, major wounds (requiring stitches)	<input type="checkbox"/>	3
Other <i>(please give details)</i>	<input type="checkbox"/>	4

.....

23) Did you resist the attack in any of the following ways? Did you...

(Please tick YES or NO for each of the 8 categories of resistance. If you answer 'other', please give details.)

Resistance categories	Yes	No
1. Shout / call for help	<input type="checkbox"/> 1	<input type="checkbox"/> 2
2. Try to run away	<input type="checkbox"/> 1	<input type="checkbox"/> 2
3. Argue with the attacker	<input type="checkbox"/> 1	<input type="checkbox"/> 2
4. Physically fight back or restrain attacker	<input type="checkbox"/> 1	<input type="checkbox"/> 2
5. Refuse to hand over money or possessions	<input type="checkbox"/> 1	<input type="checkbox"/> 2
6. Have no opportunity to resist (e.g. it happened too fast or you were knocked out)	<input type="checkbox"/> 1	<input type="checkbox"/> 2
7. Think it was best not to resist	<input type="checkbox"/> 1	<input type="checkbox"/> 2
8. Other <i>(please give details)</i>	<input type="checkbox"/> 1	<input type="checkbox"/> 2

.....

24) About how many alcoholic drinks had you consumed in the 2 hours before the attack?

(Please enter number of drinks. E.g. enter 00 if you hadn't consumed any alcohol, 01 for 1 alcoholic drink, 02 for 2 drinks, etc.)

One drink is equivalent to:

- 1 middie of beer
- 1 glass of wine / fortified wine
- 1 nip of spirit

Number of alcoholic drinks

OR

(Please describe amount of alcohol consumed as best you can) Ø

25) Were you under the influence of any other drug at the time of the attack?

(Under the influence means physically or mentally affected)

(Please tick one box.)

Yes 1

No 2

Don't know / can't remember 0

26) Before this attack, had you ever been a victim of an assault or a robbery where you were threatened or hurt?

(Please tick one box.)

Yes 1

No 2

Don't know / can't remember 0

27) Why do you think you were attacked?

(Tick YES or NO for each of the 6 motivation categories. If you answer 'other', please give details.)

Motivation categories	Yes	No
1. For money	<input type="checkbox"/> 1	<input type="checkbox"/> 2
2. Racism	<input type="checkbox"/> 1	<input type="checkbox"/> 2
3. A personal dispute	<input type="checkbox"/> 1	<input type="checkbox"/> 2
4. Homophobia (gay bashing)	<input type="checkbox"/> 1	<input type="checkbox"/> 2
5. To have sex	<input type="checkbox"/> 1	<input type="checkbox"/> 2
6. No reason	<input type="checkbox"/> 1	<input type="checkbox"/> 2
7. Other <i>(please give details)</i>	<input type="checkbox"/> 1	<input type="checkbox"/> 2

.....

28) What is your ethnic background?

Are you...

(Please tick one box. If you answer 'other', please give details.)

Caucasian / white Anglo Saxon	<input type="checkbox"/>	01
Middle Eastern	<input type="checkbox"/>	02
Japanese	<input type="checkbox"/>	03
Other Asian	<input type="checkbox"/>	04
Latin American	<input type="checkbox"/>	05
Aboriginal / Torres Strait Islander	<input type="checkbox"/>	06
African / African American	<input type="checkbox"/>	07
Indian	<input type="checkbox"/>	08
Pacific Islander	<input type="checkbox"/>	09
Don't know / refused	<input type="checkbox"/>	00
Other <i>(please give details)</i>	<input type="checkbox"/>	10

.....

29) Where do you live?

*(Please tick one box.
If overseas please specify
country.)*

Sydney 1

Other part of Australia 2

Overseas 3

Country you are visiting from

.....

30) Are you a backpacker?

(Please tick one box.)

Yes 1

No 2

31) What is your postcode in Australia?

*(Please fill in your postcode
or if postcode is not known,
the name of your suburb.)*

Not applicable 9999

Postcode

OR

Suburb name

32) How old are you?

(Please enter age in years.)

Age in years

If you were assaulted but not robbed (i.e. nothing was stolen from you) and have completed Section A, you have completed this survey.

Thank you for participating in this study.

If you have any further comments you would like to add see page 19.

If you were robbed, (i.e. something was stolen from you) please complete the next section, Section B. (Questions 33 - 36).

Section B - For Robberies Only

Please answer every question

33) Were you carrying or wearing any of the following items at the time of the attack?

(Please tick YES or NO for each of the 9 item categories. If you answer 'other', please give details.)

Item categories	Yes	No
1. Camera / camera bag	<input type="checkbox"/> 1	<input type="checkbox"/> 2
2. Wallet / purse	<input type="checkbox"/> 1	<input type="checkbox"/> 2
3. Money belt	<input type="checkbox"/> 1	<input type="checkbox"/> 2
4. Duty free shopping bags	<input type="checkbox"/> 1	<input type="checkbox"/> 2
5. Other shopping bags	<input type="checkbox"/> 1	<input type="checkbox"/> 2
6. Handbag / briefcase	<input type="checkbox"/> 1	<input type="checkbox"/> 2
7. Jewellery / expensive watch	<input type="checkbox"/> 1	<input type="checkbox"/> 2
8. Backpack	<input type="checkbox"/> 1	<input type="checkbox"/> 2
9. Mobile phone	<input type="checkbox"/> 1	<input type="checkbox"/> 2

34) What did the attacker(s) steal or try to steal?

(Please tick YES or NO for each of the 13 item categories. If you answer 'other', please give details.)

<i>Item categories</i>	Yes	No
1. Camera / camera bag	<input type="checkbox"/> 1	<input type="checkbox"/> 2
2. Money	<input type="checkbox"/> 1	<input type="checkbox"/> 2
3. Wallet / purse	<input type="checkbox"/> 1	<input type="checkbox"/> 2
4. Money belt	<input type="checkbox"/> 1	<input type="checkbox"/> 2
5. Duty free shopping bags	<input type="checkbox"/> 1	<input type="checkbox"/> 2
6. Other shopping bags	<input type="checkbox"/> 1	<input type="checkbox"/> 2
7. Handbag / briefcase	<input type="checkbox"/> 1	<input type="checkbox"/> 2
8. Jewellery / watch	<input type="checkbox"/> 1	<input type="checkbox"/> 2
9. Backpack	<input type="checkbox"/> 1	<input type="checkbox"/> 2
10. Mobile phone	<input type="checkbox"/> 1	<input type="checkbox"/> 2
11. Shoes / sports shoes	<input type="checkbox"/> 1	<input type="checkbox"/> 2
12. Jacket / clothing	<input type="checkbox"/> 1	<input type="checkbox"/> 2
13. Baseball cap	<input type="checkbox"/> 1	<input type="checkbox"/> 2
14. Other <i>(please give details)</i>	<input type="checkbox"/> 1	<input type="checkbox"/> 2

.....

35) Were you at an Automatic Teller Machine (ATM) or bank, or had you been to an ATM or bank in the 30 minutes before the attack?

(Please tick one box.)

Yes, ATM	<input type="checkbox"/> 1
Yes, bank	<input type="checkbox"/> 2
No	<input type="checkbox"/> 3
Don't know, can't remember	<input type="checkbox"/> 0

36) Did the attacker(s) approach you under some pretext before robbing you? For example, to ask you for something, to ask for information or to offer you help?

(Please tick one box. If you answer 'yes', please give details)

Yes	<input type="checkbox"/>	1
No	<input type="checkbox"/>	2
Don't know, can't remember	<input type="checkbox"/>	0

What was the pretext? *(please give details)*

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Any further comments:

.....

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.....

.....

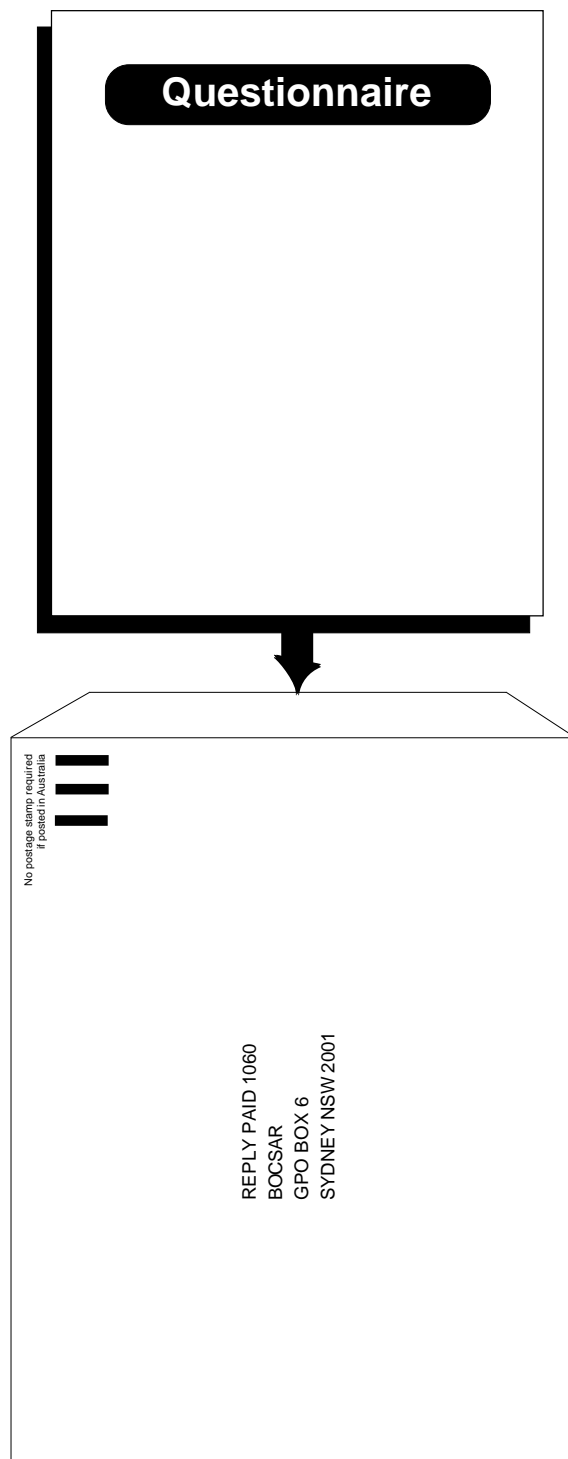
.....

.....

Thank you for participating in this study

Please put the survey in the reply paid envelope and either hand it back to the police officer dealing with this incident, or mail it to the NSW Bureau of Crime Statistics and Research (GPO Box 6 Sydney 2001).

Please place this questionnaire in the reply paid envelope provided...



seal it and hand it to the police officer dealing with this incident, or post it to the Bureau.

APPENDIX 2 - CRIME MAPPING METHODOLOGY

This appendix provides a more detailed account of the crime mapping methodology outlined in Section 2.3. The data sources used to create the crime maps in this report are described and details of the address enhancement process are presented. A glossary of terminology is provided as a guide to this appendix.

GLOSSARY

Incident File -	a file containing records for all assault and robbery incidents recorded by police that occurred in the Sydney District between July 1995 and June 1996.
Street File -	a file which displays line segments which represent streets. The file also contains information pertaining to the street numbers on each street.
Postcode File -	a file displaying regions which represent the postcode boundaries in Sydney District.
Defined location -	a region (boundary) created on a map representing a specific place such as a railway station, park or public utility. Defined locations were appended to the Street File.
Address field -	a appended database field within the Incident File which was used for matching against address data in the Street File and Postcode File.
Geocoding -	a process of assigning X and Y coordinates to records in a database so that they can be displayed as objects on a map.
Intersection number -	a unique number specifying the intersection of two streets. Intersection numbers were usually assigned (by COPS) to incidents that occurred at or near to street intersections.
Mapinfo -	a software package used to present data in a graphical format using maps.

CRIME DATA SOURCES USED FOR MAPPING

A data extraction was performed on the COPS database to obtain records of all assault and robbery incidents that occurred in Sydney District between July 1995 and June 1996. The file that contained these incidents is referred to as the Incident File. The Incident File contained 4,472 recorded incidents, 3,060 assaults and 1,412 robberies. Each incident (record) listed in the Incident File contains various 'fields' selected from the COPS database. Amongst the fields present in the Incident File are the event number, incident number, patrol name, date of offence, time of offence, offence category, premise type, landmark, property name, street number, street name, street identifier, intersection number, suburb, postcode, and modus operandi.

GEOGRAPHIC DATA SOURCES USED FOR MAPPING

Two files containing geographic data were used to generate a map of the Sydney District over which the crime data from the Incident File were to be overlaid. These files were the Street File and the Postcode File.

The first, the Street File, is made up of line segments, each representing a section of a street one block in length. Hence, a street spanning five blocks would be represented by five adjoining line segments. Each line segment also stores the street numbers of any

dwellings, shops or buildings situated either side of the street. Because some incident locations were not located on streets the Street File was modified to include specially defined locations such as railway stations, parks, landmarks and other utilities. Over fifty specially defined locations were created and appended to the Street File.

The second file used for geocoding was the Postcode File. This file contains a series of adjoining shapes which represent the postcode boundaries within Sydney District. These postcode shapes were placed under the Street File as an invisible layer.

REQUIREMENTS FOR GEOCODING

Geocoding is a process of assigning X and Y coordinates to records in a database so that they can be displayed as objects or points on a map. Essentially, during geocoding, Mapinfo matches address information from the Incident File with corresponding street and postcode data in both the Street File and the Postcode File. Using both the modified Street File and the Postcode File allows addresses to be verified using two separate sources. That is, an address from the Incident File must match an address in the Street File and also lie within the correct postcode boundary in order to be correctly geocoded.

To perform this operation, location data in the Incident File and the Street File must be in a compatible format. Accordingly the Incident File must hold address information in one of the following formats:

- as a street number and street name, e.g. 176 George St.
- as a reference to an intersection, e.g. Elizabeth St && Market St (where '&&' denotes 'at the intersection of')
- as a reference to a defined location, e.g. Darling Harbour Casino.

Only one-third of the data on the Incident File fulfilled the above criteria and so enhancements to the address data were required.

PREPARING THE INCIDENT FILE FOR GEOCODING

Categorising and enhancing the Incident File

To convert the available address information for each incident into suitable format, records in the Incident File were separated into four data sets according to the type of location information present. Each data set was stored as a distinct file and was dealt with separately. In each of the four data sets, an address field was appended. This field was used to store incident address location information which would eventually be used as a matching field during geocoding (i.e. matched against corresponding data in the Street File). A description of each of the four data sets and an overview of the method used to enhance the location information is given below.

Street number data set - this data set contained incidents where a street number, street name and street identifier were listed in their respective data fields and could be combined to form a complete address e.g. 176 George St. There were 1,522 such incidents (34% of all incidents).

Preparation of this data set was fairly straightforward. The data from the street number, street name and street identifier fields were combined into the newly appended address field. For example if street number was '176', street name was 'George' and street identifier was 'St', then the address field was concatenated to read '176 George St'. A number of records in this category did not have a street identifier (e.g. Rd, St, Ave) so relevant identifiers were assigned with the aid of a street directory. Of the 1,522 incidents in the *Street number* data file an address field was established for 1,514 incidents (99%)

Intersection data set - these records did contain a street number but had occurred at or near an intersection and hence contained an encoded intersection number. There were 1,264 such incidents (28% of all incidents).

This data set was transferred electronically to the NSW Police Service Information Technology Branch Applications Development Section where the intersection numbers were decoded to reveal the names of the streets constituting each intersection. Two additional fields were added at the same time, the distance and direction fields. These indicated the distance (in metres) away from an intersection that an incident occurred and the respective direction (N, S, E, W) from the intersection. The decoded data set was then returned to the Bureau where the names of the two streets constituting the intersection were merged into an address field. For example, if an assault occurred at the corner of 'Elizabeth St' and 'Market St', it was listed in the address field as 'Elizabeth St & Market St'. Wherever present, the distance and direction fields were tagged onto each incident record. Of the 1,252 incidents in the *Intersection* data file, an address field was established for 1,240 incidents (99%).

Property name data set - this data set contained incidents where neither a street number nor an intersection number were present but a property name was listed. A property name may refer to a specific place like 'The Bourbon and Beefsteak' bar or a less specific location such as 'Darling Harbour Casino' or 'Hyde Park'. There were 1,132 such incidents (25% of all incidents).

This data set was sorted alphabetically by property name. Telephone directories and street maps were employed to determine the addresses of these places. Where an exact street number and street name or intersection was found, they were entered into the address field. Not all incidents, however, occurred at a specific street address or at an intersection. Some occurred at a property or location where a traditional address could not be used to allocate the incident to a point on a map. Of the 1,132 incidents in the *Property name* data set an address field was established for 984 incidents (87%).

Narrative data set - This data set contained incidents where neither a street number, intersection number nor property name were present. Therefore, in order to determine a precise location for these incidents the police narratives had to be viewed directly from the COPS Eagle Net system. There were 554 such incidents (12% of all incidents).

Establishing the location details for this data set was the most time consuming. It involved looking up each incident (via an on-line connection to the COPS network) and reading the narrative section of the police report. Relevant location information, wherever present, was then entered into an address field in a format suitable for geocoding. Of the 554 incidents records reviewed in this way a suitable address field was established for 510 of the incidents (92%).

GEOCODING THE INCIDENT FILE

Having created a suitable address field for as many incidents as possible in each of the four data sets, they were merged together into a new Incident File. The process of matching the address fields in this file with the relevant fields in the Street File and Postcode Boundary Files could then commence.

During geocoding however, a number of complications were encountered. These are discussed briefly. Firstly, in the event that an address, say '176 George St' occurred within more than one postcode in Sydney District, it was possible for the incident to be geocoded incorrectly (i.e. to the wrong postcode). In order to avoid this eventuality, a secondary matching source was used, that is the Postcode Boundary File. By layering the Postcode Boundary File under the Street File, the mapping software ensured that incidents concerned were allocated to the correct location (i.e. in the correct postcode).

Secondly, where an address field and postcode field in the Incident File matched the relevant fields in the Street File and Postcode File, the incident was geocoded automatically. About two-thirds of the data were geocoded in this way. However, when an incident was not automatically geocoded, Mapinfo required the user to match data interactively. This was done using the following principles:

- When a street address in the Incident File did not include a postcode or had an erroneous postcode, Mapinfo displayed a list of postcodes from the Postcode File which contained the specified address within its boundaries. The user was then able to select the relevant postcode and the incident was placed at the corresponding address within that postcode boundary.
- When a street name was misspelled in the Incident File, Mapinfo displayed a list of similarly spelt streets from its Street File and allowed the user to choose the appropriate street spelling to confirm the match.
- When the number of the street specified in the Incident File did not match any street number on a particular street, Mapinfo displayed the street number ranges available for that street so that the incident could be positioned at the nearest valid street number.

When a street name was specified in the Incident File, but no street number was present, Mapinfo allowed the user to position the incident in the middle of that street. This was done in only a small number of cases where the street or laneway was relatively short, usually only one block in length.

Of the 4,472 incidents in the original Incident File, suitable location information was determined for 4,248 of the incidents (95%). Using the automatic and interactive geocoding process it was possible to geocode and display 4,233 incidents of the incidents. This gave an overall result of 94.7 per cent of the original 4,472 assault and robbery incidents being assigned to a location on a map.

Two further enhancements were finally made to the map to improve its degree of accuracy.

Dispersing points

On examining the resulting map, it became apparent that where the same address was assigned to two or more points, the points were placed directly on top of one another on the map. In some cases over thirty points were allocated to the same location or intersection, therefore obscuring concentrations of incidents or Hot Spots. To overcome this, a point dispersion technique was used.

A Mapinfo MapBasic program (disperse.mbx) was employed to disperse these points within a specified distance around a central point. Hence, a number of incidents occurring at the same location became represented by a cluster of points or 'Hot Spot' surrounding that location.

Relocating points

Following the geocoding process it was discovered (by viewing the distance and direction fields) that 60 per cent of the incidents that were positioned at intersections, did, in fact, occur less than 10 metres from that intersection. In these cases the point location provides an acceptable level of accuracy for the purposes of this project. However, in the remaining 40 per cent of the incidents positioned at intersections, the distance from the intersection was (according to the distance and direction fields) actually between 10 and 100 metres away. These incidents therefore required relocation to avoid false clusters around various intersections. Using the values in the distance and direction fields in the Incident File, the incidents in question (approximately 500) were re-positioned manually by 'dragging and dropping' the incidents to a new location. A ruler tool is provided in the Mapinfo package which enables the user to measure (in metres) the desired distance for the relocation.

Lastly, incidents that were geocoded to specific defined locations such as the Sydney Harbour Casino, were dispersed randomly within the boundaries of that location. As a result, an incident shown on a map within a defined location does not represent the exact location of the incident but rather the closest approximation to the location of the assault or robbery. In larger areas, like Hyde Park, the park was divided into smaller defined locations, such as the 'War Memorial', 'Archibald Fountain' and 'Hyde Park North' and the points were then dispersed randomly within these areas with similar results.