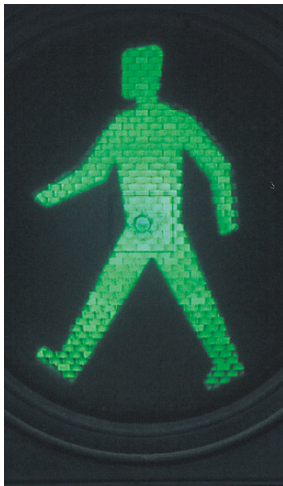


Road User Behaviour Study



Summary Report



This Report, *Road User Behaviour Study, Summary Report* summarises the key issues and findings of five reports of the *Road User Behaviour Study*.

The *Road User Behaviour Study* was commissioned by the Chief Executive of the NSW Roads and Traffic Authority, to address Government concern at the high 2000–2001 Christmas–New Year holiday road toll in NSW. The study was conducted to drill down into the areas of crash data, public education strategies, deterrence strategies, and community attitudes and to identify countermeasures to address and reduce the rising road toll.

The research consisted of five separate studies, all of which have been published.

A Road Safety Task Force, which consisted of representatives from key stakeholder agencies and the community, established by the Minister for Roads coordinated the study.

The remaining reports published separately are as follows:

- *Road User Behaviour Study, Crash Data Analysis Report*
- *Road User Behaviour Study, Public Education and Mass Media Report*
- *Road User Behaviour Study, Road Safety Enforcement and Deterrence Strategies Report*
- *Road User Behaviour Study, Community Attitude Survey Report*
- *Road User Behaviour Study, Observational Studies Report.*

A consortium led by Jamieson Foley and Associates Pty Ltd conducted the *Road User Behaviour Study*.

The consortium included:

- NSW Injury Risk Management Research Centre, University of New South Wales
- David Saffron Pty Ltd
- Bedford Park Consulting Pty Ltd
- The Gallup Organisation Pty Ltd
- Mr M Lane
- Mr H Camkin

The project was coordinated for the RTA by David Walsh and Associates Pty Ltd.

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Recommendations

1.0 Recommendations

The Recommendations arising from this study were derived from the following systematic process. With reference to Figure 1:

- Issues and contributing factors were identified in Part A (the crash analysis) and fed into the subsequent Parts. This process also yielded specific data-related, 'technical' recommendations.
- The contributing factors identified in the crash analysis were raised in discussion with the focus groups (Part B) and were researched within the literature review for this Part B. This process also yielded specific recommendations.
- The identified factors from Part A were also raised in discussion with the enforcement agencies (Part C) and were further researched within the literature review for this Part C. Thus, further recommendations resulted.
- The process for Part D was similar to the market research procedure for Part B.
- The road-user behaviour studies conducted in Part E also generated recommendations.

The Recommendations were classified into four main groups:

1. Strategic priorities for behavioural countermeasures
2. Enforcement practices
3. Public education practices
4. Other issues.

The format for each Recommendation includes its Objective and its Rationale—in the context of the integrated Parts of the study.

1.1 Strategic priorities for behavioural countermeasures (Group 1)

1.1.1 Recommendation 1A¹

Continue to focus in 2001–2002 in NSW on behavioural countermeasures for the four main issues in priority order:

- **speeding (the single most important)**
- **drink-driving**
- **fatigue, and**
- **non-use of vehicle occupant restraints and helmets (important for reducing the severity of the crashes).**

OBJECTIVE

To maintain the focus on these four factors associated with the majority of fatal crashes in NSW.

RATIONALE

A significant reduction in the incidence of each factor would result in a similar reduction in road trauma. The crash analysis undertaken in Part A of the study showed that speeding was the major contributing behavioural factor throughout the study period (1993–2000). It was a factor in over one third of all fatal crashes every year and since 1996, and involved between 190 and 205 such crashes a year.

Drink-driving remains a contributing factor in 80–100 fatal crashes per year.

Fatigue involvement has increased from 85–95 fatal crashes a year to 109 in 2000.

Among those killed each year, around 90 were drivers or passengers who were not wearing available restraints and around 10 were riders or passengers not wearing a helmet.

The *Road Safety Enforcement and Deterrence Strategies Report* (Part C) revealed that Police data showed that almost two and one-quarter million Traffic Infringement Notices were issued between 1996 and 2000 for speeding offences and over 125,000 drivers were proceeded against for alcohol offences.

The (self-reported) attitudes and behaviours disclosed by the community interviews (Part D) and to a lesser extent, by the focus groups (Part B), demonstrated that community members, tolerate their personal unsafe behaviour yet still generally acknowledge speeding as the major road safety problem, followed by fatigue and drink-driving.

The focus group reports suggested scope for increasing rates of restraint use in the country.

1.1.2 Recommendation 1B

Implement campaigns to address the above priorities generally throughout the year, during the Easter holiday period and public holiday weekends and with increasing intervention efforts in the lead up to and during the 2001–2002 Christmas–New Year holiday period.

OBJECTIVE

To reaffirm the significance of these issues at all times.

RATIONALE

Fatal accidents during the Christmas–New Year period have increased over recent years. Indeed one of the primary distinguishing characteristics of the fatal accidents in 2000 was the disproportionate number occurring over the Christmas–New Year public holiday period.

The analysis from Part A demonstrated that over the study period, very few characteristics reliably distinguished Christmas–New Year crashes from non-Christmas crashes. Speed, fatigue, to a lesser extent alcohol and, more recently, failure to wear restraints, were involved in fatal Christmas crashes more often than

¹ This recommendation relates to the application of countermeasures at the strategic (State-wide) level. The priorities will also generally apply at the local level, but will vary if analysis of local crashes involving local residents indicates different issues.

fatal non-Christmas crashes. Fatal crashes at Christmas were slightly more likely to occur in the dawn to dusk periods than non-Christmas crashes, and in recent years, more likely to occur on country non-urban roads or roads with high (100 or 110 km/h) speed limits.

There was a tendency for fatal crashes at Christmas to involve a higher proportion of controllers licensed outside of the State, than during non-Christmas periods. The data analysis also clearly showed that during the Christmas–New Year period crashes involved proportionally more country drivers and riders speeding on rural roads and not wearing restraints and helmets.

1.1.3 Recommendation 1C

Address speeding and lack of restraint wearing in rural and regional areas and non-wearing of helmets in the road safety countermeasures and advertising and enforcement programs.

OBJECTIVE

To reduce the incidence of speeding and improve restraint wearing in rural areas and helmet wearing rates.

RATIONALE

Part A identified that speeding is the key contributor to the seriousness of crash outcomes. It is a factor in 30–40 per cent of fatal crashes but only around 15 per cent of non-fatal crashes. The proportion of fatal crashes involving speeding has been increasing slowly since a low in 1994, but showed a turndown in 1999 and 2000.

The Part D attitude surveys suggested that the community considered that speeding is a most important road safety problem yet a substantial proportion of people reported a tolerance for breaking speed limits, in both high- and low-speed zones.

The data analysis also clearly showed that the Christmas–New Year period involved proportionally more country drivers and riders speeding on rural roads and not wearing restraints, or helmets.

While the non-wearing of restraints appeared to be related to alcohol involvement and speeding, the focus group reports suggested scope for increasing wearing rates in country areas—the source of a large number of fatalities associated with non use of restraints (as indicated in the Part A study).

1.1.4 Recommendation 1D

Target the largest section of the road user community (drivers and riders aged under 50 years with standard licences) with particular emphasis on males, younger drivers and riders, and improve public awareness and appreciation of the dangers of driving on country roads and the dangers of driving at night, in the road safety advertising and enforcement countermeasures.

OBJECTIVE

To maximise cost-effectiveness of advertising and enforcement resource allocation.

RATIONALE

Part A of the study identified that in absolute terms, the two age bands, most likely to be involved in road crashes are aged 17–25 years and 30–49 years. Furthermore, an increasing involvement of the 40–49 age group as controllers and casualties was identified. Further analysis showed that this was largely due to an increase in the number of drivers in this group rather than due to changes in any particular aspect of their on-road behaviour. When adjusted for the numbers of licences issued to the various aged groups, accident involvement decreases with age so that younger drivers have a higher relative risk. Both age bands should be addressed in Media campaigns, with the appropriate specific age band being targeted for varying issues. Furthermore, the Part A findings demonstrated that fatal crashes were most likely to occur on country roads (the proportion of these accidents has increased since 1996) or when it is dark. Non-fatal crashes, on the other hand, were most likely during daylight hours.

Generally, there is no clear trend in fatal crash involvement rates of motorcycle riders by age group over the decade since 1990. Young riders are around six times more likely to be involved per licences held than older riders, although this may be an overestimation given that actual on-road motor cycling exposure is much more

likely to be higher for younger licence holders. In terms of casualty crash involvement, there is a very gradual downward trend for younger licence holders with the exception of 2000. Between 1990 and 1999, the involvement rate for riders aged under 30 years fell by around 25 per cent. There has been a significant increase in motorcycle fatalities in recent years, whilst injuries have remained fairly steady. Older riders (40 years and older) are making up an increasing proportion of motorcycle fatalities and injuries and the majority of motorcycle licence holders is now aged 40 years and over.

Closer examination of the crash data, in association with the acknowledged changes in attitude with maturation and changes in lifestyle (as identified in Parts B and D of the study) added credence to the concept of market segmentation on the basis of family or household, lifestyle development and maturity—for example adolescence and early adulthood, family and career development, mature middle-age and senior years. The study findings confirmed earlier research that suggested that most crashes occur nearer rather than further away from home. Therefore, when it is appropriate, road safety education programs should include localised elements supported by local government Road Safety Officers.

While the focus group reports from Part B of the study indicated more similarities than differences in attitudes and behaviours by people from different regions of the State, there were nevertheless some clear differences in attitude to restraint use by country 'out-of-town' residents, as distinct from urban residents.

Strong indications from the community interviews confirmed earlier research that cultural, employment and socio-economic factors have an influence on both behaviour and attitudes to road safety issues.

The research on behavioural change contained in Part B suggested that communication with particular community groupings should be continued. A greater focus is needed on both the definitive characteristics (such as ethnicity and socio-economic status) of the group, and those behaviours relevant to the types of crashes in which they are involved. Regional and local government road safety personnel who are well placed to take advantage of the multi-variant analysis of the mass data, should be encouraged to use these findings to inform their program development.

1.1.5 Recommendation 1E

Evaluate the impact of the Graduated Licensing Scheme (introduced in July 2000) on both the participation rate and the accident involvement of younger drivers and continue to monitor the impact of the Rider Training and Testing Scheme.

OBJECTIVE

To maximise the cost effectiveness of road safety countermeasures that target young drivers.

RATIONALE

In absolute terms the single age band most likely to be involved in road crashes are those aged 17–25 years. Even after adjustment for number of licences issued to this age group, these younger drivers have a higher relative risk.

The Graduated Licensing Scheme (GLS) was introduced in July 2000 and is a system for phasing-in on-road driving that allows beginners to get their initial experience under conditions that involve lower risk. It introduces beginners to more complex and riskier situations in stages. The GLS is the framework that ensures that novice drivers demonstrate improved skills and maturity in driving before graduating through the stages of driver training and licensing. The evaluation process will take until at least 2005 in order to observe the behaviour of drivers who have passed through the system and then demonstrated several further years of driving.

The Rider Training and Testing Scheme was implemented on a progressive basis since 1990, and covers 85–90 per cent of all applicants. The Scheme provides basic riding skills, hazard perception, and road craft skills for people learning to ride motorcycles. It allows riders to develop their competence in a safe environment under the supervision of a licensed riding instructor. The Scheme involves seven hours of training at the learner level, and a further six hours of training, and a riding test, at the provisional level. The Scheme operates from 20 training centres across NSW.

1.2 Enforcement practices (Group 2)

1.2.1 Recommendation 2A

The Police Service examine the forthcoming AUSTROADS Report on Speed Enforcement in Australasia for further guidance in developing a 'Code of Best Practice for Traffic Enforcement for Road Safety' in NSW.

OBJECTIVE

To ensure that the application and management of both human and technical resources to enforcement of road rules are done consistently, and in accordance with the best known practices appropriate to NSW conditions.

RATIONALE

The review undertaken in Part C of this study indicated that enforcement agencies made a major contribution to reducing the road toll in NSW (and elsewhere) in the latter part of the 20th century. But changing social conditions have created competing demands for Police attention. Thus, the priority accorded by the community and governments to major issues such as drug abuse have obliged most agencies to adopt management practices that improve the efficiency of the resources that can be diverted to traffic supervision and control. Different problems and different priorities have led to variations in practices among jurisdictions and there is no general consensus on all the attributes that may be defined as 'best practice'.

However, there is an understanding that the circumstances demand both an increased use of technology, and an improvement in the efficiency with which both technology and human resources are utilised. The *Road User Behaviour Study, Road Safety and Deterrence Strategies Report*, Part C provides more details.

The research conducted in Part C of this study revealed a preference by agencies to utilise only the enforcement measures seen as most appropriate to their own circumstances. However, there was an identified emerging degree of acceptance of certain principles that could form the basis of 'good' practice.

These principles were identified in this study (Section 3.3.2.2) and range from an affinity of enforcement, with theories of behavioural change, to formal evaluation of strategies and tactics to ensure continued cost-effectiveness.

The development of such a Code, and the associated administrative support for its application, needs to progress within the context of a Police Service charged with the general responsibility for the protection of life and property.

1.2.2 Recommendation 2B

Develop and coordinate enforcement practices and operations in such a manner as to heighten the perception of likelihood of detection and to dispel notions of predictability of enforcement operations.

OBJECTIVE

To bring about a rapid improvement in behaviour in the three key areas of speeding, drink driving and non-wearing of restraints, enforcement being the most effective single action that could be taken to reduce the road toll in the short-term. This should be done in a manner that convinces the community that enforcement action applies to 'anyone anywhere anytime'.

RATIONALE

In the context of Recommendation 1A, the literature reviews in Parts B & C, the interviews with interstate counterparts as well as domestic experience (going back to the introduction of Random Breath Testing), enforcement of appropriate legislation is the key to behaviour change. However, the research suggests (Part B) that *attitudinal* change is more dependent on education and necessarily takes longer to effect.

The focus groups researched in Part B, disclosed a clear acceptance of enforcement, at least to curb extreme behaviours and the general community attitude survey (Part D) demonstrated that most people report that speed limits are reasonable.

Parts B and C documented an extensive literature review of various deterrence strategies, and identified the need for balance between 'targeted' and 'random' operations, and between 'overt' and 'covert' operations. The material presented in these Parts discussed the relationship between evidence of enforcement activity, and driver responses to unpredictability of enforcement.

The matters discussed in these Parts related to creating a noticeable threat. The main value of high visibility is that it publicises the enforcement activity in a much more credible way than any advertisement. Nevertheless, in some circumstances, visibility can allow the driver to avoid detection.

1.2.3 Recommendation 2C

Review the Enhanced Enforcement Program to ensure that it continues to best meet the joint objective of the Police Service and the RTA.

OBJECTIVE

To ensure that the value of enforcement is properly acknowledged in strategic planning for road safety, and that the degree and nature of enforcement delivered meets strategic expectations throughout all local Regions within the State.

RATIONALE

Records supplied for Part C by NSW Police showed that the numbers of Highway Patrol personnel, vehicles and kilometres travelled by those vehicles, and Traffic Infringement Notices for speed limit offences, were all lower in 2000 than in previous years. In addition, the number of random breath tests conducted was lower in 2000 than for previous years, other than 1998. This suggested a reduction in the extent of Police enforcement in 2000, compared with previous years. While the deployment of 'general duties' Police to traffic enforcement might have served to restore this balance, the diversion of Highway Patrol personnel to other urgent duties probably would have affected the total amount of traffic enforcement.

Part C of this study noted that this situation did not necessarily mean that the effectiveness of Police enforcement had diminished. Indeed, changes in procedures leading to greater efficiency might have increased the overall effectiveness of Police enforcement. Furthermore, the greater use of fixed cameras supplied and installed by the RTA contributed substantially to the overall level of surveillance of speed and detection of infringements.

Part C recorded that Police agencies in New Zealand, Victoria, Queensland and Western Australia are among those that have recently incorporated management practices that establish operational targets (such as the number of breath tests and vehicle speed measurements) and requirements for performance measurements at the input, process (operational) and output levels. Such indicators assist in the efficient management of an organisation with resource constraints and in the evaluation of the effectiveness of different business strategies and tactics.

The NSW Police Service maintains a core of Police officers—currently 1,000 officers—whose primary role is traffic law enforcement. This number far exceeds that of any other Australian jurisdiction.

Part C also identified that the commercial and business practice implicit in the RTA's rules for enhanced funding and taken to its logical development in New Zealand, involves enforcement agencies contracting local government to supply a specified level of enforcement activity. Similarly, in Western Australia the Road Safety Trust Fund finances enhanced enforcement.

The NSW Police Service and RTA have worked together for many years to improve road safety in NSW. The relationship was formalised in 1994 through a Memorandum of Understanding that specifies the agreed joint goal, objectives and responsibilities of the RTA and the Police Service in reducing road trauma.

To augment the traffic enforcement services provided by the Police Service, the RTA and Police Service in 1994 developed an Enhanced Enforcement Program (EEP). The aim of the EEP is to enhance the level of visible Police enforcement activity over and above normal operating requirements.

Through the EEP, the RTA has negotiated with the Police Service to provide ancillary funds to provide for additional activity aimed at providing an enhanced level of visible enforcement at critical times of the year in

conjunction with RTA major road safety public education campaigns.

The EEP was reviewed in 1996 and 1998 on both occasions leading to improved administrative arrangements between the two agencies. In light of recent road safety events discussed in this report it may be considered an appropriate time to review all aspects of the current program to ensure that it continues to meet the joint objectives.

1.2.4 Recommendation 2D

The NSW Police Service continue to consider the use, wherever possible, of non-sworn personnel, including other agencies in the use of technology such as fixed cameras and other enforcement strategies that do not demand the physical presence of Police.

OBJECTIVE

To maximise the utility of available Police officers and increase the perceived level of enforcement.

RATIONALE

It has become clear from regular community surveys (including the focus group work conducted for Part B of this study), that the public is becoming increasingly demanding of Police Services. This increasing demand relates to 'Law and Order' issues, such as drug enforcement issues. The enforcement of traffic-related matters involves a variety of activities, not all of which need 'face-to-face' contact between motorists and Police 'sworn personnel'. Part D recorded that public perception of the level of enforcement can actually *increase* despite a decline of visible Police presence. This was evidently achieved by the publicity associated with speed cameras.

Part C noted that the complete operation of speed cameras, including issuance of Infringement Notices, is contracted out in Victoria. This gave supporting evidence to the position that there seemed to be no operational reason to insist on sworn personnel issuing Traffic Infringement Notices on camera evidence. In NSW, such Traffic Infringement Notices are issued by the Infringement Processing Bureau, which is staffed by unsworn officers.

1.2.5 Recommendation 2E

Review within the NSW Police Service, the performance measures used in New Zealand, Victoria and those proposed in Western Australia with a view to enhancing the current NSW model to improve the effectiveness of enforcement operations.

OBJECTIVE

To achieve improved allocation and utilisation of enforcement resources and analysis of the cost-effectiveness of enforcement strategies relative to each other and to other road trauma countermeasures.

RATIONALE

Part C determined that performance measures are valuable because they allow managers to relate level and nature of activity to outcomes. New Zealand has adopted a strongly economically rational approach to government with a complete system of performance measures. These include the hours devoted to traffic policing, and the number of hours of use of speed cameras. All the jurisdictions from which information was sought (apart from NSW), had targets for the number of hours of use of speed cameras and the number of breath tests undertaken. NSW no longer uses targets for breath tests. Again, New Zealand has a comprehensive set of targets. Victorian road safety management has benefited from the information provided by evaluation of initiatives. Information from the Victorian police suggested that all significant initiatives are subject to sophisticated evaluation.

1.3 Public education practices (Group 3)

1.3.1 Recommendation 3A

Develop RTA 'Guidelines for Public Education Campaigns' based on the 'good' practice principles identified in Part B of this Study.

OBJECTIVE

To implement effective public education campaigns which achieve program objectives.

RATIONALE

Part B of the study identified key principles of best practice in public education. When these principles are applied, the likelihood of campaign objectives being achieved is significantly higher. A fundamental good practice principle is the need to identify the role of mass media advertising within the overall program strategy. Legitimate advertising roles include information provision, agenda setting and direct behaviour change. The campaign development must be researched-based and based on expert knowledge of psychology (the science of behaviour).

Once developed, the Guidelines should be applied consistently by the RTA, and provided to key stakeholders including local government Road Safety Officers, NRMA Member Services, MAA, Department of Health and NSW Police Service and the Institute of Public Works Engineering. This will facilitate a common understanding of good practice in road safety advertising campaigns.

The research also identified that mass media advertising needs to be subject to independent evaluation.

1.3.2 Recommendation 3B

Underpin behaviour change strategies and research with documented specifications that clearly define the objectives of the advertising campaign for each public education campaign.

OBJECTIVE

To ensure that advertising campaigns have appropriate strategic roles based on research and sound psychological principles.

RATIONALE

This recommendation follows from Recommendation 3A. Campaigns intended to change behaviour should be based on a good knowledge and understanding of the *science* of human behaviour. As identified in Part B of the study, advertising campaigns that are effective in changing behaviour play a support role to other program initiatives, such as enforcement and penalties. Where the strategic role of a campaign is to set agendas or inform the public, these campaigns should be evaluated in terms of changes in knowledge or awareness.

The literature review highlighted that a stand-alone advertising campaign will not produce significant behaviour change. The prevailing view is that road safety advertising campaigns that seek to change behaviour are likely to have an effect only if they support other significant elements within an integrated program. When it has been shown to have been successful, advertising has usually been closely associated with enforcement or legislative (penalty) initiatives. It is more likely to be successful when it is associated with a specific enforcement strategy.

However, there are times when social marketing advertising is used for purposes other than changing behaviour. This includes agenda setting and information provision. Examples of all advertising campaigns for these purposes include the RTA driver fatigue advertising campaigns (*Testimonials* and Double Demerit campaigns). Advertising campaigns can also be used to maintain safe behaviours by providing 'social proof' that everybody else is doing the desired behaviour. Where these campaigns contribute to changes in knowledge and awareness over time, they can be evaluated as successful.

1.3.3 Recommendation 3C

Continue to develop and implement RTA integrated and targeted public education campaigns to support enforcement programs, and where possible link them to specific enforcement initiatives.

OBJECTIVE

To maximise the effectiveness of enforcement programs and achieve short-term behaviour change.

RATIONALE

Part B of the study identified that where advertising has been part of a program that has achieved direct behaviour change, its role has been to inform the community about the enforcement initiative as well as to provide a link between the behaviour and the enforcement. To assist directly in behaviour change the advertisement should have a specific message about the enforcement initiative. The campaign is undermined unless road users see enforcement activity and furthermore this affects credibility of future campaigns.

The research presented in Part B of the study noted the difficulty of convincing people who behave in an undesirable way (and have done so for a long time) that this behaviour is likely to lead to a serious crash. Their day-to-day experience negates the message. Intermediate outcomes such as licence loss and fines are seen to be more likely events than fatal crashes for these individuals and, therefore, are more likely to result in behaviour change.

1.3.4 Recommendation 3D

Further improve public understanding of the more complex issues surrounding driver fatigue in RTA education programs, focusing on the concept of tiredness as a consequence of both over-exertion, long hours of wakefulness and disruption to circadian rhythms.

OBJECTIVE

To increase general understanding of the nature of driver fatigue and thereby encourage the adoption of behavioural countermeasure strategies beyond the strategy of resting every two hours.

RATIONALE

This follows from Recommendation 3C. The crash data analysis indicated that fatigue is of growing significance in the contribution to serious crashes. However, fatigue data are largely circumstantial; they depend on features of crashes being indicative of a loss of concentration—such as possible tiredness due to lack of sleep, the time of day and evident distances travelled.

Parts B and D of the study contained significant material on the community's attitude to driver fatigue. Considerable success has been achieved in public recognition of driver fatigue as an important factor in crashes. However, this study disclosed both a considerable disregard for the 'Rest after 2 hours' concept on the one hand, and a possible over-reliance on it (as a complete countermeasure) on the other.

Although there was recognition that driving while fatigued might be putting them at risk, almost all group participants admitted to driving when fatigued (that is, driving when tired) at some time in their life. Furthermore almost 15 per cent of survey respondents reported having fallen asleep while driving. While the initial focus group anecdotes of driving when fatigued tended to concentrate on long trips, it was commonly accepted that a driver could become fatigued when driving on shorter or local trips. Some group participants indicated that they were less likely to drive while fatigued as they grew older.

It logically followed from these findings that targeted advertising campaigns should be developed to increase community understanding of the dangers of driver fatigue.

1.4 Other issues (Group 4)

1.4.1 Recommendation 4A

Support the use of self-testing breath alcohol devices in licensed premises.

OBJECTIVE

To increase the use of self-testing breath alcohol devices in licensed premises and to prevent drink driving.

RATIONALE

The community attitude survey found that self-operated devices may be useful for many participants if they are available. Although a very small proportion of participants in the attitude survey reported having used self-operated breath testing devices in the past, around one in three participants reported that they would use them if they were available. Interestingly, the subgroups most likely to use them and, therefore, that could be targeted most effectively were young drivers (student, learner and provisional drivers) and males. More Asian- and European-born participants reported that they would use these devices.

1.4.2 Recommendation 4B

Study the relationship between crash involvement and licence history.

OBJECTIVE

To better understand the effect of licence-based sanctions on subsequent behaviour.

RATIONALE

The crash data analysis and Police Christmas–New Year reports (Part C) showed a marked increase in the crash involvement of defined suspended and disqualified drivers and involvement of drivers with an adverse licence record of various offences. Police also have some concern at the difficulties associated with large-scale checking of licences. This concern was translated into the inability of the study to seek any correlations between recidivism and crash involvement.

1.4.3 Recommendation 4C

Include integrated pedestrian safety countermeasures including facilities, education and other engineering treatments in the Pedestrian Safety Strategy being developed by the RTA.

OBJECTIVE

To improve pedestrian safety and to identify and address those design and operational deficiencies that may discourage pedestrians from taking maximum advantage of the safety provided by the installation.

RATIONALE

Part A of the study found that Pedestrians typically represent 12.5–13 per cent of hospitalisations in Australia, and 17–20 per cent of fatalities. Furthermore, a large majority of these crashes occurs in built-up areas. The Sydney region is over-represented in terms of pedestrian crashes compared with the rest of the State.

The NSW mass crash data cannot establish a link between speed and pedestrian casualties. Speed is rarely identifiable directly from a crash report because this depends on the driver being willing to state that he or she was speeding or the Police officer having sufficient evidence to charge the driver with speeding.

McLean et al. (1994)² analysed the results of detailed investigations of 176 fatal pedestrian crashes in the Adelaide area between 1983 and 1991, and found that:

A reduction of 5 km/h in vehicle travelling speeds in the Adelaide area could be expected to result in a reduction of 30 per cent of the incidence of fatal pedestrian collisions.

Part B of the study identified that it is difficult to convince people who behave in an undesirable way and have done so for a long time that this behaviour is likely to lead to a serious crash as their experience negates the message. Given this finding and due to the fact that widespread pedestrian enforcement campaigns are unlikely to occur, reliance on stand alone advertising campaigns that target pedestrians is unlikely to achieve

² McLean, A J, Anderson R W, Farmer, M J B, Lee, B H, and Brooks C G (1994) *Vehicle travel speeds and the incidence of fatal pedestrian collisions*. Federal Office of Road Safety (now Australian Transport Safety Bureau) Canberra.

significant behaviour change. However, campaigns that target drivers and pedestrians as part of an integrated program are more likely to contribute to behaviour change.

Part E (the Pedestrian Study component) determined that pedestrians who disobeyed traffic lights appeared to be approach dependent³. It appeared that pedestrians made a judgment about the potential crash risk, traffic volume and crossing distance before they commenced illegal crossing manoeuvres.

These sites provided examples of issues that can develop at crossing locations of high pedestrian density and should be included in the Pedestrian Safety Strategy being developed by the RTA.

1.4.4 Recommendation 4D

RTA continue to pursue innovative perceptual treatments on curves, to reduce undesirable driver behaviours which involve curve tracking, and continue trials at sites of known high crash frequency.

OBJECTIVE

To make specific traffic engineering improvements at hazardous sites by encouraging better tracking of vehicles on curves, leading to fewer incidents of loss of control and collisions with approaching traffic.

RATIONALE

Based on the preliminary study documented in Part E, it was considered that the lack of orderly tracking around curves seemed to be a common behaviour, and would be subject to further survey. This behaviour can encourage higher speeds to an undesirable level; reduce sight distances through a curve for non-tracking motorists; and startle oncoming motorists.

The RTA could pursue perceptual treatments on curves (with problems) to encourage drivers to improve curve navigation by not using the road shoulder. The evaluation *Perceptual Safety Treatments*, a joint project undertaken by the RTA, VicRoads, Monash University Accident Research Centre, ARRB Transport Research and the Australian Bureau of Transport Safety since 1994, aims to identify appropriate perceptual safety treatments that will influence drivers' speeding behaviours, particularly at locations where high speed is noted to be a factor in the occurrence or severity of road crashes. The findings of this evaluation will not be available for several months. However, this evaluation will provide RTA with countermeasures that are most effective for reducing speed on curves rather than improving curve tracking. Furthermore, the implementation of guide posts that are placed together at closer intervals and that are placed in increasing increments of size, on problem curves, may contribute to improving curve tracking and would not result in skid resistance problems. At present, this type of treatment is being trialed for speed reduction.

1.4.5 Recommendation 4E

Jointly develop a NSW Police Service and RTA protocol for Police Service access to the photographic images held on the RTA DRIVES computer system.

OBJECTIVE

To increase the detection of suspended and disqualified road users.

RATIONALE

Improved Police-RTA protocols for Police access to the RTA DRIVES database would facilitate checking whether or not drivers have had their licences suspended or disqualified.

³ Approach dependent: Pedestrians make a judgement about the potential crash risk, traffic volume and crossing distance before they commence illegal crossing manoeuvres.

Summary Report

2.0 Introduction and Background to the Study

2.1 Introduction

Six hundred and three people died as a result of crashes on NSW roads in 2000—26 more than in 1999. This was the highest annual total since 1995. A particularly bad Christmas–New Year holiday period contributed to this result, with 40 deaths occurring in a 15-day period, the highest since 1989–90, a period that included 35 fatalities in the ‘Kempsey’ bus crash.

In response to this situation, the Minister for Roads established a Road Safety Task Force to review trends and current initiatives, and to make recommendations about appropriate measures to address the rising road toll. The Task Force included representatives from the NSW Roads and Traffic Authority (RTA), Motor Accidents Authority (MAA), Ministry for Police, NSW Police Service, NRMA Member Services, and three community representatives.

The Task Force, chaired by the Chief Executive of the RTA, made its report to the Minister on 3 April 2001. This report made specific recommendations in the areas of driver and rider education and behaviour, technology, enforcement and deterrence, monitoring and evaluation.

The significance of driver behaviour in the causation of traffic crashes was recognised, and it was considered appropriate to undertake a major study on road user behaviour.

This Road User Behaviour Study was commissioned by the RTA Chief Executive and coordinated by the Road Safety Task Force. The study was funded by the RTA and MAA and supported in kind by the NSW Police Service.

The research study into road user behaviour consisted of five separate studies (Parts A to E; Figure 1). This report summarises the key issues and findings from the study, and thus, should be read in conjunction with these individual reports.

The crash data analysis study (Part A) involved an analysis of the crash data for the period 1993 to 2000 and focused on establishing the most likely cause of crashes, the number and rates of crashes over the period and a comparison of NSW road safety performance with other States and countries. This study is reported in the *Road User Behaviour Study, Crash Data Analysis Report*.

The public education study (Part B) included a review of the literature, a review of current RTA advertising campaigns, and a series of focus group interviews. This study is reported in the *Road User Behaviour Study, Public Education and Mass Media Report*.

The road safety enforcement and deterrence study (Part C) included a review of the literature and interviews with key stakeholders in NSW, other States and New Zealand. This study is reported in the *Road User Behaviour Study, Road Safety Enforcement and Deterrence Strategies Report*.

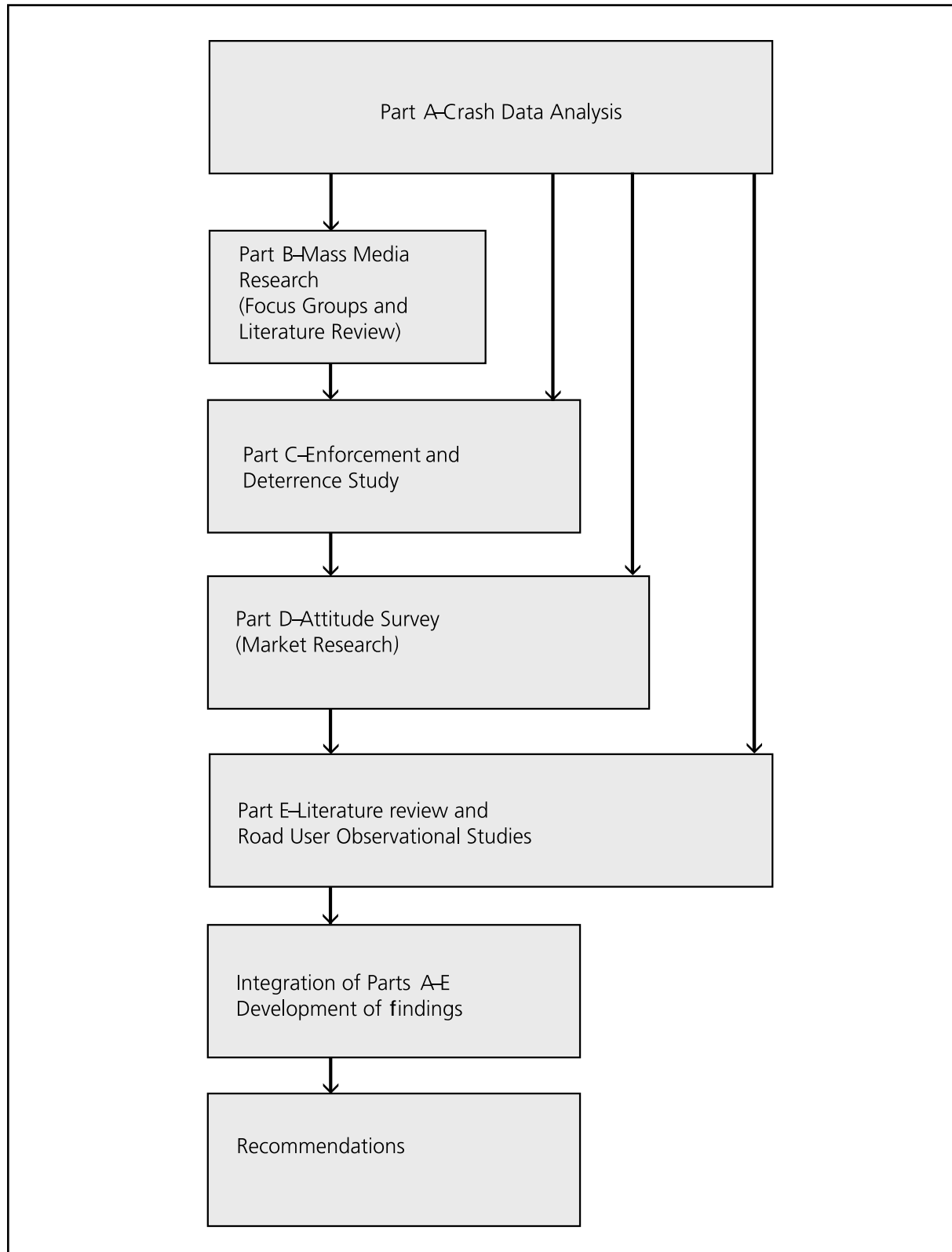
The community attitude study (Part D) involved a telephone survey of 1,000 drivers in NSW. This study is reported in the *Road User Behaviour Study, Community Attitude Survey Report*.

Two observational studies (Part E) of the behaviour of pedestrians and of drivers entering curves were implemented. The results of these studies are reported in the *Road User Behaviour Study, Observational Studies Report*.

The key issues and findings from each of the studies, including 19 recommendations reported in four categories have been summarised and form this Report.

Finally, the results of this study and the recommendations in the Task Force Report should be viewed in the context of *Road Safety 2010* (which is the strategic plan for NSW to halve the road toll by 2010) in the road safety action plans.

The integration of the research undertaken in the five parts is illustrated in Figure 1.

**FIGURE 1: SCHEMATIC OF STUDY STRUCTURE**

2.2 Background

To put the rise in the road toll for NSW in context, it is appropriate to consider the trend in fatalities and fatal crashes since 1975 (Figure 2) and what has happened in other Australian States and Territories and internationally.

2.2.1 Trends in the NSW road toll 1975–2000

In NSW the 1999 and 2000 results both deviate from the steady but gradual downturn in fatalities since 1994. However, Figure 2 highlights the peak in the road toll in the late 1970s and shows that the major gains in the road toll that were experienced from 1982–1984 and from 1988–1993 were not repeated during the late 1990s.

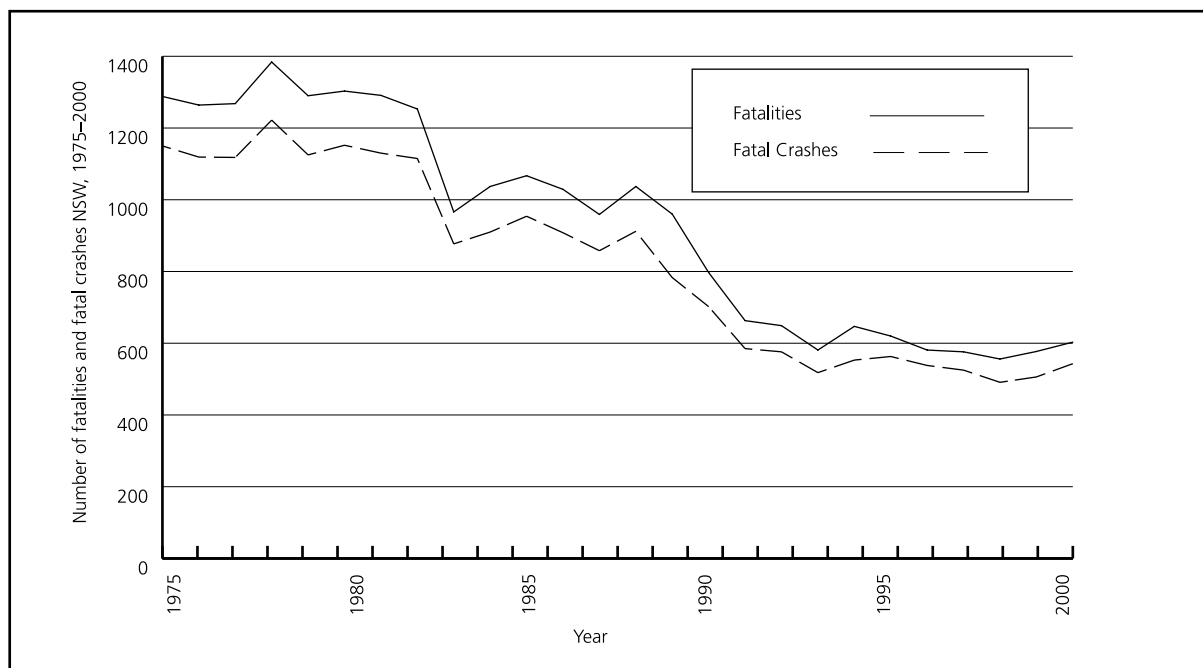


FIGURE 2: NUMBER OF FATALITIES AND FATAL CRASHES IN NSW, 1975–2000

2.2.2 Interstate comparisons

Comparisons of fatality data between Australian States and Territories should be treated with caution because of the differing data collecting procedures.

On the basis of NSW data and published data for the other States and Territories⁴, there were 1,820 fatalities in Australia during 2000, an increase of 57 (3%) on 1999.

Compared with 1999, most States and Territories experienced more fatalities in 2000—South Australia (up 15, 10%), Victoria (up by 24, 6%), Queensland (up by 4, 1%), NSW (up by 26, 5%) and the Northern Territory (up by 3, 6%) all recorded increases in fatalities (Figure 3).

In terms of fatalities per 100,000 population, only the ACT (5.8), Victoria (8.5) and Queensland (8.9) and Tasmania (9.1) recorded lower fatality rates than NSW in 2000. The fatality rate per population for NSW (9.3) was slightly below the rate for the whole of Australia (9.5).

⁴ Australian Transport Safety Bureau, (ATSB) March edition, published April 2001.

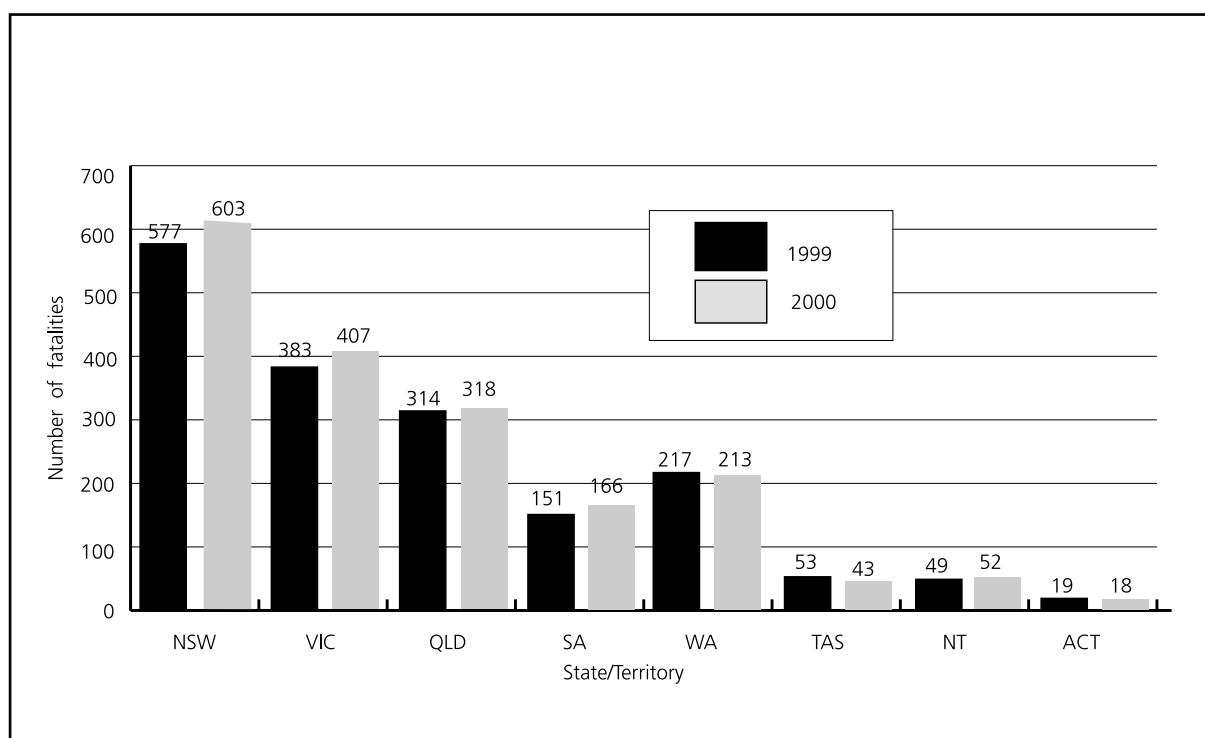


FIGURE 3: ROAD FATALITIES FOR AUSTRALIAN STATES AND TERRITORIES, 1999 AND 2000

2.2.3 International comparisons

Comparisons of fatality data between NSW and overseas jurisdictions should also be treated with caution because of the differing data collecting procedures.

Compared with other industrialised countries, NSW and Australia have both demonstrated significant larger reductions in their fatality rates. Since the early 1980s, NSW has made substantial gains in improving road safety and its performance now surpasses industrialised countries like the United States and is now approaching that for the best performing countries such as Great Britain.

NSW recorded 9.3 fatalities per 100,000 population in 2000 (compared with Victoria on 8.5). The OECD median was 11.0 per 100,000 in 1998 (the latest OECD figures available).

3.0 Key Findings

This Section integrates conclusions from each of the five parts of the study (A to E) into issues considered to be the Key Findings from the study as a whole, and constitutes the basis of the study recommendations.

The overall results of this study indicate that there was an increase in fatal crashes in the Christmas–New Year period of 2000 and that this increase was one of the main distinguishing characteristics of crashes in 2000. Overall trends in 2000 suggested that fatal crash rates tended to increase, although this increase was not statistically significant and non-fatal crash rates appeared not to have changed from the previous year. The fact that this trend seems to be mainly due to fatal crashes suggests that road safety initiatives need to focus on the factors that increase the risk of these types of crashes. The analysis shows clearly that fatal crashes differ from injury and non-casualty crashes in several important ways. These need to be taken into account in the design of future road safety initiatives. The fact that most change seems to have been in fatal crashes also increases the impetus to take action to reduce the numbers and rates of fatal crashes. For this reason, the key findings described below relate primarily to fatal crashes. It is expected that improvements in fatal crashes would also result in an overall reduction in road trauma.

3.1 Crash data analysis

The numbers of fatal traffic crashes (and fatalities) has been increasing since 1998, which appears to represent a departure from the trend towards the RTA's (calendar) year 2000 target of 500 fatalities. When the fatalities and fatal crashes are expressed as rates, however, the increasing trend is within the range of statistical variation that might be expected by chance. Consequently it is not clear whether the recent increase reflects random variation or an early warning of a longer-term increasing trend. In the same period (i.e. since 1998) injury and non-casualty crash rates remained the same.

Fatal crashes for the 2000–2001 Christmas period represent part of an increasing trend in recent years, with the number of fatal crashes over this period doubling from 17 in 1997–98 to 34 in 2000–2001. Figure 4 shows the increasing contribution of fatalities and fatal crashes in this period in the annual toll. Because some cases remain unresolved, more recent data are not available, and no firm conclusions can be made about whether or not casualty and non-casualty crashes are following a similar trend for Christmas.

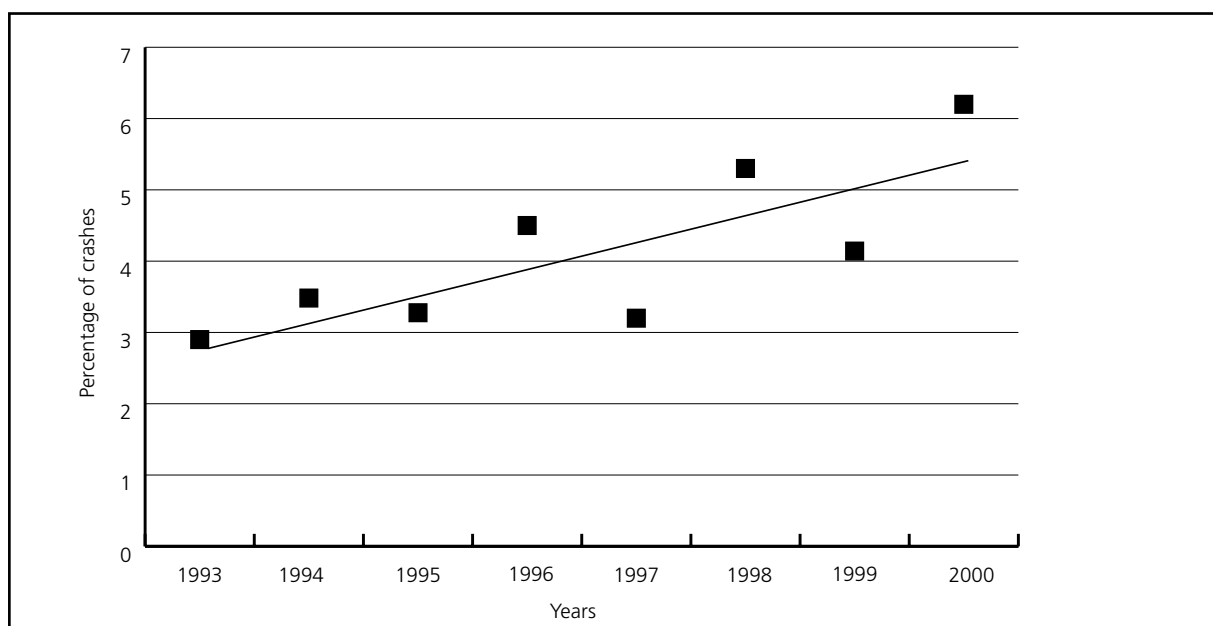


FIGURE 4: PROPORTION OF ANNUAL FATAL CRASHES OCCURRING IN 15-DAY CHRISTMAS–NEW YEAR HOLIDAY PERIODS

The substantial reduction in fatalities in the first four months of 2001 suggested that much of the ground lost in 2000 might be regained in the short-term. However, to bring the 2001 toll back onto the trend line existing prior to 1999, a greater proportionate reduction than for any year since the introduction of random breath testing will be needed.

Over the study period (1993–2000) despite the increasing proportion of fatal crashes per day during the Christmas–New Year holiday period, the trend for other times of the year was generally stable.

Even when data for 1999 and 2000 are included, the improvement in the NSW road toll has continued to be among the best of OECD countries in the latter part of the 20th century. If NSW can regain and hold the 1994–98 trend line in fatalities, it will be approaching ‘World’s Best Practice’ by year 2005.

Speeding, drink driving, fatigue and non-wearing of seat belts continue to be the road user behaviours that, through effective targeting, have the greatest potential for the reduction in the number of road fatalities.

3.1.2 Causal and related factors from crash data

3.1.2.1 MAJOR ISSUES SURFACING IN YEARS 1999–2000

- The emergence of 40- to 49 year age group as being significant for fatal crashes, although changes in the proportion of 40–49 year olds in the population may account for at least some of this change;
- Increases in fatigue-related fatal crashes by nearly five per cent since 1996, although changes in the crash patterns for potentially related variables such as time of day, type of road user movement and road features (see below) suggests that RTA criteria for determining fatigue involvement may underestimate the significance of this factor;
- Increases in fatal crashes on state highways by nearly 10 per cent and in 70 to 90 km/h zones by around six per cent since 1997;
- Increases in fatal crashes involving vehicles travelling in opposite directions (increase of around 10% since 1997) and off path movements—(increase of around 4% since 1999);
- Increases in fatal crashes at dawn (especially around 05:00am) and dusk;
- Increase in the number of fatal crashes on the North Coast of around two to three per cent in the last three year period (1997–2000);
- Increase of around two per cent in the involvement of light trucks in fatal crashes, but not necessarily as the vehicle at fault in the crash;
- Increasing involvement of disqualified and suspended drivers in fatal crashes (four-fold increase since 1998). Greater proportion of casualties in 2000 involved motor vehicle drivers; and
- Decrease of between 12 and 18 per cent in involvement of provisional licence holders involved in fatal and injury crashes between 1999 and 2000.

3.1.2.2 PECULIARITIES OF THE 2000–2001 CHRISTMAS PERIOD

There were 40 fatalities in the 15-day police identified period over the Christmas–New Year in 2000–2001. The crash data analysis (Part A) identified that three key controllers (10%) in fatal crashes were disqualified or suspended. In 2000–01 there was an increase in the proportion of key controllers who were disqualified or suspended.

The NSW Police Service, Traffic Services Branch reported that:

- Three (3) key controllers (10%) in fatal crashes during the 2000–2001 Christmas period were ‘unauthorised’;⁵
- Drivers involved in fatal crashes were predominantly from NSW (10% from Queensland);
- Drivers involved in country fatal crashes were mainly country residents and in metropolitan crashes they were mainly Sydney residents; and

⁵ Motor vehicle controllers who do not have a valid licence, including those who do not have the correct licence for the type of vehicle being driven. Categories of unauthorised driving include cancelled, disqualified, suspended, refused, expired, never licensed, overseas and interstate licenses which have not been converted within three months of taking up residency, and wrong class of licence.

- There was a very high incidence of 'at fault' drivers having previous records of speeding, other traffic offences, and licence suspension or cancellation;

Compared with previous Christmas periods crash data analysis showed that:

- Many more fatalities occurred on rural (i.e. country non-urban) roads (increase of 20%), and where the speed limit was 100 or 110 km/h (increase of around 20% compared to the 1999–2000 period);
- Crashes occurred more often on curves or curved sections of road (increase of nearly 20% since the 1998–1999 period);
- Crashes occurred more frequently in the North Coast–New England region, and less frequently in the Sydney–Hunter and Illawarra regions of the State; and
- A higher involvement of speeding (increase of nearly 20% since 1999–2000 period).

3.1.2.3 MAJOR ISSUES PREVAILING OVER THE WHOLE STUDY PERIOD, (WITH LITTLE DIMINUTION IN YEAR 2000)

Speeding remains the major contributing factor in fatal crashes; it was involved in over one-third of fatal crashes each year throughout the study period. While speeding decreased proportionately in favour of fatigue in year 2000, the actual number of speed-related fatal crashes has remained between 190 and 205 for each year since 1995.

Fatigue involvement increased from 85–95 fatal crashes per year, to 109 in 2000. This was evidenced both by RTA assessment criteria and the incidence of 'run off road' crash types and early morning crashes. Fatigue now rivals drink-driving as a major road safety issue.

Alcohol involvement is currently a contributing factor in around 15 per cent of fatal crashes per year (88 crashes). A reduction in alcohol-related crashes occurred between 1993 and 1998, from a high of 123 crashes per year to a low of 80 in 1998. However, RTA statistics for alcohol-involved crashes relate to drink-driving and do not include 'drink-walking'. This was estimated to be a factor in 25–50 per cent of pedestrian crashes.

Non-wearing of restraints and helmets remains an issue, with around 90 drivers and passengers not wearing available restraints among those killed each year and around 10 riders or passengers not wearing a helmet.

'Heavy' trucks continue to be over-represented in fatal crashes but not as the key vehicle at fault. Indeed, heavy trucks are less likely than all other motor vehicles to be the key traffic unit in a crash. Nevertheless, around 100 heavy trucks are involved in fatal crashes every year.

The Pacific Highway continues to have more than twice as many fatal crashes as any other classified road. 'Country non-urban' sections of major State Highways generally, are the site of the majority of fatalities in those roads. Some other less travelled classified roads (such as the Monaro and Federal Highways) showed an increased relative risk—in terms of fatal and injury crashes per vehicle-kilometre of travel.

3.1.2.4 ENVIRONMENTAL AND MANAGEMENT FACTORS

The downward fatality trend of around 13 per cent from 1995–1998 occurred in the context of increased traffic generally. Since then, traffic has continued to increase by about three per cent per year. If the recent increase in crash frequency was solely due to increased travel, it would be expected that fatalities would be more frequent than in the earlier period.

Trends were identified for increasing numbers of crashes involving disqualified and suspended drivers. However, it is not clear whether this represents an increase in rate because data are not available on the number of disqualified and suspended drivers on the road.

In relation to the effect of the Olympic Games on the road toll in 2000, the available data did not assist in ascribing any discernible effect. In fact, the proportion of fatal crashes occurring in September 2000 was almost identical to the proportion in September in the previous year (approximately 8% each year). Unfortunately, no travel pattern data was available to assist in determining the effect of road user exposure.

It was not possible to investigate links between the extent or timing of RTA and Police road safety campaigns and the road toll during the study period.

3.2 Public education and mass media marketing

The *Road User Behaviour Public Education and Mass Media* study commenced with a review of literature. The findings from that review were then integrated with the crash data analysis in order to develop an interview schedule for focus group research. This consisted of a series of focus group interviews to ascertain the impact on the community of recent mass media advertising. In addition, a review of current RTA and interstate advertising campaigns was conducted.

This study concluded that the RTA follows good practice in the development, implementation and evaluation of road safety advertising. In summary the RTA:

- uses research extensively in campaign development and management;
- recognises that the role of advertising is to support program initiatives and countermeasures rather than being about behaviour change on its own; and
- generally focuses on specific behavioural messages.

Furthermore, the study revealed that the media mix used by RTA appears to be appropriately chosen.

3.2.1 Best practice in mass media marketing—as identified from the review

There is no global consensus on what constitutes ‘best practice’ in this area. However, 13 elements of good practice were identified as a result of the literature review, discussions with other agencies and a review of media choice and mix (refer to the *Road User Behaviour Study, Public Education and Mass Media Report*). These are followed to a greater or lesser degree in Australia and elsewhere and include:⁶

1. Strategic context
 - On its own, advertising cannot be expected to change behaviour. A behaviour change strategy has many diverse components (for example, school education, legislation, enforcement, health programs, local and community programs, driver licensing and education programs). Mass media advertising may, or may not, have a role within such a strategy. It is also only one of several forms of public education activity.
2. Situation analysis
 - A decision has to be made on what advertising should aim to achieve, tempered by what it can achieve. The decision should be based on data (for example, crash statistics, observation surveys, questionnaires) and a review of road safety research literature.
3. Evaluation
 - Evaluation is necessary to assess whether the advertising achieved its objectives. The evaluation informs other work.
4. Roles of mass media advertising
 - The role of mass media advertising, within the strategy, must be identified. Its possible roles include:
 - providing information
 - setting agendas, and
 - changing behaviour directly.
5. Crash depiction
 - Research demonstrates that most people believe they are better and safer drivers than the rest of the driving public and that crashes happen to other less skilled and less safe drivers. The role of crash depiction in road safety advertising is to show the potential outcome of unsafe behaviour. The perceived links between unsafe behaviour and crashing are not usually strong enough, however, to motivate drivers to reduce unsafe behaviour. To produce behaviour change, the advertising should also depict an intermediate outcome that is perceived to be more likely than crashing, such as licence

⁶ For further information refer to the *Literature Review*, in Appendix A of the *Road User Behaviour Study, Public Education and Mass Media Report*.

loss or fines. This means that advertisements that depict only crashes as the outcome of unsafe behaviour are less likely to be influential than those that only depict an intermediate outcome. Depicting a crash as well as the intermediate outcome can play a role by enhancing the importance of these intermediate outcomes as a legitimate road safety activity.

6. Advertising supports other programs.
 - Where advertising has been part of successful programs to achieve direct behaviour change, its role has been to support enforcement initiatives.
7. Supporting enforcement
 - Where evaluations have demonstrated successful behaviour change involving advertising, they have reported the success of a specific enforcement initiative supported by advertising.
 - To assist directly in behaviour change, the advertisement should have specific messages about the enforcement initiative. The effect is short term, unless road users see enforcement activity.
8. Medium- and long-term
 - Road safety strategies have short-, medium-, and long-term components. The role of advertising should be defined for each. A 'one-off' isolated campaign is inappropriate.
9. Based on research
 - The development of successful advertising materials is based on research, rather than 'good ideas'. Campaign management should be informed by research.
10. Use of professional marketing principles
 - Effective campaigns use professional marketing principles. For example, media choice is research-based, so that it is likely to reach and influence identified targets. Paid advertisements are supported by media stories.
11. Based on behavioural science
 - Understanding of the target audience and generation of strategies to change behaviour have to be based on knowledge of psychology, the science of behaviour.
12. Promoting a specific behaviour
 - Advertisements with messages such as 'drive safely' or 'drive carefully' are not effective. Promote a specific behaviour, such as staying at or below the speed limit.
13. Emotional
 - It is usually inappropriate to attempt to persuade by rational argument in advertising.

3.2.2 Interstate practice

Discussions with Victorian and South Australian road safety advertising agencies revealed that in general they appeared to follow most of the above principles.

Recent Queensland practice did not provide a *prescription* for change, (being more in the way of agenda-setting than behavioural change) and, therefore, its contributions to improvement in the road toll in that State were difficult to assess.

3.2.3 RTA practice

After the completion of the crash analysis a literature review (focussing on traffic safety education and media), and an assessment of interstate practices, a review of recent RTA mass media products and media placement practice was implemented using 'focus group' perceptions and feedback. This process was undertaken according to the previously outlined principles of good practice. The findings are detailed in the *Road User Behaviour Study, Public Education and Mass Media Report*.

Improvements may be effected by:

- more behavioural science input into behaviour change strategies and research;
- complete and documented specifications of that which is required of public education within road safety strategies;
- greater exploration of the crash data and attitudinal research to better target and understand the market segments for advertising campaigns; and
- differentiating the message to subgroups, such as more highly educated people, as shown in the community attitude survey.

3.3 Deterrence

The examination of deterrence issues (Part C) incorporated a review of existing literature and discussions with various Police services.

The role of enforcement in general deterrence (i.e. beyond the detection and apprehension of offenders) is essentially to help create a threat of punishment such that people choose to comply with the law.

Such a threat is a product of the risk of detection and the consequent penalty, if so detected. Obviously, if either the risk is perceived to be very small, or the penalty inconsequential, the threat will be discounted no matter how high the other factor.

While they are not strategies, measures that help road users to comply (e.g. clear signposting of speed limits and advisory signs) enhance the credibility of enforcement policy and practices.

3.3.1 Legislation

The study did not identify any pressing need for legislation or regulation change beyond that proposed in the Road Safety Task Force Report of 3 April 2001. However, some changes in policy and administration are indicated as being worthy of consideration.

3.3.2 Enforcement issues from Part C

3.3.2.1 BEST PRACTICE

The review undertaken for Part C of the study found no general consensus on what constitutes 'best practice' in traffic law enforcement. Most agencies asserted that their own practices in both management and operations were suitable for their particular circumstances, and that they varied those practices where experience or changing circumstances so dictate.

Too few data are available relating to enforcement activity to enable a rigorous determination of the relationship between the level of enforcement and a reduction in road trauma.

Nevertheless, there was an increasing degree of agreement, and an emerging consensus of what practices constitute *good* practices.

3.3.2.2 GOOD PRACTICE

The literature review undertaken for Part C and extensive current research being undertaken by AUSTROADS indicates that *good* practice in traffic law enforcement should accommodate the following principles.

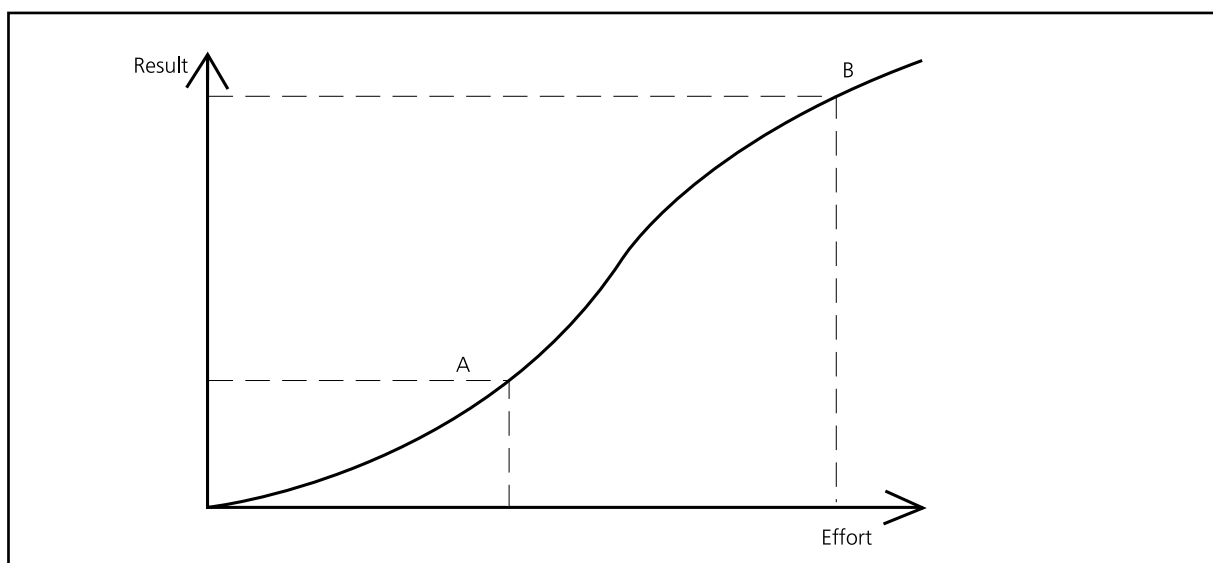
- Potential offenders should perceive the threat. They should choose to comply, in order to avoid threat. Those who regularly comply should seldom perceive a threat. Many of the issues to do with enforcement practice are related to ways in which road users perceive they can avoid the threat without complying, or by complying only at limited times and places.
- It appears that enforcement activity should be seen as concentrating on particular behaviours. This partly depends on public education. Nevertheless, when road users see enforcement activity, they should recognise the behaviour being targeted.
- Publicity appears to help in supporting enforcement initiatives. It should tell people about the threat and specifically what to do to avoid it.

- The optimal level of enforcement activity must depend on how effectively the enforcement is done. Internationally, there has been little useful research on the optimum level, mainly because of the absence of good data to measure the activity.
- A strategy built on the advantages of both Police presence and technology is necessary to maximise the potential of using both for deterrence.
- Enforcement processes should be designed so that sanctions immediately follow any offence, whether detected manually (e.g. fixed, digital camera) or remotely (e.g. Police officer).
- It is recognised commonly that enforcement activity should be visible. The value of high visibility is that it publicises the enforcement activity in a more credible way than any advertisement. However, in some circumstances visibility can allow drivers or riders to believe they can avoid detection.
- Enforcement locations should be randomised. Research shows that, with regularly positioned visible operations, drivers and riders predict where the operations will be and drive slower near those locations. This is a local effect, however, and they slow for only a limited time and distance. When the purpose is to improve safety at a particular location, then local effects are desirable. It is common to use data analysis (intelligence) to target certain locations. AUSTROADS is planning a study to address the issues around targeting and predictability.
- Drivers and riders should believe that if they offend they will be detected. Their fear of detection will be reduced if they are never caught, and they will then be more likely to offend in the future. Moreover, they will tell their friends, thus reducing their fear.
- Conveying positive countermeasure strategies to drivers and riders should form part of the behaviour change strategy. If road safety authorities can help people to comply, this will result in better compliance.
- Enforcement activities benefit from the information provided by the evaluation of initiatives. Planning and management of enforcement activity should include evaluation at the input, process and outcome levels so as to optimise both efficiency and effectiveness.

3.3.2.3 HOW MUCH IS ENOUGH?

Crash analysis from Part A, combined with the information gained from Parts B, C and D raised many general crash countermeasure issues.

With limitations on the financial and other resources available overall for road safety, there is obviously an 'opportunity cost' to be faced, if resources are applied to a countermeasure that is not as cost-effective as an alternative one. This concern is pertinent to the issue of the appropriate balance in the application of 'discretionary' funds between public education and 'enhanced' enforcement.



**FIGURE 5: RELATIONSHIP BETWEEN RESULTS AND EFFORT.
THIS CURVE WILL HAVE DIFFERENT SLOPES FOR DIFFERENT ACTIVITIES.**

In general terms, the relationship between effort and results can be represented by a traditional 'ogive' curve shown in Figure 5. Below point A, results are not commensurate with effort—the effort is only 'token'. However beyond point B, the effort is subject to diminishing returns.

The research consistently suggests that most major road safety strategies, including enforcement and mass media advertising, are cost-effective in the range A–B. However in neither case do we really know the slope of the curve (i.e. the benefit: cost ratio), or where on the curve the current allocation of resources sits. To determine this position, management should consider appropriate *measures of performance* at the input level, as well as outcome. Past efforts to establish these relationships in terms of reductions in casualties per dollar spent on advertising, and, or, enforcement, have found some statistically significant correlations. The relationships varied from program to program however, and often were distorted by imprecise input data, especially on the extent and nature of enforcement. Therefore, there is no national or international consensus in this area.

3.3.2.4 INTERSTATE AND NEW ZEALAND PRACTICE

Organisational arrangements, management practices and operational procedures significantly varied from jurisdiction to jurisdiction. The forthcoming report on the AUSTROADS study into speed enforcement is expected to present a definitive analysis in this area, and it is anticipated that many of its findings will relate to other areas of traffic law enforcement. The AUSTROADS research is also expected to contain a comprehensive review of contemporary practices and likely expand upon the requirements or good practice outlined above. The features of contemporary practice in some other jurisdictions include:

- increasing consideration of a balance between crash-based intelligence-driven targeted operations and more general deterrence-oriented managed enforcement of wider areas in a more random manner;
- incorporation of management measures that monitor inputs and processes as well as outcomes of enforcement, with performance indicators at each level; and
- examples of 'purchaser–provider' models of accountability for enforcement activity for base-line as well as enhanced enforcement, with the purchaser being variously within or external to the enforcement agency.

3.3.2.5 CURRENT NSW PRACTICE

Part D—the community attitude survey identified a perception among the NSW community of increased speed enforcement, but this appeared to take in the effects of publicity about fixed cameras, rather than actual Police presence.

The level of Highway Patrol activity appeared from operational statistics to have declined in recent years. The community attitude surveys conducted for Part D of the study reinforced this appearance. From Part C, a possible 'crossing-over' of duties was identified within the Police Service, which may (or may not) have resulted in a net increase in traffic enforcement.

'Input and process' performance measures may help to determine the efficiency of enforcement operations, and quantify their contribution to reduction of road trauma.

3.3.3 Penalties

The penalty of an offence should be substantial, to establish the relevant offence as serious.

3.4 Community attitude surveys

The main findings from the community attitude survey included the following:

- Speeding was reported by most participants as the major road safety problem.
- Fatigue was reported as a major road safety problem by fewer people, but there is evidence from earlier surveys that more people are reporting it as a problem.
- More than three-quarters of participants felt that being over the legal limit for alcohol made them less safe as a driver but only around a half felt the same about their safety as a pedestrian.
- Some groups (young people, those from lower educational background, females, Asian-born people and

retirees and pensioners), were more likely to abstain from driving if they were drinking, whereas males, and people with a higher educational background were more likely to take the less conservative path of restricting their intake if driving.

- Only around 10 per cent of people reported exceeding the speed limit on a regular basis by more than 10 km/h. There was greater tolerance for exceeding the higher speed limits than lower ones. Some subgroups were more tolerant of speeding and these included people with higher education, learners and provisional licence-holders. There was a strong finding that many felt that speeding is all right if the person 'drives safely'.
- Most participants felt that speed limits were set at reasonable levels, but more than half felt that fines were for revenue raising.
- Fourteen per cent of participants reported that they had fallen asleep at the wheel at some time. The most vulnerable subgroups were people who were more likely to drive a lot, or at particular times such as shift workers.

3.5 Observational studies

3.5.1 Pedestrian observational study

The pedestrian observational study involved the observation of the crossing behaviour of 839 pedestrians at two signalised Sydney 'blackspot' intersections. These were Pitt Street–Park Street, Sydney and at Crown Street–Oxford Street, Darlinghurst.

The observations indicated that at both intersections, the majority of pedestrians appear to be law abiding and safety conscious as they wait for traffic and the green light and look for traffic hazards during the crossing manoeuvre. The study confirmed that, generally speaking most pedestrians are safety conscious. The fact that the majority of pedestrians appeared to be law abiding may be contrary to the perceptions of drivers.

Apparently pedestrians make a judgment about the potential crash risk, traffic volume and crossing distance before they commence illegal crossing manoeuvres.

At both intersections, many pedestrians finished their crossing manoeuvre during the flashing red period. Pedestrian signals are designed for people to complete the walking manoeuvre during the flashing red period even if they started to cross during the green 'Walk' phase. The possibility should be considered for increasing green time to complete crossing for the intersections without red arrow protection to give greater priority to pedestrians than to vehicles.

Both intersections appear to have some design problems. The non-90° angle of the intersecting roads at the Oxford Street–Crown Street intersection appears to encourage some pedestrians to cross outside the marked facility on the two Oxford Street approaches, which is exacerbated by the short median and the location of the median push button. At the Pitt Street–Park Street intersection, there appears to be significant confusion about the one-way nature of Pitt Street, with no traffic waiting at the holding line on the northern approach. At this location the potential for conflict is exacerbated by lack of holding arrows for left and right turning traffic, which appear to 'suddenly come out of nowhere'.

There appears to be little difference in behavioural patterns at different times of the day and week. Some variation does occur, but these appear to be site specific, for example, on weekend mornings fewer pedestrians cross during red in the City, while this happens in Oxford Street during the day and at night on Crown Street.

3.5.2 Curve tracking study

An observational study was conducted of the lateral positioning of vehicles on curves. The study was conducted to observe how motorists manoeuvre through a curve on the Great Western Highway about two kilometres west of the Heavy Vehicle Checking Station at Blackheath. This road was chosen for the relatively high crash frequency on curves through this section. The observation study was supplemented with a survey of vehicle speeds.

Of the 300 vehicles observed only 65 (22%) drivers held a 'central line' within their lane. The remainder described asymmetric cornering lines either within their lane, or outside their lane. The most common form of cornering at this curve involved a driver positioning their left wheel on or near the left edge line around the curve, thus, staying well clear of the centre line.

The study revealed that the vehicle classifications of car or car derivative, four-wheel drive and vans (forward control van or people mover) mostly were exceeding the advisory speed sign posting (55 km/h) of the curve. The vehicle classification with the greatest speed was the forward control van or people mover (58.3 km/h). A concern was the high number of vehicles (45 or 15%) that completely or partially occupied the breakdown lane as they traversed this left curve. This illegal manoeuvre on a curve of limited sight distance is potentially hazardous particularly if a broken down vehicle or cyclist occupies the lane.

Also of concern was the observed short headways between vehicles within platoons. These short headways, combined with the speeds which were generally in excess of the signposted advisory speed built up a picture of 'tight' driving where drivers appeared to be leaving too little time and distance to avoid a potential conflict. Such a conflict could be either in the form of an object in the left breakdown lane or an oncoming vehicle straddling their side of the carriageway.

Processes to reduce curve tracking and improve driver curve negotiation behaviour and reduce the incidence of drivers using the entire road shoulder should be investigated. The evaluation, *Perceptual Safety Treatments*, a joint project undertaken by the RTA, VicRoads, Monash University Accident Research Centre, ARRB Transport Research and the Australian Bureau of Transport Safety since 1994, aims to identify appropriate perceptual safety treatments that will influence drivers' speeding behaviours, particularly at locations where high speed is noted to be a factor in the occurrence or severity of road crashes.

3.6 The bottom line

The research identified an on-going debate over the 'bottom line' measure of performance in road safety. Should changes be measured in terms of 'rates' (crashes for vehicle-kilometre of travel, per vehicle, per capita, per licensed driver) or in absolute numbers of crashes (fatal, casualty, all) or outcomes (fatalities, casualties, social cost)?

Further debate was identified on the objective for countermeasure development. Should it be an 'ethical' approach (vulnerability, equity), or economic (benefit-cost, cost-effectiveness) or social cost (financial cost, years of productive life lost, etc)?

Although the Brief for this project provided a specific focus on current road safety crash trends, the search for explanations of changes includes consideration of exposure and kilometres of travel, licences on issue, population, demographic and transport. Determination of target audiences for countermeasure action requires similar consideration.

This study cannot be considered in isolation. Indeed, the Brief quite properly required examination of exposure trends—both to help explain increases, and to assist in the development and application of countermeasures. Therefore, there is a substantial degree of analysis and discussion of changes in rates in the five individual study reports.

Also identified was the issue of the magnitude of fatality statistics, compared with those of casualties and non-casualty crashes. The larger number of non-fatal crashes provides greater statistical power for analysis, whereas with fatal crashes the smaller 'cell size' makes it difficult to differentiate between statistical variability and significant change in many cases.

However, there is generally less accuracy, more controversy, and less timeliness about the data on casualty and non-casualty crashes than about fatal crashes. Furthermore, the analysis presented in Part A showed some clear distinctions (beyond severity) between the factors involved in fatal crashes versus other crash types.

Consequently the focus is typically on absolute numbers and predominantly fatalities. However in terms of 'benchmarking' performance against that of other jurisdictions, 'rates' that take relative exposure into account are more appropriate.

3.7 Overall situation

The findings from Parts A, B C and D of the study, suggested that NSW practice in road safety promotion, (including marketing and enforcement), does not suffer overall in comparison with that in any other Australian State or New Zealand, and must generally be counted as among the better of the OECD countries.

Nevertheless, there are clear indications (identified in Part D of this study) that the community expects continuous improvement, and there are avenues for achieving this. The recommendations in the Task Force Report of 3 April 2001 contains many elements that will make major contributions—some in the short-term, others in the longer term.

While the high ‘benefit–cost ratios’ achieved by engineering treatment of road blackspots, and similarly effective reported benefits of ‘targeted’ enforcement demonstrate the value of blackspot treatment, a relatively small proportion of fatalities occurs in such concentrations. This suggests that the bulk of education and enforcement activity should be directed more strategically (in time and place), and engineering solutions (including the application of enforcement tools such as fixed cameras, safety-cam etc) should continue to be employed to free up police resources.

The recommendations arising from the integrated Parts of this study focus on prospects for improvement through better identification of problem behaviour, and improved mechanisms for managing the resources available to counter these issues.

4.0 Outstanding Issues

Several issues were identified during the progress of the study that warrant further consideration. While efforts were made to see that no key issue had been overlooked, the sequential nature of the overall study limited the opportunity available for reiteration of the findings from earlier phases into later ones.

In addition, the study brought forth issues that were ostensibly beyond the Brief yet have a bearing on future progress in addressing the road toll.

These issues included:

- ongoing analysis of the TADS⁷ database to, for example:
 - find any association of the increased involvement of 40 to 49 year-old road users with particular crash causal, environmental, or geographic factors;
 - explore the circumstances surrounding crashes that involve pedestrians; and
 - further examine the role of controller gender in crashes.
- Monitoring experience with the application of targets and performance measure by authorities in other States and New Zealand.
- Overcoming shortcomings in exposure data and using projections of such data to anticipate possible trends in the incidence of crashes.

⁷ RTA Traffic Accident Database System.

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