

# **A COMPARATIVE ANALYSIS OF THE NATURE AND EXTENT OF TRAFFIC OFFENCES AND THEIR RELATIONSHIP TO OTHER NON TRAFFIC OFFENCES**

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## **ABSTRACT**

This study examined the relationship between traffic offences and other types of crime through a comparative analysis of their characteristics and temporal/spatial dynamics. The results suggest that serious traffic offences, disturbances and offences against the person share similar characteristics and occur in concentrated places at similar times. This gives credence to the notion suggested by other studies (Broughton 2003; Rose, 2000; Sugg, 1998) that there is an association between serious traffic offending and general criminality. The findings demonstrate the value of place based theories of crime and indicate that targeting specific criminal offences at times and places through problem oriented policing may have potential for reducing serious traffic offences. The authors suggest a more comprehensive model to explain the relationship between traffic offending and criminality.

## **INTRODUCTION**

### *Characteristics of Traffic Offenders*

Serious traffic offences are generally defined as those involving drink driving, dangerous driving, driving whilst disqualified as well as involvement in motor vehicle accidents where an injury or fatality has occurred. Internationally, serious traffic offenders share similar characteristics. The majority are males with low education, single, separated or divorced, with high unemployment, aged between 17-39 years, and come from blue-collar working backgrounds (Ferguson, Schonfeld, & Sheehan, 1999; Vingilis, 2000). Recidivist drink drivers share these characteristics and in addition have poor impulse control, antisocial personalities (Bailey & Bailey, 2000; Beck, Rauch & Baker, 1997), have a history of other criminal offences and come from disadvantaged backgrounds (Ferrante, Rosman, & Marom, 2001).

### *Traffic Offending and Criminality*

Although the link between serious traffic offending and general criminality has been examined directly in a number of studies, the nature of this relationship still remains largely unexplored. Attention was drawn to the possible link between traffic offending and other types of criminal offending in the 1960s (Eysenck, 1964; Willett, 1964). These studies found that approximately 20% of serious traffic offenders had a history of other types of criminal offences. These individuals were largely a homogeneous group of young males who worked in manual occupations and had more criminal convictions than the population as a whole.

Studies in the 1980s and 1990s suggested stronger links between serious traffic offending and other criminal offending (Argeriou, Milton, McCarty, & Blacker, 1985; Sugg, 1998). In some cases more than 50% of serious traffic offenders had convictions for other criminal offences (Argeriou, McCarty, & Blacker, 1985). The findings of these studies suggest that serious traffic offenders were not specialist offenders but had a diverse range of convictions for offences such as theft, burglary and assault as well as a propensity to reoffend by committing further traffic and non-traffic offences (Sugg, 1998).

More recent research indicates a growing trend towards an association between offending on the roads and other criminal activity. Rose (2000) examined the current court convictions, past offending behaviour and reconvictions of approximately 40,000 British offenders. The main findings revealed that 40 percent of drink drivers had criminal records, but these were less extensive than other groups of serious traffic offenders, and 12 percent reoffended within a year. In regards to disqualified drivers 79 percent had criminal records and 37 percent were reconvicted within a year. Approximately 50 percent of dangerous drivers had a previous conviction and about a quarter reoffended within a year. In a study of over 50,000 British drivers Broughton (2003) clearly demonstrated that male drivers with several non-traffic offences were far more likely than non-offenders to commit offences of drink driving or dangerous driving. In this study about a quarter of drivers had convictions for non-traffic offences.

### *Risky Behaviour, Social Deviance and Offending*

There also appears to be a strong relationship between crime, risky behaviour and involvement in motor vehicle accidents (Junger, West, & Timmam, 2001; Junger & Wieggersma, 1995; Lawton, Parker, Stradling, & Mainsteal, 1997). Researchers investigating this link have also found a positive association between risky traffic behaviour, accidents and social deviance (Fergusson, Swain-Campbell, & Horwood, 2003; Junger, West, & Timmam, 2001; Meadows, Stradling, & Lawson, 1998; West, Elander, & French, 1993). The fact that a substantive proportion of serious traffic offenders engage in risky traffic behaviour, are prone to accidents and commit other types of crime tends to lend credence to the theories of low self control and cross situational consistency developed largely by Hirschi and Gottfredson (1993). These theories suggest that individuals think and behave in relatively the same manner across a variety of different settings. In addition individuals with low self control are more likely to ignore the negative long term consequences of their actions in favour of pleasures obtained through their risky behaviour.

### *The Role of Alcohol*

The risky behaviour associated with serious traffic offending and other criminal activity often involves the misuse of alcohol. For example, alcohol impaired driving is a major contributing factor in crashes (Zador, Krawchuk, & Voas, 2000) and 30% of fatalities have been found to be alcohol-related (Single & Rohl, 1997). The misuse of alcohol has also been associated with murder, domestic violence, assaults, property offences and traffic injuries (Bryant & Williams, 2000; Chikritzhs, Jonas, Heale, Dietze, Hanlin, & Stockwell, 1999, Williams, 2000).

In Sydney metropolitan studies of police patrols (Ireland & Thommey, 1993; Ireland, 1995), 62% of all incidents to which police were called were judged to be alcohol related and in a similar Queensland survey of police attendance at all incidents over a two week period, 27% involved alcohol (Arro, Crook, & Fenton, 1992). In both the Sydney and Queensland studies specific types of incidents such as street offences, property damage, offensive behaviour, domestic violence, assaults and noise complaints were more likely to involve alcohol.

### *Temporal and Spatial Variation of Offending*

It also appears that serious traffic offences and other types of crime occur at similar times and places. The development of computer crime mapping and geo referencing (for a review see Lersch, 2004) has facilitated the temporal and spatial analysis of crime. This has allowed the occurrence of crime to be explained in terms of a crime pattern model (Eck & Weisburd, 1995) that shifts the focus from targeting prevention solely on offender characteristics to the time and place of offending. Most crime is not a random event (Block & Block, 1995; Jochelson, 1997) but occurs in concentrated places at certain times referred to as "Hot Spots", especially where alcohol is available (Teece & Williams, 2000). Incidents of assaults and

robberies recorded by police over a 2-month period in inner Sydney (Jochelson, 1997) using crime mapping technology were found to be located in specific Hot Spots.

Most alcohol-related assault seems to occur late at night, on weekends and in the early hours of the morning whether in the home, on the street or in licensed premises (Briscoe & Donnelly, 2001; Homel, Hauritz, Wortley, McIlwain, & Carvolth, 1997; Teece & Williams, 2000). Traffic accidents, drink driving offences and assaults peak after midnight around the closing times of liquor trading places (Chikritzhs et al., 1997; Smith, 1988) and when closing times are varied a shift in the pattern of drink driving offences and traffic accidents occurs to coincide with the new closure times.

#### *Aim of Study*

The overall empirical evidence indicates that specific characteristics coupled with time and place can be important predictors of serious traffic offending and other types of criminal activity. The aim of this study was therefore to examine the relationship between traffic offences and other types of crime through a comparative analysis of their characteristics and temporal/spatial dynamics. It was anticipated that serious traffic offences and some types of criminal offences would share similar characteristics and temporal/spatial dynamics.

## **METHOD**

#### *Participants, Materials and Procedure*

The participants included first response operational police officers from the Metropolitan North Region, Gold Coast District and Townsville District in Queensland Australia. During their normal operational shifts officers were required to record details of their attendance at all offences and incidents on a modified police service activity log. Offences and incidents associated with alcohol and other illicit substances were noted. Demographic factors were also recorded, including, the age and gender of persons as well as the time and location of offences and incidents.

The study was conducted over a five week period commencing from 0000 hours on 29<sup>th</sup> March 2004 to 2400 hrs on 2<sup>nd</sup> May 2004. Officers received training in how to complete the modified activity logs. Prior to the commencement of the major study period a four week pilot study (1 March 2004 to 28<sup>th</sup> March 2004) was conducted in order to ensure that officers involved in the study had an opportunity to familiarize themselves with the modified activity log, understand their instructions with regard to completing the activity log and obtain experience in accurately recording incidents involved with alcohol and other illicit substances.

#### *Data Analysis*

The data reported in this study are part of a larger study conducted for the Queensland Police Service examining the nature and extent of alcohol and drug related incidents requiring police attention. All incidents across the study areas related to police work were recorded during the survey period onto a modified police activity log and then transcribed onto a computer data base. The Statistical Package for the Social Sciences version 12.5 (SPSS V 12.5) was used for the data analysis. The majority of data was descriptive and categorical and recorded as percentage frequencies. Chi-squares were performed in respect of the time and place of traffic and non-traffic offences. Police officers were not able to record characteristics related to age and gender for all offences. In this paper temporal and spatial patterns are reported for the Gold Coast District only.

## RESULTS

### *Characteristics of Sample*

Table 1 presents the most prevalent offences requiring police attention. During the study period a total of 31,090 incidents and offences required police involvement. A quarter of the offences and incidents were alcohol related (Table 1). Being youthful, male and consuming alcohol were risk factors for committing traffic and other types of criminal offences, especially those related to traffic, disturbances and offences against the person.

**Table 1: Criminal and Traffic Offences by Police Location**

Offence	Metro North Region	Gold Coast District	Townsville District	Total	% Alcohol related
<b>Traffic</b>	<b>3,124</b>	<b>2,307</b>	<b>1890</b>	<b>7,321</b>	<b>40</b>
<b>Person*</b>	<b>343</b>	<b>236</b>	<b>157</b>	<b>736</b>	<b>31</b>
<b>Property</b>	<b>2,406</b>	<b>1,249</b>	<b>1030</b>	<b>4,685</b>	<b>5</b>
<b>Sexual</b>	<b>83</b>	<b>57</b>	<b>22</b>	<b>162</b>	<b>16</b>
<b>Stealing</b>	<b>1,977</b>	<b>1,132</b>	<b>864</b>	<b>3,973</b>	<b>6</b>
<b>Disturbances</b>	<b>2,667</b>	<b>2,097</b>	<b>1650</b>	<b>6,414</b>	<b>41</b>
<b>Other</b>	<b>3,521</b>	<b>1,919</b>	<b>2,359</b>	<b>7,799</b>	<b>12</b>
Total	14,121	8,997	5,613	31,090	24

\*Includes homicide, serious assault, assault, abduction and threats against the person. The majority of these offences were assault related.

Table 2 shows the various types of traffic offences. Approximately one third of all types of traffic offences related to driving under the influence of alcohol. Tables 3 and 4 present details of the age and gender of offenders. About half of the offenders were aged between 10 and 24 years. Although the 20-24 year old age group committed more traffic offences than other age groups their criminal activity was slightly lower than the 30-39 year old age group.

**Table 2: Serious Traffic offences by type and location**

Offences	Metro North Region	Gold Coast District	Townsville District	Total	% Alcohol
<b>Accident Fatal</b>	<b>4</b>	<b>11</b>	<b>0</b>	<b>15</b>	<b>0</b>
<b>Accident Hit Run</b>	<b>35</b>	<b>13</b>	<b>4</b>	<b>52</b>	<b>17</b>
<b>Accident No Injury</b>	<b>349</b>	<b>208</b>	<b>120</b>	<b>677</b>	<b>13</b>
<b>Accident with Injury</b>	<b>174</b>	<b>101</b>	<b>47</b>	<b>322</b>	<b>14</b>
<b>DUIL Suspect*</b>	<b>1,202</b>	<b>486</b>	<b>735</b>	<b>2,423</b>	<b>99</b>
<b>Traffic Offence<sup>+</sup></b>	<b>605</b>	<b>853</b>	<b>372</b>	<b>1,830</b>	<b>13</b>
<b>Other Non Serious</b>	<b>755</b>	<b>635</b>	<b>612</b>	<b>2,002</b>	<b>11</b>
Total	3,124	2,307	1,890	7,321	40

\*Driving under the influence of liquor. This category inflates the overall % of alcohol-related traffic offences. Excluding this category leaves the remaining offences with about 12% alcohol involvement.

<sup>+</sup>Offences such as speeding where tickets were issued.

**Table 3: Percentage Distribution of Age of Offenders**

Age of Offender	Traffic Offences Only <sup>#</sup>			Other types of Criminal Offences*		
	N	% of N	% Alcohol	N	% of N	% Alcohol
<b>10 – 19</b>	<b>196</b>	<b>20</b>	<b>34.6</b>	<b>1,086</b>	<b>33</b>	<b>23.7</b>
<b>20 - 24</b>	<b>258</b>	<b>27</b>	<b>54.2</b>	<b>548</b>	<b>17</b>	<b>47.0</b>
<b>25 - 29</b>	<b>134</b>	<b>14</b>	<b>41.8</b>	<b>443</b>	<b>14</b>	<b>38.8</b>
<b>30 - 39</b>	<b>169</b>	<b>18</b>	<b>43.8</b>	<b>630</b>	<b>19</b>	<b>41.9</b>
<b>40 -49</b>	<b>93</b>	<b>10</b>	<b>49.5</b>	<b>334</b>	<b>10</b>	<b>48.5</b>
<b>50 +</b>	<b>95</b>	<b>11</b>	<b>35.8</b>	<b>232</b>	<b>7</b>	<b>34.9</b>
Total	945	100	44.2	3,273	100	36.5

\*Offences include those against the person, property, stealing, disturbances and sexual offences.

<sup>#</sup>Age was available for only 945 traffic offences.

Approximately 50% of traffic and other criminal offences were committed by offenders aged between 10 and 24 years. Alcohol was a substantial factor associated with offending for all age groups.

**Table 4: Percentage Distribution of Gender of Offenders**

Gender of Offender	Traffic Offences Only			Other types of Criminal Offences*		
	N	% of N	% Alcohol	N	% of N	% Alcohol
Male	1,424	82.3	40.8	6,241	78.2	33.4
Female	306	17.7	34.9	1,744	21.8	27.9
Total	1,730	100	39.7	7,985	100	32.2

\*Offences include those against the person, property, stealing, disturbances and sexual offences.

#Gender was available for only 1,730 offences.

The majority of traffic and other criminal offences were committed by males.

*Temporal and Spatial Patterns*

The temporal and spatial patterns of offences are limited to the Gold Coast District. The number and type of offences by day of week, time of day and location are shown in figures 1, 2 and 3. Chi-squares were utilized to examine the differences between offence type and time of day, offence type and day of week and offence type and location. It should be noted that the number of serious traffic offences could be influenced by police targeting, although Random Breath Testing Units were excluded from the study. The majority of the other offences were largely motivated by calls for police service.

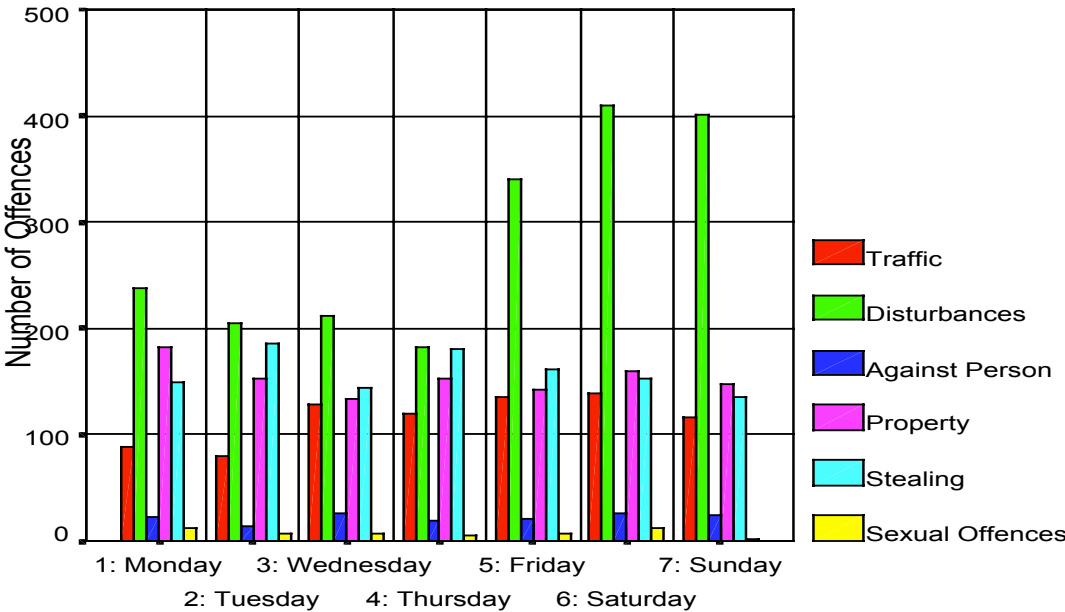


Figure 1: Number of Offences by Type of Offence and Day of Week

Figure 1 demonstrates that the most prevalent offence on any day of the week was disturbances. No significant differences were observed for offences against the person, property offences and sexual offences. In other words these offences did not vary greatly from the mean across the week. However, significant differences were found for serious traffic offences ( $\chi^2 = 27.4, p < 0.05$ ), disturbances ( $\chi^2 = 198.5, p < 0.05$ ) and stealing ( $\chi^2 = 13.2, p < 0.05$ ). The greatest difference for serious traffic offences was observed for Fridays and Saturdays indicating that serious traffic offences were more likely to occur on these days. Disturbances were most prevalent on Fridays, Saturdays and Sundays with a peak occurring on a Friday. Overall, disturbances increased by approximately 70% on the

weekends. Stealing offences were significantly more prevalent on weekdays, particularly Tuesdays and Thursdays.

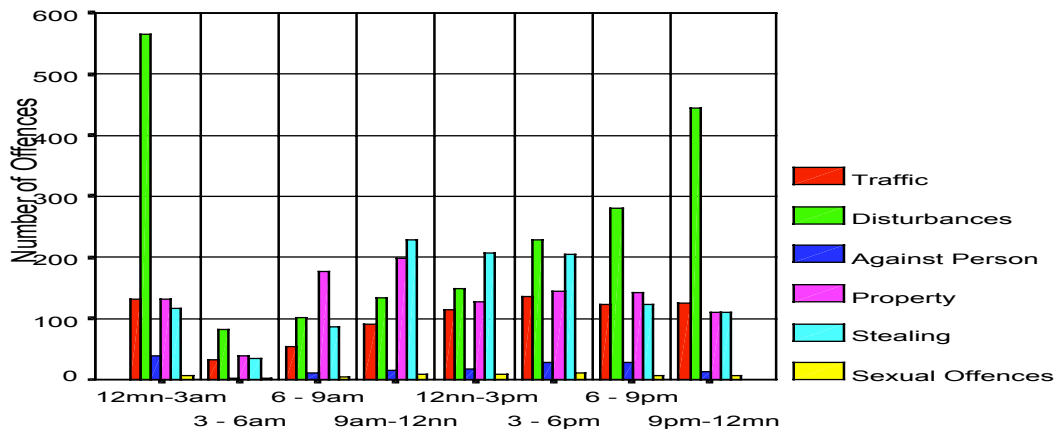


Figure 2: Number of Offences by Type of Offence and Time of Day

Figure 2 demonstrates that there were significant differences between the three hour time periods. Serious traffic offences ( $\chi^2 = 104.2, p < 0.05$ ) were more likely to occur between 3pm-6pm followed closely by the 12mn-3am time period. It should be noted that 3pm-6pm is the peak hour period for traffic and it is probable that alcohol-related traffic offences was more likely to occur between the 12mn-3am time period. Disturbances ( $\chi^2 = 852.3, p < 0.05$ ) and offences against the person ( $\chi^2 = 50.6, p < 0.05$ ) were significantly more frequent between the 12mn-3am time period. The periods between 9pm-12mn and 3pm-6pm reflected the second highest number of offences for disturbances and offences against the person, respectively. Property and stealing offences were more likely to occur between the 9am-12noon period. The second highest occurrences for property offences and stealing occurred between 6am-9am and 12noon-3pm, respectively. There were no significant differences between the 3 hour time periods for sexual offences.

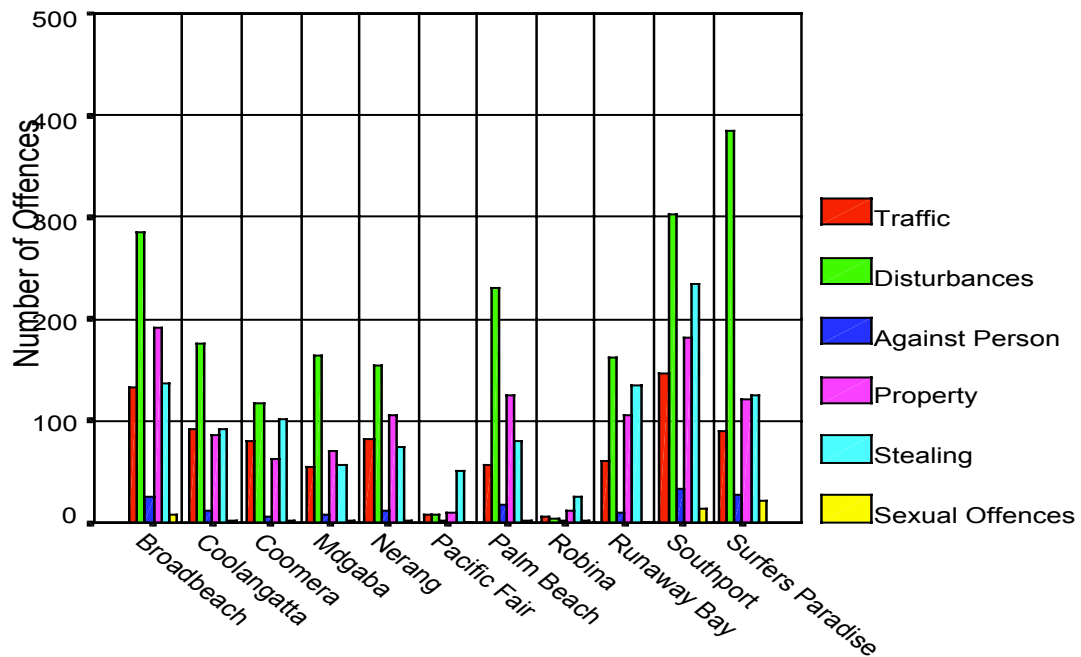


Figure 3: Number of Offences by Type of Offence and Police Station

Figure 3 demonstrates that there were significant differences between the 11 locations. Chi-squares show that offences related to traffic ( $\chi^2 = 271.4, p < 0.05$ ), against the person ( $\chi^2 = 96.0, p < 0.05$ ), stealing ( $\chi^2 = 348.8, p < 0.05$ ) and property ( $\chi^2 = 368.7, p < 0.05$ ) were concentrated in the Southport and Broadbeach areas. Disturbances ( $\chi^2 = 741.8, p < 0.05$ ) and sexual offences ( $\chi^2 = 63.6, p < 0.05$ ) were more prevalent in the Surfers Paradise and Southport areas.

## DISCUSSION

The current study demonstrates that traffic offences share similar characteristics with other types of criminal offences. Individuals who committed traffic offences and other types of crime, especially disturbances and offences against the person (mostly assault-related) tended to be young males. Alcohol also played a substantial role in these types of offences. Serious traffic offences and disturbances tended to increase throughout the evening, peaking after midnight and were more prevalent on weekends. There were some variations for time and place across the different types of offences.

Serious traffic offences and disturbances were more likely to occur at similar times (weekends after midnight) and were concentrated in specific places such as Surfers Paradise, Southport and Broadbeach). It should be noted that there is a high concentration of night time entertainment and licensed premises in these areas. Property and stealing offences were more prevalent on week days in the mornings.

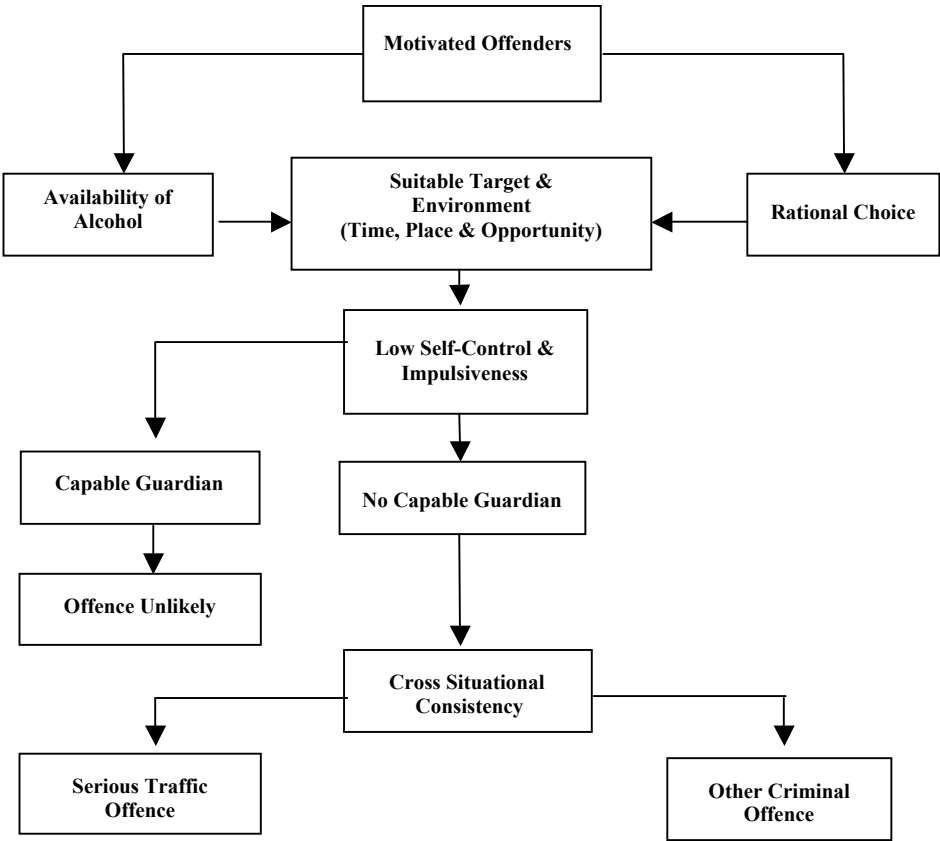
Although offences against the person were concentrated in similar locations to disturbances and serious traffic offences, there were no major variations in frequency across the week. However, they were more frequent in the early morning (12mn-3am) and there were slightly more offences on a Saturday. Most of the other criminal offences were concentrated in similar locations to traffic offences but they differed in respect to time and day of occurrence.

Mapping traffic offences and other types of crime by time and place will provide valuable intelligence that will assist police to identify specific “Hot Spots” of offending. Increased surveillance and law enforcement in these areas coupled with intelligence led strategies such as more systematic use of “last known place of drinking” can then be undertaken to reduce offending. Targeting individuals who commit disturbances and offences against the person in and around licensed premises may also reduce serious traffic offences. Similarly, targeting traffic offenders is likely to result in identifying some other types of criminal activity. The study was limited in that it could not examine the criminal histories of individuals committing traffic offences at certain times and places.

The results support the value of crime pattern theory. Crime pattern theory (see Eck & Weisburd, 1995) combines routine activities (Cohen & Felson, 1979) and rational choice theories (Cornish & Clarke, 1986) to explain the temporal and spatial variation in crime. This theory suggests that crime is more likely to occur at specific times and places during the routine activities of motivated offenders who make rational choices about the risks and benefits of their actions. When the risk is reduced by the absence of capable guardians such as intimate handlers (e.g. spouse or influential friend), controllers or place managers (e.g. security officers & police) to regulate behaviour, offending is more prevalent. Crime pattern theory is a place based theory of crime and also regards social and physical characteristics of the environment as well as the presence of alcohol as factors that contribute towards offending behaviour (for an overview of place based theories see Eck & Weisburd, 1995).

Crime prevention strategies may therefore be enhanced by including an analysis of traffic offending and other types of crime in terms of discrete time units at specific locations. Once this intelligence is gathered, specific times and locations could be targeted with a coordinated approach that incorporates intensive legal enforcement, community and environmental strategies. The findings of the present study suggest that targeting assault related offences and disturbances through a problem oriented policing approach may have potential for reducing serious traffic offences.

The findings also suggest that crime pattern theory provides a model for understanding how, when and where traffic offences and other types of crime take place. However, this theory is limited in that it does not explain the relationship between serious traffic offending and other types of crime, and ignores personality traits such as low self control and impulsiveness (see, Hirschi & Gottfredson, 1993) often associated with offending behaviour. The authors recommend a broader model that incorporates the theories of low self control and cross situational consistency that has potential for identifying not only how, when and where offences occur but also why offenders commit certain types of offences. The model referred to as the theory of serious traffic offending and criminality (STOC) is displayed in figure 4.



**Figure 4: Serious Traffic Offending and Criminality**

Figure 4 demonstrates that during routine activities motivated offenders make rational choices to commit an offence when a suitable target and environmental conditions (time & place) are conducive to offending. The offence is more probable in the presence of alcohol and low self control. However, if capable guardians are present it is unlikely that an offence will occur. When there are no capable guardians, motivated offenders are likely to act in a cognitively and cross situationally consistent manner thereby increasing their vulnerability to committing both serious traffic and other types of criminal offences. Further investigation to test the veracity of this model in the context of exploring the association between serious traffic offending and criminality is required.



## REFERENCES

- Argeriou, M., McCarthy, D., & Blacker, E. (1985). Criminality among individuals arraigned for drinking and driving in Massachusetts. *Journal of Studies on Alcohol*, 46, 525-529.
- Arro, P., Crook, G., & Fenton, T. (1992). *The nature and extent of alcohol related incidents requiring police attention in South-East Queensland*. Brisbane: Department of Health and Queensland Police Service.
- Bailey, P.P.M., & Bailey, K.H. (2002). Hard core drink drivers in New Zealand. In *Proceedings 15<sup>th</sup> International Conference on Alcohol, Drug and Traffic Safety*. Stockholm, Sweden: ICADTS.
- Beck, K.H., Rauch, W.J., & Baker, E.A. (1997). The effects of alcohol ignition interlock licence restrictions on multiple alcohol offenders: A randomised trial in Maryland, in C. Mercier-Guyon (Eds.). *Alcohol, Drugs and Traffic Safety-0T'95: Proceedings of the 13<sup>th</sup> International Conference on Alcohol, Drugs and Traffic Safety*, 159-164. Adelaide, Australia: NHMRC Road Accident Research Unit.
- Block, R.L., & Block, C.R. (1995). 'Space, Place and Crime': Hot spot areas and hot spot places of liquor related crime', in J.E. Eck & D. Weisburd (Eds.). *Crime and Place, Crime Prevention Studies vol 4*, Criminal Justice Press, Monsey, New York and Police Executive research Forum, Washington.
- Briscoe, S., & Donnelly, N. (2001). Temporal and Regional Aspects of Alcohol-Related Violence and Disorder. *Alcohol and Studies Bulletin*. NSW Bureau of Crime Statistics and Research.
- Broughton, J. (2003). *The number of motoring and non-motoring offences*. TRL Report 562, TRL Limited, Worthingham, Berkshire, UK.
- Bryant, M., & Williams, P. (2000). Alcohol and Other Drug-Related Violence and Non-Reporting. *Trends and Issues in crime and criminal justice*. Australian Institute of Criminology.
- Chikritzhs, T., Jonas, H., Heale, P., Dietze, P., Hanlin, K., & Stockwell, T. (1997). *Alcohol-caused deaths and hospitalizations in Australia, 1990-1997. National Alcohol Indicators, Technical Report No. 1*. Perth W.A. National Drug Research Institute, Curtin University of Technology.
- Chikritzhs, T., Stockwell, T., & Masters, L. (1997). *Evaluation of the public health and safety impact of extended trading permits for Perth hotels and night-clubs*. Perth. The National Centre for Research into the Prevention of Drug Abuse, Curtin University of Technology.
- Cohen, L.E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review*, 44, 588-605.
- Cornish, D., & Clarke, R.V. (1986). *The Reasoning Criminal: Rationale Choice Perspectives on Offending*, Springer-Verlag, New York.
- Eck, J.E., & Weisburd, D. (1995). 'Crime places in theory', in J.E Eck and D. Weisburd (Eds.). *Crime and Place, Crime Prevention Studies*, 44, Criminal Justice Press, Monsey, New York Police and Executive Research Forum.
- Eysenck, H.J. (1964). *Crime and Personality*, Routledge and Kegan Paul, London
- Ferguson, M., Schonfeld, C., & Sheehan, M. (1999). Drink Driving Offenders in a Rural Community: A Profile of Drink Driving offenders in Regional Queensland. Road Safety Research Report, CR183, Australian Transport Safety Bureau.
- Fergusson, D., Swain-Campbell, N., & Horwood, J. (2003). Risky driving behaviour in young people: prevalence, personal characteristics and traffic accidents. *Australian and New Zealand Journal of Public Health*, 27(3), 337-342.
- Ferrante, A., Rosman, D., & Marom, Y. (2001). Novice drink drivers, recidivism and crash involvement. *Accident Analysis and Prevention*. 33, 221-227.
- Hirschi, T., & Gottfredson, M.R. (1993). *The Generality of Deviance*. New Brunswick, NJ: Transaction Publishers.

- Homel, R., Hauritz, M., Wortley, R., Mcilwain, G., & Carvolth, R. (1997). Preventing alcohol-related crime through action: The Surfers Paradise Safety Action Project. Homel (Ed.). *Policing for Prevention: Reducing Crime, Public Intoxication, and Injury*. Monsey, N. Y: Criminal Justice Press.
- Jochelson, R. (1997). Crime and Place: An analysis of assaults and robberies in inner Sydney, NSW Bureau of Crime Statistics and Research, Sydney.
- Junger, M., West, R., & Timman, R. (2001). Crime and Risky Behavior in Traffic: An example of Cross-situational Consistency. *Journal of Research and Crime Delinquency*, 23(4), 439-459.
- Junger, M., & Wiegersma, A. (1995). The Relations between Accident, Deviance and Social Control. *Criminal Behavior and Mental Health*, 5, 144-174.
- Lersch, K.M. (2004). *Space, Time and Crime*. Carolina Academic Press, Durham North Carolina.
- Ireland, C. S., & Thommeny, J. L. (1993). The crime cocktail: Licensed premises, alcohol and street offences. *Drug and Alcohol Review*, 12, 143-150.
- Lawton, R., Parker, D., Stradling, S.G., & Manstead, A.S.R. (1997). Predicting road traffic accidents. *British Journal of Psychology*, 88, 249-262.
- Meadows, M.L., Stradling, S.G., & Lawson, S. (1998). The role of social deviance and violations in predicting road traffic accidents in a sample of young offenders. *British Journal of Psychology*, 89, 417-431.
- Rose, G. (2000). *The criminal histories of serious traffic offenders*. Home office Research, Development and Statistics Directorate, Research Findings No 206. London Home Office.
- Single, E., & Rohl, T. (1997). The national drug strategy: Mapping the future: An evaluation of the national drug strategy 1993-1997. Canberra Australia: AGPS.
- Smith, D.I. (1988). Effect on Traffic Accidents of Introducing Flexible Hotel Trading Hours in Tasmania, Australia. *British Journal of Addiction*, 83, 219-222.
- Sugg, D. (1998). *Motor projects in England and Wales: An Evaluation*. Home office Research, Development and Statistics Directorate, Research Findings No 81. London Home Office.
- Teece, M., & Williams, P. (2000). Alcohol-related assault: The time and place. *Trends and Issues in Crime and Criminal Justice*, 169. Canberra: Australian Institute of Criminology.
- Vingilis, E., Mcleod, A.I., Seely, J., Mann, R.E., Beirness, D., & Compton, C.P. (2005). Road safety impact of extended drinking hours in Ontario. *Accident Analysis and Prevention*, 37, 549-556.
- Willet, T.C. (1964). *Criminal on the road: a study of serious motoring offences and those who commit them*. London: Tavistock.
- Zador, P., Krawchuk, S., & Voas, R. (2000). Alcohol-related relative of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: An update using 1996 data. *Journal of Studies on Alcohol*, May, 387-395.

## KEYWORDS

Traffic offences, characteristics of offenders, temporal and spatial crime patterns, alcohol impaired offending.