AP-R189

# SPEED ENFORCEMENT IN AUSTRALASIA:

VOLUME 1: PRACTICE — PERFORMANCE MEASURES — OUTCOME MEASURES

VOLUME 2: APPENDICES



AUSTROADS

*Speed Enforcement in Australasia:*
*Volume 1: Practice — Performance Measures — Outcome Measures*
*Volume 2: Appendices*

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**Volume 1: Practice — Performance Measures — Outcome Measures**
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# SPEED ENFORCEMENT IN AUSTRALASIA:

## VOLUME 1: PRACTICE — PERFORMANCE MEASURES — OUTCOME MEASURES

## VOLUME 2: APPENDICES


Sydney 2001

## AUSTROADS PROFILE

Austroads is the association of Australian and New Zealand road transport and traffic authorities whose purpose is to contribute to the achievement of improved Australian and New Zealand transport related outcomes by:

- developing and promoting best practice for the safe and effective management and use of the road system
- providing professional support and advice to member organisations and national and international bodies
- acting as a common vehicle for national and international action
- fulfilling the role of the Australian Transport Council's Road Modal Group
- undertaking performance assessment and development of Australian and New Zealand standards
- developing and managing the National Strategic Research Program for roads and their use.

Within this ambit, Austroads aims to provide strategic direction for the integrated development, management and operation of the Australian and New Zealand road system — through the promotion of national uniformity and harmony, elimination of unnecessary duplication, and the identification and application of world best practice.

## AUSTROADS MEMBERSHIP

Austroads membership comprises the six State and two Territory road transport and traffic authorities and the Commonwealth Department of Transport and Regional Services in Australia, the Australian Local Government Association and Transit New Zealand. It is governed by a council consisting of the chief executive officer (or an alternative senior executive officer) of each of its eleven member organisations:

- Roads and Traffic Authority New South Wales
- Roads Corporation Victoria
- Department of Main Roads Queensland
- Main Roads Western Australia
- Transport South Australia
- Department of Infrastructure, Energy and Resources Tasmania
- Department of Transport and Works Northern Territory
- Department of Urban Services Australian Capital Territory
- Commonwealth Department of Transport and Regional Services
- Australian Local Government Association
- Transit New Zealand

The success of Austroads is derived from the synergies of interest and participation of member organisations and others in the road industry.

# EXECUTIVE SUMMARY

## Background and Report Structure

Relatively little is known about the road safety outcomes of the various strategies and practices used around Australia and in New Zealand for enforcement programs aimed at speeding. There are significant differences in approaches to speed management and enforcement throughout Australasia, but we have only a limited picture of these differences, and even less information about how they compare in terms of outcomes. Also, little is known of how actual speed distributions vary from place to place (on comparable roads), or how they are changing over time.

The main purpose of this project was to provide Australasian road safety and enforcement agencies with guidance on appropriate strategies and practices for enforcement programs aimed at speeding in both urban and rural areas, including enforcement intensities and the forms and levels of associated public education programs. An important secondary task of the project was the development of consistent performance and outcome measures of speed enforcement activities in Australia and New Zealand.

The project output was presented in two separate reports. These reports have been integrated as Volume 1 and Volume 2 within this publication (AP-R189/01).

The second report (Volume 2) mainly details, in a series of 13 appendices to this main (Volume 1) report, the speed-enforcement-related data that was collected from each of the jurisdictions as part of the project. Appendix 2 summarises the outputs from the workshop on speed enforcement practices held in Wellington, New Zealand. Appendix 13 lists the organisations and individuals contacted within each jurisdiction. The appendices in Volume 2 cover the following areas:

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The current report (Volume 1) provides the main outputs from the project. Section 1 sets out the background to the project and the details of a literature review on speed enforcement. Sections 2 and 3 provide summaries of enforcement resources and practices within each jurisdiction in Australasia (in mid-1998, when most of the data was gathered). Section 4 contains a 'Synthesis of current practice', which attempts to draw together the key elements of speed enforcement as currently practiced throughout Australia and New Zealand. Recommended performance measures and outcome measures, related to speed enforcement, are set out in Sections 5 and 6. The final section (Section 7) briefly discusses research in progress and future research needs related to speed enforcement.

## Best Practice?

A key desire at the commencement of the project was to obtain detailed information from each jurisdiction about speed enforcement operations and related media activities, and then to produce an overlay of the available outcome data (on-road speeds and crashes) from which best practice guidelines could be developed. Unfortunately, it proved to be impracticable to identify best practice in speed enforcement from the data that was able to be gathered. Differences in operations, definitions and data collected within the different jurisdictions did not allow the necessary comparisons to be completed in any statistically valid manner.

In view of this, and in order to extract the maximum value from the assembled data, a synthesis of current practice has been compiled based on reasoned assessment of the data that was gathered for the study, giving due consideration to local variations as well as the outputs from a workshop involving a number of key stakeholders from around Australia and New Zealand.

The 'Synthesis of Current Practices' (set out in Section 4) briefly discusses, for each of the major topics in speed enforcement:

- Core beliefs.
- A reasoned assessment of current best practice.
- Issues that are actually or potentially contentious.

The major topic headings used, and the main findings, were:

- Technology: *Speed cameras have provided a means to broaden the exposure of motorists to speed enforcement activities, and therefore awareness of speeding as an issue. Digital cameras provide an ability to reduce the time taken to process infringements, and the associated cost of infringement issue.*
- Methods of enforcement: *A mixture of covert and overt enforcement is required as well as varying degrees of mobility, and a strategy which ensures a coverage of a wide range of sites, whether these are targeted or not. At present there exists neither established theory nor sound empirical evidence to guide commanders as to how much visible and how much covert enforcement there ought to be in differing circumstances. The existence of covert enforcement, and the recognition of its existence by the great majority of drivers through publicity, arguably forms the main basis of the general deterrence effect of speed enforcement. A variable stationary covert speed camera will serve to provide both specific and general deterrence when in operation, however a sign visible past the point of detection stating the presence of the camera will much enhance its general deterrence effects.*
- Intensity of enforcement: *The present state of knowledge does not permit clear prescriptions regarding the optimum intensity of enforcement. At the local level anecdotal evidence suggests that a period of 2-3 weeks of initial concentrated enforcement at a site will provide changes in behaviour that can be maintained over a longer period with lower levels of enforcement. At the systematic level, there is some evidence to suggest that major changes in speed enforcement can have a marked impact on speed behaviour.*
- Performance and outcome measures: *Measures of enforcement performance and outcomes are important tools for understanding the relationship between enforcement activity, speed and crash information. It may be appropriate to set target values for different enforcement modes, but outputs will depend on traffic flow, enforcement history, and site factors. Changes in crashes and covertly measured speed distributions are the two primary outcome measures for speed enforcement.*

- Intelligence-driven operations: *There appear to be no formal studies showing that intelligence-based programs are more effective, however local level comparisons are increasingly used to monitor effectiveness. A complete reliance on a targeted approach to a small number of selected sites is not desirable, with predictability and lack of general deterrence a likely outcome. A balance is required between crash based intelligence driven targeted operations, and managed targeting to wider areas in a random nature. Details on the speed distributions across a network are limited, and therefore do not feature in the development of enforcement programs.*
- Tolerances: *The smallest feasible tolerance should be adopted through minimisation of equipment inaccuracies, but bearing in mind the formal acceptance of practice from a legal aspect, and giving due recognition to the potential backlash from drivers if tolerances are perceived to be impracticably small to allow for brief inadvertent excesses in speed. With a history of tolerance levels above the speed limit (in addition to equipment error tolerances) any major change in practice would be likely to have political implications. A possibility exists to simultaneously lower the tolerance level, while introducing a lower range penalty that considers a loss of demerit points only (thereby avoiding claims of revenue raising). Tolerance levels ultimately need to be reduced if the belief is to be changed that the speed limit is a maximum speed and not a minimum or recommended speed.*
- Penalties: *A fine and demerit point system which reflects community expectations is required. The effect of automatic licence loss for very high speed offences can be justified on theoretical grounds and (probably) in terms of community support. No monetary penalty (demerit point only) should exist for lowest level offences, thereby reducing court challenges and non-payment administration costs, as well as lessening the possible grounds for accusations of 'revenue-raising'.*
- Public education: *Coordination and cooperation between speed enforcement and public education initiatives is critical. Public education can serve two main purpose: to heighten public awareness of enforcement (where it is important that on-road enforcement levels reflect education campaigns), and progressive education where behavioural attitudes to speeding and safety in general are targeted with a long term focus. Campaigns have to be carefully thought out in terms of current community perceptions, the target audience, attitudes and beliefs, the previous history of the issue, and the available time and resources. Characteristics of successful campaigns, are those that are:*
  - *based on theoretical models and prior research*
  - *are persuasive rather than educational*
  - *are more emotional than rational*
  - *focus on a specific behaviour*
  - *do not rely on celebrities*
  - *are supported by enforcement.*

## Performance and Outcome Measures

The establishment of consistent performance and outcome measures for speed enforcement practices will provide jurisdictions with the ability to monitor performance and benchmark operations. Many aspects of performance and outcomes are currently measured by the various jurisdictions (see Volume 2, Appendix 7). The provision of a consistent framework to collect, store and evaluate this information will facilitate the comparison of speed enforcement operations within and between jurisdictions. This will help jurisdictions to optimise their internal operations through continuous improvement, as well as providing a basis for increased harmonisation of enforcement practices between jurisdictions, with the ultimate aim of further reducing road trauma on Australasian roads.

If detailed analysis of speed enforcement performance and outcomes within and between jurisdictions is to be undertaken in the future, it will be necessary to implement consistent sets of performance and outcome measures related to speed enforcement. Suitable measures of performance and outcome are recommended in Sections 5 and 6. Achieving consistency in performance and outcome measures will help to overcome the existing differences in operations, definitions and data collected within jurisdictions and that prevented such analysis from being completed as part of this project.

The establishment of these measures will enable jurisdictions to obtain a better knowledge of the effect of various speed enforcement operations, leading to more efficient and effective speed management. One of the key recommended outcome measures relates to a reduction in on-road speeding behaviour, which will enable the effects of speed enforcement on road trauma to be better estimated.

The recommended performance measures (see Section 5) include specifications for the keeping of uniform data relating to:

- exposure categories (road types within each environment);
- speed camera activities (quantification of speed camera operations);
- non-camera activities (quantification of non-camera operations);
- infringement processing (recommended process performance indicators).

Recommended outcome measures (see Section 6) include:

- road trauma (severity levels by various exposure measures);
- vehicle speeds (design of a monitoring framework, outlining road types by environment; site requirements, sampling specifications and recommended speed parameters);
- community attitudes (two potential survey models are identified);
- infringement rates (discusses potential conflicts in using these as outcome indicators).

With the increased use of map based technology in the provision of intelligence information, an initial investment of coding of the road network as suggested will enable many of the recommended performance and outcome measures to be generated without a major ongoing expenditure on resources. With the combined knowledge of enforcement intensity, non-enforcement related covert speed distributions, and appropriate crash data, an improved knowledge of the relative effectiveness of speed enforcement practices will be possible. With the broad level data recorded in a consistent manner, the effect of variations in local practice (eg signing of camera sites, public education initiatives etc.) on outcome measures will be more readily able to be identified. Over time, more consistent monitoring and the resulting continued improvement of speed management practices will provide Australasian jurisdictions with the means to maximise the reduction of road trauma from speed enforcement and related educational investments.

## Research

Research into various aspects of speed enforcement being undertaken by jurisdictions at the time of the project interviews is briefly described. Future research needs are discussed in terms of high and medium priority.

## Acknowledgments

The authors would like to thank the many people involved in preparing this report. Firstly, the Members of the Police Forces from within Australia and New Zealand. Representatives from organisations involved in the media activities within each state. Members of the Austroads Project Team, in particular the Project Manager, Colin Harwood. John Toomath for his valued input, and delivery of New Zealand information. ARRB Transport Research staff involved in the compilation of this report including Misha White and Kelly Evans.

# SPEED ENFORCEMENT IN AUSTRALASIA

## VOLUME 1: PRACTICE — PERFORMANCE MEASURES — OUTCOME MEASURES

# CONTENTS

## VOLUME 1

# 1 INTRODUCTION

## 1.1 Background and Report Structure

Relatively little is known about the road safety outcomes of the various strategies and practices used around Australia and in New Zealand for enforcement programs aimed at speeding. There are significant differences in approaches to speed management and enforcement throughout Australasia, but there is at present only a limited picture of these differences, and even less information about how they compare in terms of outcomes. Also, little is known of how actual speed distributions vary from place to place (on comparable roads), or how they are changing over time.

The project output was presented in two separate reports. These reports have been integrated as Volume 1 and Volume 2 within this publication (AP-R189/01).

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### 1.1.1 Purpose of the project

The main purpose of this project was to provide Australasian road safety and enforcement agencies with guidance on appropriate strategies and practices for enforcement programs aimed at speeding in both urban and rural areas, including enforcement intensities and the forms and levels of associated public education programs. An important secondary task of the project was the development of consistent performance and outcome measures of speed enforcement activities in Australia and New Zealand.

A further purpose of this project was to identify those areas where further research is required to adequately understand and determine the 'dose-response' outcomes of key speed enforcement practices.

A key desire at the commencement of the project was to obtain detailed information from each jurisdiction about speed enforcement operations, related media activities, on-road speeds and crash outcomes, and then to produce an overlay of the available data from which best practice guidelines could be developed. Unfortunately, it proved to be impracticable to identify best practice speed enforcement practices from the data that was able to be gathered. Differences in operations, definitions and data collected within the different jurisdictions did not allow the necessary comparisons to be completed in any statistically valid manner.

In view of this, and in order to extract the maximum value from the assembled data, a synthesis of current practice has been compiled based on reasoned assessment of the data that was gathered for the study, giving due consideration to local variations as well as the outputs from a workshop involving a number of key stakeholders from around Australia and New Zealand.

### 1.1.2 Project tasks

In pursuit of the above aims, visits were made to all Australian States and Territories and to New Zealand. The purpose of the visits was to gather appropriate information relating to both urban and rural speed enforcement strategies and practices (including the use of supporting public education programs). Also of interest was information related to their relative effectiveness in terms of reducing crashes and changing on-road speed distributions. To support these visits, a regional questionnaire was distributed to a sample of rural police districts where approval was given to do so.

Additionally, a review was conducted of the published literature on National and International speed enforcement practices. This review provides a historical perspective on the subject matter and allows examination of the effectiveness of programs implemented outside of Australia and New Zealand.

## 1.2 Literature Review

### 1.2.1 Historical perspective

Zaal (1994) presents a very comprehensive review of enforcement practices, including a section which gives extensive coverage to speed enforcement and related issues.

The report begins by making the point that speeding behaviour is deeply entrenched and may be difficult to modify. Amongst the reasons that have been put forward for this are:

- Over time, drivers learn that speeding is 'safe' behaviour as a result of speeding without adverse consequences
- Speeding is itself inherently rewarding
- The probability of detection has been very low
- Tolerant attitudes towards speeding

While the relationship between speed and crash severity was said by Zaal (1994) to be well established, until relatively recently there has been less recognition of the relationship between speed and crash frequency, although there was good reason to expect a relationship on *a priori* grounds. The relationship between travelling speed and crash risk (as well as crash severity) has been clarified to some extent for both urban and rural roads by recent and by some older work in a number of countries.

Kloeden, McLean, Moore & Ponte, (1997) carried out research in the metropolitan area of Adelaide, and found that the risk of a serious casualty crash in 60 km/h areas increased exponentially as the travelling speed of vehicles rose above 60 km/h. The case control study found that the risk of being involved in a serious casualty crash at 60 km/h was doubled if the vehicle was travelling at 65 km/h, and was further doubled for each additional 5 km/h. Also, speeding by a small amount (up to 15km/h over the 60km/h speed limit) accounted for a large proportion of crashes because of the large proportion of vehicles travelling in this speed range.

For rural roads, Nilsson (1982) developed an empirically based 'rule' that fatal crash rates change in proportion to the 4$^{th}$ power of changes in mean speed, serious injury crash rates in proportion to the 3$^{rd}$ power of speed change, and all injury crash rates to the 2$^{nd}$ power of speed change. In a review by Finch et al (1994) it was reported that 'for every 1 mph rise in the mean traffic speed, the percentage change in [crashes] rises by about five percent'. In recent work in the UK by Lynam, Baruya, Taylor and Finch (1999) cited in Silcock et al, 1999, it was found that 'a 1 km/h reduction in mean speed can produce up to a three-percent reduction in crashes'.

### 1.2.2 National and international practice

Extensive speed management programs have been implemented in several EC countries. Three of these were addressed in a review produced by the Transportation Technology Evaluation Center (sic) (TTEC) at the Loyola College in Maryland (1995).

Speed related crashes in the USA have been estimated to result in a $27 billion ($43.2 billion Australian) cost to the community. In response, the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA) teamed up to form the joint Speed Management Team. This team was formed in 1994. The Speed Management Team developed a Speed Management Work Plan that details areas of research demanding attention and the activities that will be undertaken by the FHWA and NHTSA. (Coleman & Morford, 1998)

Two areas that the agencies have concentrated on are enforcement and public education activities. Enforcement activities include:

- Cooperative law enforcement efforts, where speed related outreach materials were distributed nationally,
- Model speed enforcement program, distributed through *Campaign Safe and Sober*, and
- Targeted traffic enforcement of commercial motor vehicles in the States with the most truck related fatalities. (Coleman & Morford, 1998).

Public information and education campaigns include:

- *Speeding! Gets you Nowhere! Fast!* and *Speed Shatters Life*
- Speed fact sheet, produced annually
- *Capital Beltway Aggressive Driver Project,* in which radar/LIDAR is used in conjunction with video to identify speeding and aggressive drivers. (Coleman & Morford, 1998).

The Netherlands uses a combination of mobile and non-mobile, automatic and non-automatic techniques. Automatic detection systems have been found to generate 70% of the violations in 5% of the person hours. Tolerance is typically 7 -15 km/h over the speed limit, with 7km/h being the usual tolerance on speed cameras.

Speed cameras have not been widely used in Germany because legislation requires positive identification of drivers for a traffic infraction. Radar cameras with 6 km/h tolerance are currently in use, but German authorities are moving towards the use of laser video technology. Laser video cameras allow the driver to be readily identified and therefore result in a conviction rate of almost 100%.

Swedish law also requires the offending driver, not the owner, of a vehicle to be responsible for an offence. Police use in-car video camera equipment and laser speed devices. These technologies facilitate identification of the driver. There is typically a 10 km/h tolerance allowed in Sweden.

Mara, Davies and Frith (1996) noted that roads in New Zealand undergo unobtrusive speed monitoring prior to any enforcement activities. Cameras at these sites are triggered when vehicles travel at greater than the 85th percentile speed as established by the speed monitoring, or more than 10km/h above the speed limit, whichever is the greater.

Kloeden et al (1997) suggest that because of the magnitude of the increase in risk of crashing when exceeding the speed limit by very small amounts, the tolerance applied in enforcement should be reduced or eliminated in order to maximise safety benefits associated with speed enforcement.

### 1.2.3 Evaluations of speed management programs

Speed enforcement can be traditional or automated. Zaal (1994) describes traditional speed enforcement as usually involving activities associated with the on-site detection, apprehension and punishment of the speeding driver, involving stopping speeders and handing out infringement notices on the spot. The primary difference with automated speed enforcement is the recording of images of speeding vehicles, with infringement notices typically posted out some days or weeks after the speeding event.

Within New South Wales, the introduction of speed cameras was found to coincide with a 22% reduction in crashes at speed camera locations. A drop in the frequency of vehicles travelling at excessive speed was also noted. Public acceptance of the NSW program was found to be high. (Loyola College, 1995).

A large program of speed camera enforcement launched in Victoria in the early 1990's demonstrated its effectiveness in reducing speeds and reducing crashes. The program reached the stage where 44,000 infringement notices each month were being issued through the camera program (Zaal, 1994). This coincided with a state-wide reduction of 18% in casualty crashes, and reduction of 10.4% in casualty crashes occurring within 1 km of the speed camera site. Although a rigorous analysis was yet to be done, on these figures the speed camera program would appear to be highly cost-effective.

Victorian authorities also found that their speed camera program resulted in a drop in the number of vehicles exceeding the tolerance limit (10% of the speed limit plus 3 km/h) from 23% of vehicles offending to 2.9%. Further, there was a decrease in the frequency of injury crashes and a reduction in the severity of injuries observed. Recidivism rates in Victoria are very low. (Loyola College, 1995).

Several papers have been published on a study undertaken by MUARC (cf. Newstead, Mullan & Cameron, 1995; Newstead & Cameron, 1996) on the effectiveness of the Victorian speed camera program. This study consisted of 5 phases and the results are summarised as follows:

*Phase 1 and Phase 2*. Covert speed camera operations, in combination with mass media publicity may produce widespread and long term reductions in crash frequency and severity.

*Phase 3*. A statistically significant reduction in casualty crashes was found within 1 km of camera sites (metropolitan area) as a result of the receipt of a TIN. Effects lasted approximately 2 weeks after the TIN was received. The presence of a speed camera was not found to result in a significant reduction in the number of crashes within 1 km of the site during the week after that site was targeted. A 'camera effect' was not found to be present for crash severity.

*Phase 4*. The mean travelling speed was not found to be affected by the presence of speed cameras but there was a reduced number of vehicles travelling well in excess of the speed limit (except in 100 km/h zones).

*Phase 5*. No significant 'camera effect' was found within 1 km of a camera site in Victorian rural towns. Receipt of a TIN was also not found to have a significant effect.

When speed cameras were introduced in Western Australia in February 1992, 67% of vehicles were observed travelling above the speed limit. By October 1995, this figure had decreased to 38%. (Latest figures from this study indicate a further decrease to approximately 20% for the period July-September 1998 (personal communication, WAPS)).

Oei (1996) reported on a study conducted in the Netherlands, where an electronic sign displaying the speed limit was activated as a speeding vehicle passed a monitoring site. The percentage of vehicles travelling above the speed limit was reduced from 80% to 47% and the mean traffic speed was reduced by 5 km/h. At another location, where the speed limit approaching an intersection with a history of speed problems was lowered from 100 km/h to 70 km/h, a fixed sign warned drivers to be aware of their travelling speed was paired with an automatically triggered sign that read 'you are speeding', and occasional police enforcement. The mean speed was reduced from 80 km/h to to 60 km/h, and this effect was maintained for two years.

Another study conducted in the Netherlands (Malenstein & VanLoosbroek, 1997) implemented a program known as Continuous Applied Speed Enforcement (CASE 1). This program was composed of a combination of public relations, continuous enforcement and random enforcement. A high enforcement level was established initially, which was gradually reduced until a 'maintenance level' was found. A road was selected that had a high crash rate, a high traffic volume, was part of a major network and had a high speed limit including 100 and 120 km/h segments. Loop detectors were used at the beginning and the end of the segment in order to calculate average speed. Three signs were placed along the segment, the first warning that speed would be checked and the second and third stating that speed had been checked. The aim of the project was to achieve 95% compliance with the speed limit. This was achieved in the 120 km/h sites but not the 100 km/h sites. Positive outcomes from this project included a reduction in speed violations, reduced average speed and a significant reduction in the number of extreme violations.

Mara, Davies and Frith (1996) found that there were significant reductions in crashes at individual New Zealand camera sites in both urban and rural areas , although reductions in area wide crash rates, combining figures both at and away from camera sites, were not significant except during low alcohol hours in urban areas. Speed cameras were found to be less effective in rural areas, but the authors suggested that this may be related to lower usage in these areas. It was recommended that the placement strategy for speed cameras be reviewed.

Hook, Kirkwood and Evans (1995) reviewed the use of 32 fixed camera sites in Oxfordshire, England, which were triggered by piezoelectric detectors under the road surface. These systems could be plugged into either tripod mounted cameras or car mounted cameras. An overall reduction in fatal and serious injury crashes of 23% was found at the speed camera sites (and up to one kilometre each side of the sites).

Corbett (1995) conducted a study in England examining self-reported driver behaviour after the installation of fixed site speed cameras. Speed monitoring was also undertaken. An examination of crash statistics suggested that in the first 6 months after the cameras were installed, mean traffic speeds fell by 10%. A 22% reduction in crashes was also found. Additional statistics suggested that there was also a drop in the number of crashes on roads that were not included in the project. This finding was supported by results from the questionnaire that 29% of drivers reported driving more slowly in general. Drivers that reported they had reduced their speed overall, or only slightly exceeded the speed limit were more likely to state that they did not know the camera locations. The evidence suggested that those drivers more likely to drive a great deal over the speed limit learned where the cameras were located and only slowed down at those sites.

Elvik (1997) conducted a study examining the effectiveness of photo radars at permanent sites in Norway. This study controlled for regression to the mean effects. A significant decline in the number of injury crashes (20%) and a non-significant decline in the number of property damage only crashes (12%) was found.

The issues relating to traditional speed enforcement are discussed by Zaal (1994). It is generally accepted that the presence of enforcement activity does reduce speeds in the immediate vicinity, and that the effects of

enforcement persist over time and space. This latter feature is referred to as a 'halo' effect, and generally persists over a distance of up to six kilometres. Time halo effects as long as 17 days have been observed following an extended period of intense enforcement.

Vaa (1997) conducted a longitudinal study on a 35km long stretch of road in Norway. Speeds were measured unobtrusively for two weeks, then for six weeks very high enforcement levels were maintained, followed by a further eight weeks of unobtrusive measurement. Enforcement levels during the enforcement period averaged nine hours a day of which five and a half hours were stationary speed controls. During the enforcement period speed reductions ranged between 3 and 10% for all time divisions and a 'time-halo' effect of between zero and eight weeks was noted, with the most common effect lasting two weeks. Reduction in the number of speeding drivers ranged between 4% and 11% and the 'time-halo' effect for the reduction in frequency of speeding ranged between zero and six weeks, most commonly two weeks. The findings suggested that only a low level of enforcement activity is required to re-establish speed reduction if it is preceded by a high level of previous enforcement and is carried out as soon as an increase in speed is noted. Vaa hypothesised that the 'time-halo' effect increases when drivers frequently experience enforcement activities, even when they are not speeding.

Jones and Lacey (1997) conducted a study in the United States comparing two types of speed monitoring equipment. A Laser Speed Management Device (LSMD) was tested at one site and a Radar Speed Management Device (RSMD) was tested at another comparable site. The use of this equipment was supported by publicity. Speeds were measured unobtrusively once a week at each site, and no enforcement was carried out at this time. The authors found that the use of radar decreased by 20% the number of vehicles travelling at 5 mph (8 km/h) and 10 mph (16 km/h) over the speed limit. The laser device resulted in no change, but there was found to be a better compliance rate at that site before its installation. Additionally, radar is more easily detected and can be artificially complied with. Laser is not as easily detected, and when it is detected, it is often too late for the driver to slow down sufficiently. Jones and Lacey suggested that a high level of publicity should support the use of laser devices. Laser should be used to supplement radar, or in situations where a specific vehicle (say in heavy traffic) needs to be identified.

Holland and Conner (1996) measured speed with and without warning signs and intensive enforcement on a 40 mph speed limited busy commuter road linking two northern England cities. During the radar enforcement phase infringements were issued to drivers found speeding. A self-report questionnaire was also administered. The largest effect was found for those drivers who exceeded the speed limit by less than 20 mph. The program was found to be less effective for young men, who are often targeted during speed enforcement campaigns. The warning signs alone were found to have some effect even without police presence.

In South Australia, Brown (1995) evaluated the effects of erecting billboard signs displaying anti-speeding messages. No effects were found for heavy vehicles. Additionally, no effects were observed in the top 15% of the speed distribution. Brown concluded that there was little road safety benefit to be gained from the signs, as the only drivers to alter their speeding behaviour were in low-risk categories. Those drivers at most risk of crashing due to speed did not heed the warning signs.

### 1.2.4 Deterrence effects of different programs

Swadling (1997) reported that there are two effects of speed enforcement: repressive (which occurs when drivers are caught speeding), and preventive (which occurs when drivers witness enforcement activities). These effects are commonly referred to as 'specific' and 'general' deterrence respectively (Fildes and Lee, 1993). Specific deterrence is what motivates previously apprehended drivers not to speed, while general deterrence occurs when the threat of enforcement influences the behaviour of drivers generally, irrespective of whether or not they have ever been apprehended.The repressive effect has been found to be larger and more persistent than the preventive effect. To achieve the maximum compliance rate, the perceived risk of being caught should be of the ratio 1:25 (deWaard & Rooijers, 1994 in Swadling, 1997). That is for every 100 trips undertaken (on major traffic routes) a driver should witness enforcement activity 4 times. This is supported by the finding that behaviour change only lasts while the perceived threat of being caught speeding is high (ECMT, 1996).

Zaal (1994) reported that visible enforcement has an immediate impact on speeds, but that speed reductions may not generalise over space and time to any great extent. Low visibility enforcement has little immediate impact on speed. If carried out with sufficient intensity and widely publicised, it may create sufficient uncertainty about the time, manner and location of enforcement to have an effect on speeds.

Many police forces opt for a mixed strategy of high visibility and low visibility enforcement, seeking to use each type to its best advantage.

The merits of stationary and mobile enforcement are also discussed by Zaal. In many ways, these mirror the arguments relating to high visibility and low visibility enforcement. Stationary vehicles have a greater immediate impact on traffic speeds, being seen by larger numbers of drivers than would mobile units. However, mobile units may have greater long-term impact by creating greater uncertainty regarding the time and location of enforcement, and indicating a greater readiness to apprehend offenders. Unmarked cars are highly effective in apprehending offenders. Thus, it would seem that the appropriate use of stationary enforcement is to act as a deterrent at high crash sites while mobile enforcement can have an area wide effect.

An evaluation of an increase in moving mode (mobile) radar operations and associated publicity in Victoria was undertaken by Diamantopoulou, Cameron and Shtifelman (1998). The study considered crash data two years before and two years after a significant increase in mobile radar units on undivided roads in 100km/h zones. The study found reductions in casualty crashes of 28% (though only marginally statistically significant). Residual effects on crash reductions up to four days after enforcement activity were noted, with this effect diminishing by the fifth day. Combined with publicity specific to the mobile radar (and not speeding in general) the effects were more noticeable. The report concludes that mobile radars are effective in reducing casualties in rural areas (undivided highways) however the effect does not extend to outer metropolitan areas.

Stark, (1996) found a reduction in both the 85th percentile speed and the number of drivers exceeding the speed limit by a large amount, at fixed speed camera sites in the UK. However, Stark noted that these effects diminished within 200m of the site and were unlikely to generalise to other routes. Fixed site cameras can be used at particularly dangerous locations and may improve safety at nearby intersections. More general benefit may be gained by using mobile speed enforcement. If drivers perceive that they could be detected speeding at any point in the road network they may be more likely to comply with all speed limits. Mobile detection devices have an additional benefit in heightening visibility of police enforcement activities (Booth & Phillips, 1997). Rothengatter (1997) concluded that a combination of subjective (obtrusive policing) and objective (speed cameras) is the best approach.

As an illustration, Ali, Al-Saleh and Koushki (1997) found that on roads in Kuwait where the majority of drivers exceeded the speed limits, fixed site enforcement was not effective. Drivers quickly learned the speed camera locations, slowed down (often suddenly and dangerously) at the sites and returned to high speeds immediately after. There was little enforcement other than the cameras and drivers knew that it was unlikely that they would be caught speeding.

Traditional enforcement methods have the advantage of delivering punishment immediately on site. However, they suffer from a low level of apprehension and, historically, have had a low impact on speeding.

The advantages and disadvantages of automated speed enforcement are the opposite of those associated with traditional methods (Zaal, 1994). They have the capacity to massively increase the probability of detection and prosecution, and hence to greatly enhance the deterrent value of speed enforcement activities. They also enhance the credibility of speed enforcement by greatly reducing the subjectivity associated with traditional enforcement methods. However, as it is usually a matter of days or weeks before the camera data is processed and the infringement notice is sent out, there is a delay between detection of the offence and the delivery of the negative consequences. Psychological theory suggests that delays in delivering punishment make it less effective in modifying behaviour. Zaal (1994) suggests that although behavioural changes are more readily achieved if the delay between the behaviour and punishment is short, it is the probability of being punished which is more important. Subsequent experience with large-scale enforcement programs using speed cameras have borne out this point of view.

### 1.2.5 Appropriate outcome measures

NSW has established a comprehensive framework for the evaluation of their speed enforcement program. This consists of an examination of numbers of speed related crashes, routine speed surveys, pre and post campaign speed surveys, constructing speed profiles per road type, monitoring and evaluating speed campaigns, conducting surveys that monitor community attitudes, knowledge and behaviour, and evaluating speed enforcement technology (RTA, 1996).

In Victoria fatality and collision data and offence data are reported monthly and by calendar and fiscal year (Booth and Phillips, 1997).

### 1.2.6 Key factors influencing speed enforcement programs

Probably the most important issue in ensuring efficient speed enforcement is that of tolerance. While a certain level of tolerance is probably unavoidable, due to speedometer error and limits on the accuracy of enforcement instrumentation, excessive tolerances can undermine the credibility of speed limits. Swedish work demonstrated that reducing tolerances can be an effective way of reducing speeds and that the concept of reduced tolerance had a high level of public support (Zaal, 1994).

#### *1.2.6.1 Targeting of Activities*

Many studies (eg Corbett, 1995 and Elvik, 1997) discuss the benefits of targeting enforcement. Reference is made to reductions in crashes and/or speeding at targeted sites. Typical results range around a 20% reduction in crashes, with various speed reductions noted for periods of 7-17 days after intense periods of enforcement (eg Zaal, 1994 and Vaa, 1997). While the benefit of targeted enforcement at a site is recognised, from a 'whole of safety' perspective this concept has been challenged (personal communication, C.Brooks – Federal Office of Road Safety) with suggestions the network wide effects of randomised enforcement may provide greater overall benefits.

Leggett (1994) conducted a study using Australian and New Zealand data in which he compares the effects of a randomised scheduled enforcement management system for traffic policing with technology-based enforcement methods using Random Breath Testing (RBT) and speed cameras indexed by crash savings per background crash rate. Details of the methods may be found in the report, as well as details of the statistical relationships discovered between activity and effect. Benefit cost ratios are also considered. He found a clear linear type relationship for "all program types between total crashes expected and crashes reduced" (p.16). This relationship becomes even stronger when background crash rates per head of population are added to the equation. As Leggett states, this is not an unusual finding in enforcement research.

Leggett suggests in his discussion that both traffic policing and technology-based enforcement methods may find their optimum success in using a randomised scheduled enforcement management system. The focus of such scheduling is on controlling and maximising the spread of enforcement throughout a large number of sites. A further benefit of this method is that costs to implement the system are not usually required. In return, a saving of as much as $1.1 billion per year in casualty crash costs could be achieved across Australia with a benefit cost ratio of 25:1.

In another study, Newstead, Cameron & Leggett (1999) evaluated the Random Road Watch program implementation across Queensland over a three-year period. This program also involved randomised scheduled enforcement. The method involved the division of police jurisdictions into sectors and weeks into time slots. All sectors were then chosen randomly to be visited by a marked police vehicle during the randomly selected time slots. Over the test period, the program produced a significant reduction in crash rates and severities. The effects were greatest outside the Brisbane metropolitan area, where fatal crashes alone dropped by 31%. It was further found that over time, increases continued to be observed in the reductions in crash occurrence and crash severity. This appears to show that with continued implementation of the program, drivers could not adjust their driving habits (e.g. speeding, drink-driving) to accommodate the expected police enforcement activity as it was now randomised, and thus continued to be effective (no diminishing returns). The crash cost savings experienced in the first year totalled $109 million, and rose to $163 million in the third year of full implementation.

This method of enforcement had been previously trialed in NSW, New Zealand and Tasmania. Similar effects were found for all locations, but only in Tasmania did the results show statistical significance. Reasons for this range from length of road covered to lack of police cooperation in following the program. A recommendation to ensure full compliance with the program may be necessary to ensure appropriate targets are achieved.

#### *1.2.6.2 Enforcement Intensity*

Oei (1996) found that a radar gun used for a 12 hour shift once a month at a site could maintain an 85% compliance rate. Stark (1996) found that the placement of a camera once a month at random locations along a 5 mile stretch of road, paired with warning signs was effective. An important issue to consider is that the driver should be constantly aware that their speed may be checked at any time (ECMT, 1996). Stark noted that since offenders are not apprehended on the spot by speed cameras, authorities should ensure that the prosecution rate from speed camera evidence is as high as possible.

In Western Australia (Office of the Auditor General, 1996) it was recommended that speed cameras should:

- be utilised to their full potential
- be used more frequently in rural areas
- be used outside of normal operating hours
- be supported by owner-onus legislation.

Zaal (1994) devotes a section to the improvement of enforcement efficiency. Better location of enforcement activity is based on two principles, maintaining uncertainty in the mind of the public, and concentrating activity in locations with the greatest crash problems. Selective enforcement strategies which combine these principles by allocating enforcement resources to high crash locations on a randomised schedule have been effective in reducing crashes. If continued over a long period of time, this may create the expectation amongst drivers that police will be present at the problem locations, encouraging habitually lower speeds and increased alertness.

De Warrd et al (1992) document a more sophisticated approach undertaken in the Netherlands, aimed at minimising the police inputs required to contain speeding behaviour below a particular threshold level. The target was to keep speeding behaviour below 6% of vehicles passing the site. Early in the experiment, every sixth offender was stopped (ie a driver travelling at more than 130 km/h on a road zoned at 120 km/h). In the second week, stopping every $10^{th}$ offender was sufficient to maintain the percentage of speeders at 6%. In the last five weeks, stopping every $25^{th}$ offender was sufficient to contain speeding to this level. This level of effort could be achieved by between 1 and 3 police officers, compared to 4-8 officers at the start of the experiment. (Present authors' note: this study seems particularly useful in demonstrating the principle that behaviour change can be effected by a major change in the contingencies in a given situation, and maintained by a much smaller change in contingencies over the long term. The method is also a possible model for similar exercises in Australia).

#### *1.2.6.3 Enhanced Enforcement Activities*

Both NSW and Victoria increase their enforcement levels to coincide with particular holiday and seasonal periods. In NSW (RTA, 1996), targeted enhanced enforcement is practised at particular times of the year (over and above normal enforcement levels). In 1995/96, speed was targeted in the October school holidays (rural) the Christmas and pre-Christmas break (rural) and the first three weeks of the school year (urban). During these times, community perception of the level of enforcement was that it was high, with 70% of rural and 50% of metropolitan respondents saying that they thought that speed checks had been carried out in their area in the past two weeks. There was a trend toward lower trauma levels during enforcement periods (for all targeted enforcement, not just speed) than previous years. The cost of the program was $6.1 million compared with an estimated saving to the community of $20 to $30 million.

### 1.2.7 Support for speed enforcement

> *For any jurisdiction to be successful in addressing speed-related problems, there must be a clear vision of how speed will be managed. This vision must be shared by all participants. The public, road users, police, the courts, traffic safety specialist, road engineers, and others must know their role and responsibilities as they relate to the jurisdiction's vision of speed management (Loyola College, 1995).*

#### *1.2.7.1 Community Perceptions*

Two factors of enforcement have been identified that will aid in establishing community support. These are credibility and visibility (Loyola College, 1995). Visibility of enforcement is important because it heightens the public perception of the risk of being caught speeding. This may encourage them to modify their behaviour (Swadling, 1997). Therefore, long term exposure to visible police enforcement may also aid in changing behaviour. However, the NRMA (1996) highlighted that merely increasing enforcement levels or introducing harsher penalties will not aid in changing community attitudes. Rather, it is likely to have the opposite effect by increasing community cynicism and promoting a culture where infringements are seen as revenue raisers for the government rather than tools to improve road safety.

It is also important that the community believes that the enforcement activities have credibility. If this status is achieved supporting strategies such as public awareness campaigns will be more successful. However, Booth and Phillips (1997) warn that there is a danger that campaigns will lose their impact through the audience becoming conditioned to the message if strategies are not carefully coordinated.

Another way to encourage community support is through appropriate speed zoning. If speed limits are viewed as appropriate drivers are more likely to comply with them (NRMA, 1996).

In a report produced by the Federal Office of Road Safety (Mitchell-Taverner, Adams & Hejtmanek, 1997) on community attitudes toward road safety 39% of respondents identified speed as the main factor leading to crashes. In total 63% said that they thought it was a key contributor. Eighty percent of respondents admitted exceeding the speed limit by 10 km/h or more at least occasionally. In spite of this, nearly one third stated they now drive at a lower speed than they did previously. Young road users (those in the 15-24 age group) are the least likely to consider that speed is a factor in crashes, however, there has been an increase in young people's recognition of the dangers of speed. Fifty-three percent of this age group considered speed a factor in crashes compared with 44% in an earlier survey. Two thirds of people have noticed an increase in speed enforcement and 90% of people feel that the current speed limits are fair. Sixty-five percent of respondents either supported or have no objection to a 50 km/h speed limit in residential areas, but less than 25% supported a 40 km/h speed limit.

#### *1.2.7.2 Support Through Mass Media*

Zaal (1994) reflects the by-now well established conventional wisdom on the role of publicity in ensuring effective speed enforcement. Enforcement is most effective when combined with appropriate publicity. As well as reinforcing the perception that enforcement is widespread, publicity also has the important role of convincing the public of the need for speed enforcement and building a supportive climate of public opinion.

The mass media can be a powerful tool in highlighting road safety messages and encouraging community support for speed countermeasures.

Walker (1996) reviewed mass media campaigns conducted in South Australia and found that driver perceptions of the risks associated with speed and their self-reported behavioural change was significantly increased. Like the remainder of Australia, media campaigns are highly targeted in SA. However, campaigns such as ‘Bloody Idiot’ are not used because SA authorities believe that it is important not to marginalise or stigmatise targeted groups. Advertisements should be believable and realistic, and the supporting enforcement should be highly visible. Advertisements can also be used to highlight the fact that cameras are safety tools and not merely revenue raisers.

Elliott (1993) conducted a meta-analysis using 87 previously evaluated media campaigns (targeting alcohol, speed, fatigue and restraint use). Characteristics of more successful campaigns (in terms of improvements to community knowledge, attitudes and behaviours):

- are more persuasive than educational
- are based on theoretical models and prior research
- are supported by enforcement
- are more emotional than rational
- request or instruct a specific behaviour (e.g. slow down!)
- use a voice over alone, rather than celebrities or experts.

This study also found that greater improvements were to be expected where the baseline knowledge, attitudes and behaviours were relatively low. It is important to emphasise that this study examined advertisements targeting a range of activities, not solely speeding.

Cameron (1996) found a link between advertising levels in Victoria and reductions in casualty crashes.

#### *1.2.7.3 Legislative Issues*

Zaal (1994) discussed the legislative control of speeding behaviour. Legal sanctions are important factors in determining behavioural and attitude change. Warning letters can be effective, particularly when legislative requirements or enforcement methods change and there is a need to educate drivers. Fines are the most usual way by which speeding behaviour is punished. However, there is some question as to their effectiveness, as many drivers continue to speed after having been fined. Evidence from Sweden has consistently shown that increasing the level of fines has little effect on speeding behaviour. While very heavy fines are unlikely to achieve much in themselves, it is desirable that the fines should be large enough to signal that speeding behaviour is strongly disapproved of.

Point demerit schemes and loss of licence are effective punishments, as it denies offenders the driving privilege, and removes high risk drivers from the traffic stream. If offenders continue to drive while under suspension, there is evidence that they do so less often, that they drive more carefully and that they reduce their speed.

One of the major issues related to the implementation of automated speed enforcement is that of an individual's right to privacy. However, it has been found that photographic evidence of speeding offences does not violate the legal definition of privacy (Turner and Polk, 1998). Concerns over invasion of privacy through photographing drivers can be ameliorated by the implementation of owner-onus legislation. The introduction of this legislation has been credited with contributing to the success the Dutch speed management program (Loyola College, 1995). Owner-onus legislation allows the burden of proof of the identity of the offending driver to be placed on the vehicle's registered owner. Most European countries do not have owner-onus legislation and therefore prefer to apprehend offenders on the spot rather than accepting a low conviction rate. In these cases, the fine (or a substantial deposit) must be paid on the spot, particularly if the offender is not a resident of the jurisdiction.

Another legal issue in speed enforcement is the use of radar detectors. Supporters of radar detectors state that these devices are necessary because speed limits are deliberately set too low in order to collect revenue. US research has shown that radar detector users make significantly more collision claims and receive more speeding convictions than the general public. Some jurisdictions have outlawed the use of radar detectors but problems arise when vehicles travel through these areas from locations where detectors are legal. Police are establishing ways to conduct speed enforcement activities that can be used against vehicles with radar detectors. These methods include using laser devices which are harder to detect, changing frequencies of radars often, and using more labour intensive methods of speed detection such as unmarked patrol cars and aerial patrols.

#### *1.2.7.4 Alternatives to Speed Enforcement*

Zaal (1994) discussed a number of alternatives to enforcement for managing speed behaviour. These include

- in-vehicle devices which limit the speed of the vehicle, or alert the driver that the speed limit is being exceeded;
- physical devices to control speeds, eg road humps;
- perceptual speed control measures eg transverse lines at the approach to intersections and roundabouts;
- improving primary and secondary safety features in vehicles.

# 2 SPEED ENFORCEMENT RESOURCES

## 2.1 Structure and Personnel

Within each jurisdiction the structure of the various police forces vary. In general a central traffic section does exist, however the proportion of the total speed enforcement activities undertaken by the specialist traffic operations groups varies. Table 2.1 below provides a brief summary of the relevant structures however it should be noted that the internal operations are somewhat more detailed (refer Volume 2, Appendix 1 "Structure and Personnel Issues") for specific information). Table 2.3 details the number of districts or regions within each jurisdiction.

Table 2.1 — Resources used for general speed enforcement activities

| Jurisdiction | Dedicated traffic personnel[1] | General Duties | General Duties with small specialist group |
|---|---|---|---|
| ACT | | | ✓ |
| New South Wales | ✓ | | |
| New Zealand | ✓ | ✓ | |
| Northern Territory | | ✓ | |
| Queensland | ✓ | ✓ | |
| South Australia | ✓ (metro) | | ✓ |
| Tasmania | ✓ | ✓ | |
| Victoria | ✓ | ✓ | |
| Western Australia | ✓ (metro) | ✓ | |

[1] Where dedicated traffic personnel undertake the majority of traffic operations general duties staff often undertake some traffic roles as part of their duties.

Each jurisdiction has a central unit providing various levels of intelligence to assist in policing operations (refer Volume 2 Appendix 1 "Intelligence Driven Operations"). The size and function of these units varies with intelligence also collated at a district level in some jurisdictions.

Internal management practice in regard to the resourcing of camera operations also varies between jurisdictions. Table 2.2 indicates the method employed, and where available the numbers of relevant staff involved in the activity.

Table 2.2 — Resources used for camera operations

| | Sworn Members | Non-sworn members | Public Servants | Contract | "Out-sourced" or other. |
|---|---|---|---|---|---|
| Camera Operation | Qld<br>NSW<br>NZ (40%)<br>Tas: 4 | NT: 4<br><br>NZ (60%) | SA: 36<br>Tas: 23 | Vic: 49 | Tas: part/full time civilian operators |
| Film Processing | | NT: Napp<br>Qld | SA: 2<br>Tas: 1 | Vic: 2 | NSW<br>NZ |
| Verification and Processing of TINs | SA: 1 | Qld<br>NSW<br>NZ | NT: (2)<br>SA: 10<br>Tas: 5 | Vic: 21 | |
| Data Management | Qld<br>Tas: 2 | Qld<br>NSW<br>NZ<br>Tas: 4 | NT: (2)<br>SA: 0.2 | Vic: 5 | |
| Other Operations | Qld | | | | |

ACT: Not applicable

## 2.2 Equipment

Within each jurisdiction the general area of coverage, population location, regional structures and equipment available vary considerably. Table 2.3 details various details of each jurisdiction.

Table 2.3 — Jurisdiction Information and Equipment available (as at January, 1999)

| | ACT | NSW | NZ | NT *4 | QLD | SA | TAS | VIC | WA |
|---|---|---|---|---|---|---|---|---|---|
| Population *1 | 309 181 | 6 329 793 | 3 587 275 | 190 453 | 3 450 476 | 1 485 354 | 471 336 | 4 648 378 | 1 821 576 |
| Area ($km^2$) | 2 400 | 801 600 | 268 675 | 1 346 200 | 1 727 200 | 984 000 | 67 800 | 227 600 | 2 525 500 |
| Regions *2 | 2 | 11 | - | 3 | 8 | 2 | 4 | - | 4 |
| Districts *2 | 4 | - | 12 | 6 | - | 17 | 12 | 17 | 15 |
| Speed cameras available | - | 19 | 31 | 3 | 14 | 14 | 13 | 54 | 16 |
| Speed cameras urban *3 | - | 13 | Discretion. | 3 | 4 | All *5 | - | 19 | 11 |
| Speed cameras rural areas *3 | - | 5 | Rural >40% | - | 10 | - | - | 13 | 2 |
| Speed cameras used for training | - | 1 | 1 | - | - | - | - | 22 | 1 training (2 repair) |
| Fixed sites | - | 1 | 60 | - | - | - | 2 | - | - |
| Cameras for fixed sites | - | 1 | 13 | - | - | - | 2 | - | - |
| mobile radars | 20 | 394 | 450 Hawk / 150 Eagle | 28 | 121 | 16 | 12 | 75 | 136 |
| other radars | 4 slant | 58 slant | - | - | 29 slant | 5 | - | - | - |
| Hand held radar | - | - | - | 30 | 133 | 133 | 32 | 350 | 125 |
| Laser speed guns | 27 | 150 | 60 | - | 68 | - | 17 | 70 | 71 |
| Elecdetectors (heavy vehicle monitoring) | - | - | - | - | - | - | - | 129 | - |
| Check speedo (calibrated in-vehicle speedometer) | - | 390 | 0 | - | - | - | - | - | - |
| Aerial patrol | - | - | - | - | - | - | - | - | 1 |

*1 Population figures are for March 1998 for all Australian States and Territories. Population figures for New Zealand are as estimated at July 1997.
*2 Terminology varies between jurisdictions
*3 Urban generally taken as capital city metropolitan area, rural includes rural cities.
*4 NT has no speed limit in rural areas
*5 Cameras in SA are based in capital city and programmed out to rural areas.

# 3 SPEED ENFORCEMENT PRACTICES

This Section presents an outline of current speed enforcement practices around Australia and in New Zealand. Greater detail is presented in Volume 2, Appendix 1.

## 3.1 Technology

- The most major advance in technology in recent years has been the introduction of speed cameras in all jurisdictions (with the ACT (at the time of drafting) in the process of introducing cameras). More recently, advances have been in the technology used in the camera devices (eg digital imaging).
- Conventional wet film based camera operations demand considerable resources in the processing of film. Digital capture of images is in use in a few locations, with concerns of image security raised as an issue where the digital technology is not in use. Where the digital cameras are used no major problems have been encountered (eg Tasmania, Northern Territory), with efficiency of operations and speed of infringement processing major advantages. Presentation of the image to offending motorists also simplifies the complaint / query process. Recent evaluation in the ACT of processing costs indicate a cost per offence of $12 for wet film and $1 per offence for digital operations (personal communication Australian Federal Police).

## 3.2 Methods of enforcement

- Speed camera operations vary between covert and overt, general area permanent signing, signage at or following the site of actual enforcement and in the open publicising of speed camera locations.
- The use of fixed cameras are generally seen by Police personnel as appropriate on a specific site basis only, and are not seen as a general tool. Stark (1996) observed the benefits at the specific camera sites, but also noted a generalised effect was not observed when considering UK operations. Where cameras are rotated between fixed housings a reduction in speeds at all sites has been observed (eg personal communication, Tasmania Police). Experience in Kuwait (Ali, Al-Saleh and Koushki, 1997) indicated a negative effect as drivers abruptly slowed at camera sites, only to accelerate to higher speeds immediately following the sites.
- Camera activity on two lane rural roads (in 100 and 110 km/hr zones) is not undertaken to a large extent (with some exceptions, in particular in New Zealand, where 40 per cent of speed camera delivery is to rural roads, which are predominantly two lane) - with mobile patrols the predominant form. Recording and targeting at this level is limited in most cases.

## 3.3 Intensity of enforcement

- The focus on rural areas varies to a large degree from a policy and operational viewpoint, with some jurisdictions setting targets of up to 50% of speed enforcement activities to be located in rural areas.

## 3.4 Performance measures

- Civilianisation of speed camera operations is a current trend in meeting desires to release sworn police officers to other tasks.
- Turnaround time for the processing of infringements extend to 4-6 weeks on occasions, with 1-2 weeks the general target. Heavier loads over peak enforcement periods influence the turnaround time. Processing rates are generally higher and turnaround time shorter where digital camera technology is in use (eg 3-4 days as opposed to 1-3 weeks).
- Cull rates appear to be an area where considerable gains can be made. Some rates are readily accessible - with cull rates varying from up to 40 % with the apparent benchmark hovering around the 20% mark. This varies depending on radar versus laser operations which are appropriate for different circumstances. (Laser preferred in high traffic volumes).

- The need for owner onus legislation in jurisdictions where it is not in place is seen by Police as high priority. Owner onus legislation eliminates the need for driver identification (in particular where demerit points apply) and therefore front photography.
- Motorcycles without front registration plates appear to be an area of concern. A need for new 'flexible plates' or a similar safe option is required to allow detection of speeding offences by speed cameras. Motorcyclists are often aware of the difficulties faced by Police in successfully prosecuting camera detected offences. This is particularly the case where owner onus legislation is not in place.
- Quality control and maximisation of resources is evident to varying degrees within jurisdictions. Usage rates vary from as low as 3 hours per day on average for cameras, up to 16 hours. Recent work in establishment of a detailed and structured quality control plan in one jurisdiction (refer WA ETEP Operations Volume 2, Section 1.9) appears to be providing lower cull rates, lower levels of offender queries and complaints, and higher utilisation rates.

## 3.5 Intelligence driven operations

- Approved speed camera locations have in general been determined as a result of an analysis of crash information. In a number of jurisdictions locations have been extended to include roads where there is a known speeding problem, or as a result of complaints from the general public.
- Speed camera deployment is generally well defined and structured. Targeted deployment for other non-camera methods are more discretionary with recording levels limited. This is especially the case where non-camera operations form part of 'general duties' roles.
- The use of 'intelligence' in the locating of speed enforcement activities is evident to varying degrees. Considerable work in this area has occurred in the past 2 years in most jurisdictions. Crash statistics are the predominant base of direction. Central provision of this information is common, however use within the field is either unknown or limited. Currency of data appears to be a major concern.
- The use of GPS technology (mapping techniques) is under development in a number of jurisdictions.
- A structured randomised approach is also used (eg Queensland) where a managed approach to enforcement spread and intensities is used.

## 3.6 Tolerances

- Tolerances vary between jurisdictions and in the discretionary tolerances allowed for camera and non-camera operation. Different tolerances may also be used on motorways (eg New Zealand). Tolerances range between 9 km/h and 15 km/h for camera activities and generally between 10 km/h and 15 km/h for non-camera activities.

## 3.7 Penalties

- Corporate offenders have been approached in different ways. Latest initiatives include the increase of the fine (to up to 5 times the original figure) for corporations where the driver is not nominated.
- Recording of cautions issued to drivers is undertaken in only a minority of jurisdictions.

## 3.8 Public education

- Police in each jurisdiction do not undertake the primary public education initiatives, however they do run various smaller campaigns or public relations activities of their own. Publicity through the launching of enforcement initiatives is common, with the degree of activity varied between jurisdictions.
- The introduction of third party insurance sponsorship of road safety public education in many jurisdictions has provided the necessary funds for higher profile advertising campaigns. Coordination of these activities through a central taskforce or road safety panel has ensured a planned approach to these activities.
- Methods of advertising vary from rational approaches to highly emotive campaigns, with strong opinions on the relative merits of each approach. The need for a long term focus on changing public perceptions is recognised.

# 4 SYNTHESIS OF CURRENT PRACTICE

## 4.1 Research method

A key desire at the commencement of the project was to obtain detailed information from each jurisdiction about speed enforcement operations, related media activities, on-road speeds and crash outcomes, and then to produce an overlay of the available data from which best practice guidelines could be developed. Unfortunately, it proved to be impracticable to identify best practice speed enforcement practices from the data that was able to be gathered. Differences in operations, definitions and data collected within the different jurisdictions did not allow the necessary comparisons to be completed in any statistically valid manner.

In view of this, and in order to extract the maximum value from the assembled data, a synthesis of current practice has been compiled based on reasoned assessment by the authors of all of the information gathered for the project, giving due consideration to local variations as well as the outputs from a workshop involving a number of key stakeholders from around Australia and New Zealand.

The 'Synthesis of Current Practices' detailed below briefly discusses, for each of the major topics in speed enforcement:

- Core beliefs.
- A reasoned assessment of current best practice.
- Issues that are actually or potentially contentious.

The major topic headings used are:

- Technology.
- Methods of enforcement.
- Intensity of enforcement.
- Performance measures.
- Intelligence-driven operations.
- Tolerances.
- Penalties.
- Public education.

## 4.2 Technology

**Core beliefs:** Technology provides a means to improve the ability to detect speeding motorists, apprehend speeding motorists, identify speeding motorists and to monitor and evaluate the effectiveness of programs.

**Current best practice:** Speed cameras have provided a means to broaden the exposure of motorists to speed enforcement activities, and therefore awareness of speeding as an issue.

Digital cameras provide an ability to reduce the time taken to process infringements, and the associated cost of infringement issue (refer ACT Volume 2, Appendix 2).

Advances in the nature of image capture aim to minimise the likelihood of non-prosecutable images as a result of multiple cars within the image (eg NSW – image markers to better define offending vehicle in night conditions). Laser technologies have improved the ability to pin-point offending vehicles in heavier traffic.

Communication equipment allowing in-vehicle links to registration databases and other information provides mobile patrols with valuable information on-site which can also assist in other policing issues.

GPS / GIS Information systems allowing visual interpretation of crash and other data, to allow a greater appreciation of area wide trends and monitoring of actual operations.

**Issues:** A major issue affecting any technological advancement in the enforcement area is the legal ramifications of its use. This is particularly the case in regard to digital imagery where the ability to prove the integrity of images is a concern in some jurisdictions. An ability to digitally 'sign' an image is an option, however issues are still to be resolved before the use of digital technology becomes a widely accepted practice by Police and the legal fraternity.

## 4.3 Methods of enforcement

**Core beliefs**: Enforcement is believed to influence driver behaviour through two types of deterrence: *specific deterrence* is what motivates previously apprehended drivers not to speed, while *general deterrence* occurs when the threat of enforcement influences the behaviour of drivers generally, irrespective of whether or not they have ever been apprehended. The enforcement of a behaviour as widespread as speeding must necessarily be aimed in large measure at general deterrence, although specific deterrence remains important, both to deter recidivist speeders and to underpin the threat of enforcement that leads to general deterrence. In practice, almost any type of enforcement will have elements of both specific and general deterrence, although the balance will differ.

Enforcement can aim to be *visible* or *covert*. Police officers carrying out visible enforcement endeavour to ensure that all motorists passing the site see the enforcement activity and recognise it as such. Officers carrying out covert enforcement make their presence known (if at all) only after an offence has been committed, and are only visible to other motorists while they are dealing with offenders. This division into visible and covert is not absolute as many drivers will fail to notice the most obvious enforcement activity, while others will recognise police officers travelling in unmarked vehicles even though they are not in the act of intercepting offenders. However, the probability of enforcement being noticed, and its impact on drivers, is likely to be quite different in each case. Nevertheless, visible and covert enforcement can each have both specific and general deterrence effects, particularly if drivers can be persuaded to remain conscious of the potential existence of covert enforcement.

Visible enforcement serves as an obvious reminder that speed enforcement represents a threat to those exceeding the limit. Although the speed activity is seen by many drivers, the immediate threat of apprehension for a speeding offence is low, since the enforcement is obvious and the individual may well feel able to reduce speed in time to avoid detection. (It should be noted, however, that a proportion of drivers will fail to notice enforcement in time to slow down sufficiently to avoid detection.) With some techniques, eg mobile mode radar where the offence can be detected before the police car can be recognised as such, drivers will find it more difficult to see the enforcement activity in time to slow down. Nevertheless, every effort is made to make the police vehicle visible.

Covert enforcement is seen by fewer individuals, but for those that do see it the threat of apprehension is regarded as relatively high, as the enforcing vehicle is not obvious and could readily be imagined by those who see it as potentially travelling close to their vehicle on future trips without being noticed. It would therefore be expected that covert enforcement would have a greater impact on the smaller number of individuals who see it in action. The existence of covert enforcement, and the recognition of its existence by the great majority of drivers through publicity, arguably forms the main basis of the general deterrence effect of speed enforcement.

Speed enforcement also varies in the mobility of its undertaking:

- *Fixed* enforcement involves a permanent or semi-permanent installation of enforcement equipment at a particular location (eg fixed housing speed cameras).
- *Variable stationary* or moveable enforcement involves equipment which can readily be moved from site to site, but is stationary whilst in operation (eg vehicle or tripod mounted speed cameras).
- *Mobile* enforcement is carried out from a moving vehicle in the traffic stream.

Speed enforcement activities may then be considered to form a matrix. Examples of how different enforcement activities fit into the matrix are shown in table 4.1 below. Each type has a different influence in terms of the principal type of deterrence it provides and the situations in which it is appropriate.

Table 4.1 — Speed Enforcement Types

| | Visible operations | Covert operations |
|---|---|---|
| Fixed | General Deterrence<br>(Fixed cameras with or without warning signs—may include rotation of cameras between fixed sites) | Specific/General Deterrence<br>(In principle covert cameras at fixed locations are difficult to arrange—rotation of cameras between fixed sites may approach covert operation) |
| Variable Stationary | General Deterrence<br>(Some speed cameras; conventional radar, laser or amphometer based enforcement) | Specific/General Deterrence<br>(Some speed cameras—often visible after speeds have been recorded, laser) |
| Mobile | General Deterrence<br>(Traditional mobile patrol; mobile mode radar.) | Specific/General Deterrence<br>(Covert patrol in unmarked car) |

The functionality of a particular enforcement type often changes in emphasis at different stages of the enforcement process. For example:

- A mobile covert operation serves a combined specific and general deterrence role while on normal patrol (the latter depending on the level of consciousness among drivers generally that it exists). Upon detecting an offending motorist, the operation becomes visible during the infringement issue stage, and will then perform as a stationary visible operation, providing a strong contribution to general deterrence for motorists passing the site.
- A variable stationary covert speed camera will serve to provide both specific and general deterrence when in operation, however a sign visible past the point of detection stating the presence of the camera will much enhance its general deterrence effects.

Visible operations perform a general deterrence function, but only for as long as they serve to remind drivers of the existence of covert speed enforcement. Covert operations, in addition to playing an important role in helping to create general deterrence effects (providing its existence is well publicised), also play a specific deterrence role for those motorists who are caught and who might not otherwise be influenced by general deterrence. Achieving a proper balance between negative reactions to covert operations and ensuring that deterrence is achieved across the road network is an issue raising many difficulties.

For the reasons cited above it is generally believed that the most effective enforcement strategy involves a judicious balance of both visible and covert enforcement. However, at present there exists neither established theory nor sound empirical evidence to guide commanders as to how much visible and how much covert enforcement there ought to be in differing circumstances.

**Current best practice:** It is difficult to make precise recommendations of best practice for methods of speed enforcement. However, it appears that a mixture of covert and overt enforcement is required as well as varying degrees of mobility, and a strategy which ensures a coverage of a wide range of sites, whether these are targeted or not. Recommendations regarding the type of enforcement to be used in specific circumstances can be deduced from first principles. The essential recommendations are summarised in table 4.2 below:

Table 4.2 — Appropriate methods of enforcement

| Location | Type of Enforcement |
|---|---|
| High crash locations | Visible fixed, or frequent visible variable stationary to maximise the general deterrence effect. |
| Remainder of road network at normal travel times, including daily travel peaks. | Variable stationary and mobile operations, with both visible and covert operations. Need to maintain general deterrence message whilst using the opportunity to extend the specific deterrence threat.* |
| Remainder of system at peak travel times | Variable stationary and mobile operations, with particular emphasis on visibility to reinforce the general deterrence message and ensure large numbers of motorists view the enforcement activity.* |
| * Extensive coverage of the road network is desirable | |

**Issues:** Recognition of speeding as a constant choice by drivers (as opposed to drink driving where the choice is normally made only once at the start of a journey) is considered important. Speeding can be exhibited over an entire length or on only portions of a journey. Speeding for the conditions, whilst travelling below the speed limit, is also an area for attention.

Two main thoughts exist on methods to combat predictability of enforcement operations. Firstly, a level of covert enforcement operations at targeted sites will, provided drivers remain aware of the threat of enforcement, result in driver compliance on a wider scale. Secondly, a broader approach (more enforcement sites with less intensity per site) will result in a change of driver behaviour on a more general basis.

Opinions on the relative merits of visible versus non-visible operations vary greatly. In regard to speed camera operations, the general consensus is that operations should be visible after the site. That is drivers become aware of the likely infringement immediately, but are not able to vary their speed in time to avoid prosecution. This approach of making the driver aware of a speed camera site after it has been passed (usually by the posting of a sign) does not work well for two way operation and at night. It also places high importance on minimising cull rates (to maximise expectancy by speeding drivers of receiving an infringement notice) and expediting the issue of infringement notices.

The extent to which enforcement resources should be targeted at high accident locations is an area generating various opinions. On the one hand, speed reductions at these locations are likely to have a high pay-off in terms of crash reductions at the enforced sites. On the other hand, concentrating enforcement resources on a limited part of the network may increase predictability, and thereby reduce the general deterrence effect across the network. Further discussion of enforcement targeting is presented in Section 4.6.

At one extreme is the view that most enforcement activity should be concentrated where there are demonstrated problems. The belief is that if sufficient problem sites are recognised and receive enforcement attention, this will ensure sufficient spread over the system to achieve a generalised deterrence effect.

At the other extreme is the view that little or no resources should be specifically targeted to problem locations, but resources should be spread around the network to achieve the maximum deterrent effect. If this effect is sufficient it will bring down speeds across the network, and reduce crashes across the system generally as well as at high crash sites. Kloeden et.al (1997) have indicated the potentially large safety benefits of achieving small but widespread reductions in speeds.

In practice, as indicated above, police in all jurisdictions currently apply a judicious (albeit differing) mix of enforcement approaches.

## 4.4 Intensity of enforcement

**Core belief**: Increased enforcement will induce greater compliance with speed limits.

The level of enforcement required to achieve given compliance levels is an area requiring further research. The measures need to consider two main aspects - the dose required to achieve an outcome at a site, and the dose or density of enforcement to achieve an outcome on a more general basis. Details on current practice regarding performance measures is provided in Volume 2, Appendix 7, and information related to ongoing data collection related to enforcement levels and crash data, is provided in Volume 2, Appendix 1 "Intelligence Driven Operations".

Considering programs globally (eg whole of State or region), suitable dose measures may include:

- Hours of speed enforcement exposure (camera and non-camera) per 10,000 drivers, per 100 million vehicle kilometres travelled.
- Number of times speed checked per population per distance travelled or per unit area, or average checks per driver per year.
- Other variables could include sites visited and patrol kilometres. Marked vehicle mileage records may provide a possible interim measure.
- The number of speeding offences detected may be used as an internal measure within police operations, however these are not considered appropriate for measuring effectiveness of speed enforcement. (For example, is a higher number of offences better or worse?)

Considering local enforcement problems, there is anecdotal evidence that these can be tackled successfully by a major effort at first and maintained by relatively small doses thereafter.

**Current Best Practice:** The present state of knowledge does not permit clear prescriptions regarding the optimum intensity of enforcement. The issue must be considered at two levels, the local and the systematic.

At the local level anecdotal evidence (various jurisdictions) suggests that a period of 2-3 weeks of initial concentrated enforcement at a site will provide changes in behaviour that can be maintained over a longer period with lower levels of enforcement. Available data for this report has not enabled an accurate determination of the levels of enforcement needed. Crash data analysed over a longer period will enable trends to be determined, although covert non-enforcement measures of speed will enable immediate analysis of the dose-response.

At the systematic level, there is some evidence to suggest that major changes in speed enforcement can have a marked impact on speed behaviour. This is demonstrated by Victoria's experience with speed cameras in the early 1990's (eg Newstead, Mullen and Cameron, 1996). Wider programs such as used in Queensland (Randomised scheduling, Random Road Watch), indicate changes to management of the operation (with few extra resources) can also effect long term results. In these cases intensities at a specific site are low, with coverage the main aim.

**Issues:** The previous section has highlighted the various methods of enforcement that are possible. In considering the intensity of those operations (and/or combination of various operations) there is insufficient detail currently available to adequately determine dose-response characteristics. The development of performance and outcome measures as detailed in Sections 5 and 6, will enable more insight into appropriate levels and effects of various strategies. Ultimately a controlled study in an area where traffic volumes are relatively constant is required to determine various dose-response relationships. Further research in this area is highly recommended.

## 4.5 Performance and outcome measures

**Core beliefs**: Measures of enforcement performance (outputs) and outcomes are important tools for understanding the relationship between enforcement activity, speed and crash information.

For speed cameras, typical measures in use by jurisdictions include:

- offences
- offences per hour
- vehicles per offence issued
- percentage of speeding vehicles
- percentage of vehicles travelling greater than the speed limit
- number of visits
- number of different locations visited
- hours in use
- total vehicles checked
- usage rates; and
- cull rates.

In some jurisdictions the urban / rural proportion of activity is actively monitored.

For mobile radar, lasers, and other methods – details of speed enforcement activities undertaken are generally not collected. Some jurisdictions do collect information on hours of direct enforcement carried out. In regard to specific initiatives various details may be collected and audited or monitored. Measures typically relate to hours of activity or the number of offences (not necessarily speed related) detected.

**Current Best Practice:** Monitoring outputs and outcomes is essential. It may be appropriate to set target values for different enforcement modes, but outputs will depend on traffic flow, enforcement history, and site factors. However, it may be useful to set uniform minimum and maximum target cull rates for speed camera operations. Current practice indicates that cull rates under 20% are approaching best practice. The technology used may influence these rates. Various rates of speeding and detection are being achieved, with levels often reflective of the typical practice in regard to visibility of operations. Changes in crashes and covertly measured speed distributions are the two primary outcome measures for speed enforcement. Recommended performance and outcome measures are presented in Sections 5 and 6 of this report.

As well as the systematic monitoring of performance and outcome measures, planned experimental studies will probably be required in order to determine the effectiveness of at least some aspects of speed enforcement operations. Research needs are discussed in Section 7.

**Issues:** Enforcement outputs should reflect the ultimate aim of reducing speeds and speeding, and hence road trauma, through reduced crashes and crash severities. Efficiency of enforcement operations should represent one part of the monitoring to ensure that maximum benefit is made of resources available for speed enforcement. Efficiency measures, such as the quality procedures being developed as part of the Western Australian Police Service Enhanced Traffic Enforcement Program (ETEP), (refer Volume 2, Section 1.9) should be monitored and evaluated for effectiveness.

An increasing trend is the civilianisation or outsourcing of speed camera operations, developing of film, processing and issuing of TINs and involvement in customer queries. The main aim of these practices is to release sworn members to other duties.

## 4.6 Intelligence-driven operations

**Core belief:** Intelligence-driven operations result in lower crashes.

The use of intelligence-driven operations may take many forms. In general the approach has centred on crash locations, with regard to speed camera operations. Latest practices have focussed on crash data in detail to identify not only crash concentrations, but also crash types, times and circumstances, with extension to non-camera operations. There appear to be no formal studies showing that intelligence-based programs are more effective, however local level comparisons are increasingly used to monitor effectiveness. The major question remains as to the effect of reductions in the crash rate at specific sites, versus possible benefits to be gained from relatively small speed reductions that are generalised across a wide area. Data from jurisdictions, where available, indicated:

- Active camera sites range from approximately 100 sites through to 2,300.
- Active camera sites per 10,000 km of roadway (not including local roads) range from 170 sites (equivalent to approximately one site per 58km) through to 1300 sites (equivalent to approximately one site per 8km).
- Active camera sites per 100,000 $km^2$ range from 7 through to 1000 sites.
- Active camera sites per 10,000 mvkt range from 400 through to 1850 sites.

These measures are all dependent on the geographic and demographic nature of each area. It is noted however that together they provide an indication of the exposure of a driver (and passengers) to speed enforcement operations.

Details on the speed distributions across a network are limited, and therefore do not feature in the development of enforcement programs.

**Current Best Practice**: A complete reliance on a targeted approach to a small number of selected sites is not desirable, with predictability and lack of general deterrence a likely outcome. A balance is required between crash based intelligence driven targeted operations, and managed targeting to wider areas in a random nature. That is the use of intelligence to support the methods of enforcement as outlined in Section 4.3.

**Issues:** Knowledge of the "dose-response" of speed enforcement activities in an area has the potential to improve the deployment of resources so as to maximise the effect on the desired outcome of speed enforcement - that is, to reduce crashes and crash severity. Through a knowledge of the intensities required to achieve certain aims, oversaturation of a site (where returns on the level of resource use are small) can be avoided through intelligence use of this nature. Further research in this area is highly recommended.

## 4.7 Tolerances

**Core belief**: Small tolerances are effective in reducing speeds.

**Current Best Practice:** The smallest feasible tolerance should be adopted through minimisation of equipment inaccuracies, but bearing in mind the formal acceptance of practice from a legal aspect, and giving due recognition to the potential backlash from drivers if tolerances are perceived to be impracticably small to allow for brief inadvertent excesses in speed.

**Issues:** One problem with published explicit speed enforcement tolerances is that they tend to create a higher de-facto speed limit. On the other hand, Elliott's (1993) meta-analysis suggests that people will be more readily persuaded if a specific behaviour is identified - uncertain tolerances create ambiguity. The consistency of tolerance levels and use in practice is seen as important.

Other tolerance related issues include:

- Should the tolerance be an absolute value or a percentage of the speed limit. The nature of the errors involved with the equipment (proportionate or discrete) should be considered in this determination.
- The degree to which the public education messages on speeding (eg "every 10 km/h makes a difference") are compromised by the level of tolerance adopted.

Whether publicised or not, tolerance levels are generally known by the public through actual experience and word of mouth. With a history of tolerance levels above the speed limit (in addition to equipment error tolerances) any major change in practice would be likely to have political implications. A possibility exists to simultaneously lower the tolerance level, while introducing a lower range penalty that considers a loss of demerit points only (thereby avoiding claims of revenue raising). This may reduce initial public backlash, especially if delivered in the context of higher risk of crashes (and higher severities of crashes that do occur), with even 'small' increases in speed (Kloeden et.al. 1997). Tolerance levels ultimately need to be reduced if the belief is to be changed that the speed limit is a maximum speed and not a minimum or recommended speed.

Wider use of speed warning devices within vehicles (such as those in later model vehicles which trigger an audible tone when drivers exceed a speed preset by the driver) may provide potential in the future. An obvious limitation of this system is at what speed drivers choose to set the trigger. The recent expansion of GPS (Global Positioning Systems) in the provision of in-car information has numerous possibilities. For example, the linking of road based GPS coordinates with speed limit references, could allow dynamic warning to drivers when they exceed the speed limit (or safe speed for the conditions).

## 4.8 Penalties

**Core beliefs**: Penalties must reflect community views on the seriousness of offences. Demerit points are an effective deterrent for speeding motorists. Loss of licence is an effective deterrent for excessive speeding.

Behavioural theory maintains that it is the probability of being caught rather than the size of the penalty which is most effective in producing the desired behaviour.

Haque (1993) reviewed Victorian data which indicated a longer period of time between a second and third offence which attracts demerit points than between the first and second.

Behaviour theory suggests that immediate loss of licence should have a powerful effect. It may be beneficial to conduct empirical studies investigating any reductions in high-speed offences following introduction of loss of licence schemes, or studies of individuals who have experienced licence loss. Anecdotal evidence suggests that while disqualified drivers may continue to drive, they do so with greater caution to reduce the risk of apprehension. In contrast, Harrison (1997) identified that 1.0% of drivers and motorcyclists involved in reported injury crashes in Victoria in 1994 were disqualified. Further analysis indicated that disqualified drivers and motorcyclists represent a "relatively greater risk of serious-crash involvement and serious injury than other road users."

Legislative provision allowing an increase in penalties for corporations where driver details of corporately registered vehicles are not provided is seen as an effective strategy.

**Current Best Practice**: A fine and demerit point system which reflects community expectations is required. The effect of automatic licence loss for very high speed offences can be justified on theoretical grounds and (probably) in terms of community support. Owner-onus legislation is an important provision to ensure maximum benefits from speed enforcement activities conducted.

**Issues:** Other issues raised in relation to penalties include:

- Divisions in penalties should reflect tolerance levels.
- No monetary penalty (demerit point only) should exist for lowest level offences, thereby reducing court challenges and non-payment administration costs, as well as lessening the possible grounds for accusations of 'revenue-raising'.

## 4.9 Public education

**Core beliefs**: Public education campaigns are an effective means of heightening the impact of enforcement and an essential part of winning support for speed enforcement activity.

Campaigns have to be carefully thought out in terms of current community perceptions, the target audience, attitudes and beliefs, the previous history of the issue, and the available time and resources. Publicity should be used proactively to raise issues before paid material goes to air. Television is useful for introducing new issues and ideas. Radio is useful where it is important to engage drivers while driving (speeding is a good case in point). Outdoor advertising (billboards) can be used effectively to reinforce points raised in the electronic media, and target drivers while they are in their vehicles.

Evaluation of media campaigns is generally limited to the campaign itself, considering factors such as reach and recall of the intended message. While behaviour and attitude changes are recognised as long-term goals, limited studies are available indicating performance over the long term.

Elliott's (1993) meta-analysis identified the characteristics of successful campaigns, as those that are:

- based on theoretical models and prior research
- are persuasive rather than educational
- are more emotional than rational
- focus on a specific behaviour
- do not rely on celebrities
- are supported by enforcement.

**Current Best Practice:** The use of 'brands' enables the linking of various campaigns to achieve an overall change in driver behaviour and attitude. Research conducted with sample groups prior to campaigns can help in ensuring that the right message is being delivered in the right format. The current study on media intensities in South Australia is designed to provide some insight into appropriate campaign intensities. Single messages only should be delivered in each campaign. There is a need to evaluate campaigns over the long term, with respect to driver attitudes. (Note: the FORS community attitude surveys provide some indication of on-going attitudes – refer Volume 2 Appendix 12).

Coordination and cooperation between speed enforcement and public education initiatives is critical. Public education can serve two main purpose: To heighten public awareness of enforcement (where it is important that on-road enforcement levels reflect education campaigns); and progressive education where behavioural attitudes to speeding and safety in general are targeted with a long term focus.

**Issues:** The appropriate level of public education and media intensities is an area of some debate. The current study being undertaken in South Australia (refer Volume 2, Section 3.6.2.3) will go some way to examining this issue. As an area requiring considerable financial resources for advertising optimisation of this spending is a high priority. Also of interest is the level of media activity surrounding holiday periods.

# 5 RECOMMENDED PERFORMANCE MEASURES

The establishment of consistent performance measures for speed enforcement practices will provide jurisdictions with the ability to monitor performance and benchmark operations. Many aspects of performance are currently measured by the various jurisdictions (see Volume 2 Appendix 7). The provision of a consistent framework to record, store and evaluate this information will enable comparison of speed enforcement operations within and between jurisdictions. This will help jurisdictions to optimise their internal operations through continuous improvement, as well as providing a basis for increased harmonisation of enforcement practices between jurisdictions, with the ultimate aim of further reducing road trauma on Australasian roads.

## 5.1 Exposure Categories

The nature of the speeding problem, and the appropriate method to achieve compliance varies depending on the type of road being considered. It is therefore important that enforcement performance measures reflect these differences.

Difficulties experienced in this current project have also related to an inability to compare activities on a like basis. A consideration of 'exposure' when evaluating various performance measures is therefore important.

The grouping of road types recognises the different purposes and driving conditions on those roads. Measurement against these groupings will allow comparison on an equal level. The major defining group is distinguishing between urban and rural operations. A further sub-group considering the functionality of the road is also important to represent the purpose of the road and therefore motorists travelling on that road.

Table 5.1 — Road Types

| URBAN ENVIRONMENT [1] | | | |
|---|---|---|---|
| Freeway | Arterial | Collector | Local |
| **RURAL CENTRE [2]** | | | |
| Through Road | Collector | Local | |
| **INTER RURAL [3]** | | | |
| Rural Highway (>2 lanes) | Rural Collector | Rural minor sealed | Rural minor unsealed |
| **OUTBACK / REMOTE [4]** | | | |
| Outback Sealed | Outback unsealed | | |

[1] Urban Environments: Defined as centres with populations > 10,000.

[2] Rural Centre: Defined as centres with populations between 100 and 10,000.

[3] Inter Rural: Defined as roads between centres and/or urban environments.

[4] Outback / Remote.

Rates should be expressed relative to population and effective exposure, registered vehicles or vehicle kilometres travelled. In general data on vehicle kilometres travelled may be more difficult to accurately determine, however an alternative measure where data is readily available is the use of registered vehicle information from licensing databases. In consideration of this the recommended exposure measures are:

- 100,000 population
- 10,000 registered vehicles

and if available;

- 100 million vehicle kilometres travelled (mvkt).

Standardisation of these groupings across Australasia for both performance and outcome measures will allow comparison within and between jurisdictions. With the increasing use of GPS (Global Positioning System) information to record crash information, and electronic presentation of road networks on such systems the potential exists to build in functions that will allow comparative analyses to be completed with relative ease. The reporting of data in such a format will allow better state wide evaluations of performance.

Tracking changes in rates relative to the local conditions and exposure will ultimately allow enforcement activity to be compared with speed and crash data to provide indications of speed enforcement effectiveness taking into account local influences. These performance measures can be applied across a small jurisdictional area, or jurisdiction wide, given sufficient data.

## 5.2 Speed Camera Activities

Data collection, and measures based on speed camera data is relatively advanced in most jurisdictions (refer Volume 2, Appendix 1 "Speed Camera Operations"). Reporting methods are similar in most instances.

Recommended outputs to measure are detailed in Table 5.2.

The speed camera activity should be recorded relative to the road types detailed above in Table 4.1, to allow more detailed comparison on the location of activities.

Table 5.2 — Speed Camera Activity Performance Measures

| Speed Camera Activity | Exposure Measure |
|---|---|
| Number of vehicles checked | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |
| Total hours of enforcement | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |
| Percentage of vehicles exceeding the speed limit [1] | |
| Percentage of vehicles travelling greater than the enforcement limit [2] | |
| The number of separate visits made [3] | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |
| The number of specific sites visited [4] | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |
| Utilisation rates (average daily use) | |
| Cull Rates (refer below for more detail) | |

[1] The speed limit could be defined as speed limit + 3km/h to allow for equipment error, and general minor variation in speeds.

[2] Standardisation of tolerance levels would enable comparison between jurisdictions.

[3] Separate visits made includes multiple visits to the same site (eg 5 visits to same site = 5).

[4] Specific sites visited regardless of frequency (eg 5 visits to same site = 1).

### 5.2.1 Cull Rates

The reporting of cull rates varies between jurisdictions. To ensure the maximum benefits are achieved from speed enforcement operations the minimisation of cull rates is recommended. To achieve this, accurate recording of reasons for culling photos is required. These can be separated broadly into six categories, as shown below.

Table 5.3— Recommended Cull Type Performance Measures (%)

| Cull Types |
|---|
| Limitations of equipment (eg multiple vehicles) |
| Number plate issues (eg motorbikes, unreadable plate or obscured). |
| Emergency vehicles. |
| Equipment failure. |
| Damaged film (if appropriate). |
| Operator error. |

Refer Volume 2, Appendix 1 “Speed Camera Operations” for existing practice.

## 5.3 Non-Camera Activities

Performance measures relating to non-camera activities specific to speed enforcement are limited with the Australasian jurisdictions (refer Volume 2, Appendix 7). The recording of accurate information may impose a significant demand on reporting processes currently in use, and therefore may not be practical. As a desirable statement on activity, the following details should be routinely available.

Table 5.4 — Non-Camera Activity Performance Measures

| Non-Camera Activity | Exposure Measure |
|---|---|
| The number of personnel and hours of traffic enforcement conducted by dedicated traffic personnel. It is desirable to isolate activities specific to speed enforcement. | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |
| The number of general duties police (note terminology varies) who may carry out speed enforcement activities. Desirable is to record hours of such enforcement. | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |
| Kilometres travelled by marked police vehicles. | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available) |

The speed camera activity should be recorded relative to the road types detailed above in Table 4.1, to allow more detailed comparison on the location of activities.

As a longer-term goal the data on non-camera enforcement activity should also include:

- Details of enforcement type - for example variable stationary or mobile, and equipment utilised. If variable stationary, the number of sites visited and total hours is desirable. For mobile operations, the kilometres travelled is a minimum requirement.

## 5.4 Infringements

### 5.4.1 Processing

The processing of infringements (refer Volume 2, Appendix 1 "Infringement Issue and Cancellation") can be an area where extensive resources may be required. The optimisation of this process is an area were considerable gains can be made.

Factors to be measured include:

Table 5.5 — Infringement Processing Performance Measures

| Infringement Processing |
|---|
| Average time between photos being taken, and adjudication commencing. |
| Average time taken between adjudication and issuing of the TIN (traffic infringement notice). |
| Total number of queries answered, personal verifications requested, complaints, TINs reprocessed (eg corporate vehicles) and TINs cancelled. |

### 5.4.2 Infringement Issues

Details on the status of TINs and penalty payment (refer Volume 2, Appendices 1 and 9) will provide valuable details on the effectiveness of penalty structures. Recommended details are:

Table 5.6 — Infringement Issue Performance Measures

| Infringement Issues |
|---|
| Number and value of TINs paid. |
| Number and value of TINs unpaid. [1] |
| Current levels of unpaid penalties. |
| Number of penalties withdrawn. [2] |
| Penalties cancelled. |
| Penalty queries resulting in court action. |

[1] Recording of details relating to why penalties are unpaid is recommended.

[2] Recording of details relating to why penalties are withdrawn is recommended.

# 6 RECOMMENDED OUTCOME MEASURES

Establishing consistent outcome measures for speed enforcement activities will provide a greater appreciation of the role of enforcement in leading to lower speeds, and ultimately to a reduction in trauma on Australasian roads. Using consistent outcome measures will also facilitate future comparisons of differing speed enforcement regimes and practices, which will assist Australasian jurisdictions in moving towards best practice.

Changes in crashes and on-road speeds are the two primary outcome measures for assessing the effectiveness of speed enforcement. Changes in community attitudes and in infringement rates are also important.

## 6.1 Background

Because the ultimate aim of speed enforcement is to reduce road trauma, its effect on road crashes would, on the surface, appear to be the best outcome measure. However, road crashes are influenced by many factors other than speed, which invariably masks the effect on crashes of any individual factor, even one as important as speed is believed to be. This does not rule out crash monitoring as a valid outcome measure for speed enforcement, but it does introduce a need for great care and rigour.

Jurisdictions are increasingly collecting details of operational aspects and crash data to enable trend information to be collated. In many cases data is currently available within existing databases, although the form and purpose of the data recording may not always suit rigorous analysis for road safety purposes. Attention to these aspects will improve the ability to conduct meaningful analysis of data.

Monitoring speed as an outcome measure has the advantage that it measures directly that which speed enforcement seeks to change—on-road speeds. Speed monitoring is a fairly straightforward activity, requiring some resources and a commitment to a program designed to most efficiently reveal the changes that can be expected to produce the desired improvements in the incidence and severity of crashes. Probably the major weak link is the uncertainty between speed change and crash risk, but this is being addressed (eg Kloeden et al 1997).

Over time the collection of speed data (in addition to crash data) and evaluation in respect to speed enforcement and public education activities may enable more accurate determination of the link between on-road speeding behaviour and crash risk.

The advantages of utilising unobtrusive speed measurement as a measure of speed management efforts has many benefits including:

- Speed measures are more directly related to speed management inputs. Changes in speed distributions are less likely to be influenced by factors other than the speed management inputs when collection of such data is quality controlled.
- Speed measurements are potentially less subject to purely random statistical variation when compared to crash data.
- Ultimately speed measurement can be used to evaluate performance at a local (even site-specific) level. Crash data sample sizes quickly reduce to levels where statistically robust evaluations cannot be undertaken, when isolating smaller areas. (This is evident in current intelligence operations being undertaken by various jurisdictions – refer Volume 2, Appendix 1 “Intelligence Driven Operations”). By contrast, it is possible to get large-sample, statistically accurate speed data for quite small regions, and track changes over short or long time periods.
- Speed data can give more rapid feedback on results than crash data. In principle, speed change data can be evaluated with a very short time lag. When considering crash data, fatality figures are the most timely, but numbers are typically so small that the data cannot be used for monitoring short-term changes in particular areas. Casualty crash data takes longer to compile and feedback on performance can be delayed.

- Adding speed data to enforcement and crash data can be an important public education tool: an opportunity to demonstrate that quite small speed changes can be linked to surprisingly large crash reductions (or increases). This provides an opportunity to be used as an input for decision-makers, as well as the general public.
- Speed data can be important in establishing the "causal links" between speed management inputs and crash outcomes. If we know that speed enforcement has been intensified (or otherwise enhanced) and there was a change in the speed distribution and there was a crash reduction, then we can be much more confident about causation than if the "middle link" in the chain was missing.

## 6.2 Road Trauma

**The ultimate desired outcome of speed enforcement is a reduction in road trauma.**

The purpose of speed enforcement activities is to achieve an outcome of reduced speeds that in turn is expected to lead ultimately to reduced road trauma.

Most road crashes occur from a combination of factors. In some cases, speeding of one or more vehicles is a primary causal factor. In considering the mechanics of a crash, the speeds of the vehicles involved influence the manoeuvrability and/or stopping distance of the vehicles. The lower the speed of the involved vehicles, the less severe the impact will be, and in some cases the impact may be avoided altogether.

The outcome of reduced road trauma through lower travelling speeds can be expressed as a general lowering in severity level. Fatal crashes may be reduced to hospitalisation crashes or lower severity, hospitalisation crashes may be reduced to minor injury crashes or lower, minor injury crashes may be reduced to property damage only crashes or the avoidance of any collision, and property damage crashes may be avoided entirely.

Given this process, evaluation of the trauma reduction outcomes of speed enforcement should be based on the full range of crash severities. Fatality rates will probably always be more publicly reported on, but the effect of speed enforcement activities should be measured across the whole range of crash outcomes:

- Fatal
- Hospitalisation
- Injury; and
- Property Damage.

Consideration of the various reporting methods within each jurisdiction is required prior to development of these measures formally. In general the major variations will impact on the property damage only crashes. When considering crash data, it should always be noted that many other initiatives occur in the road safety arena that are aimed at reducing road trauma. When assessing changes in road trauma levels the contribution of these other initiatives should be recognised, although quantification may not be possible. A further need when making comparisons of crash rates is to take account of changes over time in crash reporting rates between jurisdictions.

Table 6.1 — Road Trauma Outcome Measures

| Crash Details [1] | Exposure Measure |
|---|---|
| Fatal Crashes | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available)<br>Specific site if desired |
| Hospitalisation Crashes | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available)<br>Specific site if desired |
| Injury Crashes | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available)<br>Specific site if desired |
| Major Property Damage Crashes | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available)<br>Specific site if desired |
| Minor Property Damage Crashes | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available)<br>Specific site if desired |
| | |
| Speed Related Crashes [2] | Per 10,000 registered vehicles in the area<br>Per 100,000 population in the area<br>Per 100 mvkt (if available)<br>Specific site if desired |

[1] The definition of crash severity types and recording requirements varies between each jurisdiction. Review of the categories at a local jurisdiction level is required.

[2] The definition and recording accuracy of 'speed related crashes' varies between jurisdictions.

The crash data should be recorded relative to the road types detailed earlier in Table 4.1, to allow more detailed comparison between the location of crashes and enforcement activity undertaken.

An area for further research may include consideration of individual crash types that are particularly speed related (eg pedestrian crashes, single vehicle crashes and certain multiple vehicle crashes). Unfortunately, the definition of 'speed related crashes' varies between jurisdictions, preventing cross-border comparisons.

## 6.3 Vehicle Speeds

The ultimate outcome sought through speed enforcement activities is to obtain a reduction in road trauma. This is expected to be achieved through a general lowering of travel speeds, primarily by producing improved compliance with speed limits. Given the extent to which crash rates are affected by factors other than speed, the most direct form of outcome measure for speed enforcement is speed itself. In view of this, it is perhaps surprising that systematic monitoring of speeds at covert non-enforcement sites is not undertaken in a number of jurisdictions. This lack of speed monitoring may be linked to perceived difficulty in relating speed changes to changes in the risk of road crashes. This problem is currently receding as further information comes to light about the relationship between speed and crash risk (eg Kloeden et al 1997). New Zealand authorities (LTSA) do collect considerable speed information from covert sites, with NSW and Victoria also collecting regular speed information. Detailed speed monitoring in also currently being undertaken in the metropolitan area of South Australia (refer Volume 2, Section 3.6.2.3).

A comprehensive covert speed monitoring system may be introduced in stages to enable costs to be spread over a number of years. However, a minimum level system should be established in all jurisdictions not already systematically monitoring speeds, so that trends in speed distributions can begin to be identified in a consistent way.

### 6.3.1 Speed monitoring by jurisdictions

Most speed camera systems are established to routinely produce statistics on number of vehicles passing the camera, numbers exceeding the speed limit by set amounts, and numbers exceeding the enforcement thresholds. These data are useful and their systematic collection and review should be encouraged. However, they do not provide an adequate picture of traffic speeds as drivers may become familiar with camera sites and adjust speed at these sites accordingly, and they may become better at identifying speed camera enforcement activity so that they are able to reduce speed before passing the camera site. Speed monitoring independent of enforcement activities is necessary for an accurate description of speed behaviour when enforcement is not present.

The following considerations must be borne in mind when planning an independent monitoring exercise :

1. Striking the appropriate balance between accuracy, monitoring all the component parts of the speed problem, and costs.
2. Keeping the output simple and useable.
3. Using existing facilities where possible. For example, it might be possible to use the piezo-electric cables installed in conjunction with the Culway vehicle weighing system to carry out unobtrusive speed surveys.

### 6.3.2 Extent of speed monitoring

Speed monitoring should be conducted to reflect the road types detailed in Table 4.1. This will ensure that performance and outcome measures are collected relative to the same field types.

Minimum requirements for a jurisdiction are (where such roads exist):

Table 6.2 — Speed Monitoring Sites

| Environment Type | Road Type | Minimum Number of Sites |
|---|---|---|
| Urban Environment | Freeway (100 km/h) | 2 |
| | Divided Arterial (60 km/h limit) | 5 |
| | Divided Arterial (80 km/h limit) | 5 |
| | Undivided Collector (60 km/h limit) – inner urban area | 5 |
| | Undivided Collector (60 km/h limit) – outer urban area | 5 |
| | Local Road | 5 |
| Rural Centre | Through road | 1 site within each of 5 centres |
| | Collector | 1 site within each of 5 centres |
| | Local | 1 site within each of 5 centres |
| Inter Rural | Rural Highway (> 2 lanes min. 100 km/h limit) | 5 |
| | Rural Collector | 5 |
| | Rural minor road: sealed | 2 |
| | Rural minor road: unsealed [1] | 2[1] |
| Outback / Remote | Outback: sealed | 2 |
| | Outback: unsealed[1] | 2[1] |

[1] Unsealed roads are considered optional

This represents a very basic framework for establishing speeds. Jurisdictions may wish to do more to achieve a detailed and comprehensive picture of speed issues. Possible ways in which this framework could be extended include:

- Applying the framework to different regions within the State.
- Further disaggregation of road types within the definitions provided above. It should be noted that the measuring and disaggregation of performance and other outcome measures in the same manner would be required for comparative analyses.
- Measuring heavy vehicle speeds, concentrating on routes with high flows of heavy vehicles, and using the same methodology as described above.

### 6.3.3 Site requirements for speed monitoring

***Sample size:*** For each survey carried out, it is recommended that a sample size of 200 cars or car derivatives travelling at free speed (ie a headway of at least 4 seconds between the vehicle measured and the preceding vehicle). Assuming standard deviations in the speed distribution of 6 km/h to 10 km/h, this would give a standard error of plus or minus 0.6 – 1.0 km/h (this is the generally accepted statistic relating to accuracy). Note that to achieve a standard error of plus or minus 0.1 km/h would require sample sizes of 3,600- 10,000 vehicles.

***Site characteristics:*** It is essential that sites be straight and level, and a reasonable distance from major intersecting roads in either direction. It is suggested that these distances be at least 2 kilometre in rural settings and 400 m in urban and rural centre settings. The site should also be free of other major distractions or other features likely to influence speed (eg service stations, major access points). The site should be one which is not frequently or regularly used for enforcement purposes.

***Timing:*** Within a jurisdiction, sites should be measured on the same day of the same week in each year, and all sites should be measured as close together in time as possible. If comparisons are to be made among jurisdictions then all jurisdictions should make their measurements at the same time of year. Surveys should be carried out on weekdays, unless it is decided that special surveys are required to monitor speeds at weekends or at holiday times.

The survey should be carried out in daytime between the morning and evening peaks. Consideration should also be given to carrying out night time measurements if concerns about night time speeds and crashes warrant it.

In normal times, it should be sufficient to carry out one survey per year. However, it may be desirable to carry out more than one survey per year, eg if there have been major changes in speed limits, enforcement practices, or other aspect of speed management.

### 6.3.4 Speed data to be recorded

In regard to measures to be extracted from the covert speed monitoring information, the following measures are recommended as a minimum:

- Speed distribution curve.
- Mean speed.
- $85^{th}$, $90^{th}$ and $95^{th}$ percentile.
- Percentage of vehicles travelling below the speed limit + 3km/h. (This is to reflect an allowance for speedometer inaccuracy, and small random fluctuation in speeds).
- Percentage of vehicles 3-<10 km/h over the limit. (In addition, the outer range of this measure may be chosen to reflect tolerance levels for local jurisdiction evaluation).
- Percentage of vehicles travelling 10 - <20 km/h, 20 - < 30km/h, 30 - < 40km/h and 40 km/h or greater over the speed limit. (Again the desire may also be to collect data relevant to fine structures).

## 6.4 Community Attitudes

A major outcome of speed management initiatives is the changing of community attitudes to speed and the speeding problem.

The Federal Office of Road Safety in Australia and the Land Transport Safety Authority (LTSA) in New Zealand currently undertake community attitude surveys that can be tracked from survey to survey (refer Volume 2, Appendix 12). Topics currently covered include:

FORS Community Attitude Survey

- Respondents mentioning speed as a contributing factor in accidents.
- Perceived changes in speed enforcement in the last two years (increased, stayed same, decreased).
- Drivers who believe there have been general decreases in the driving speed.
- Drivers who say they drive 10 km/h or more over the limit.
- Drivers booked for speeding in the last two years.
- Drivers booked for speeding in the last six months.
- Drivers who believe the speed tolerated in a 60 km/h zone should be 70 km/h or more.
- Drivers who believe the speed tolerated in a 100 km/h zone is over 110 km/h.

LTSA Survey

- Risk of being caught.
- Levels of speed enforcement relative to previous years.
- Respondents who believe enforcement of the speed limit lowers the road toll.
- Respondents who believe the use of speed cameras help lower the road toll.
- Opinions regarding the open road speed limit (100 km/h).
- Opinions regarding the urban road speed limit.

## 6.5 Infringement Rates

Current performance measures within some Police jurisdictions relate to the number of infringements issued. Speed camera performance measures are increasingly measuring the percentage of vehicles passing a site over the speed limit, or enforcement limit. The lower this value the better perceived effectiveness of the operation. Mobile patrols are often considered in a different light where a higher number of notices issued is a measure of effectiveness. The conflicting nature of these measures should be noted. As for speed cameras, an outcome of non-camera operations could be a reduction in the number of infringements issued. It is accepted that the exposure, site specific variations and various targeting initiatives will influence the validity of any assessment of the number of infringements issued. As such no formal outcome measures are recommended, however an appreciation of the concept of lower infringement levels indicating a positive outcome is desired.

# 7 RESEARCH

The need for a better understanding of some of the inputs and outputs from a speed management program have been identified as part of this current project. Also of relevance is the current research work being undertaken by the various jurisdictions.

## 7.1 Research in Progress

Research work being undertaken at interview time included:

- The RTA NSW had undertaken a trip overseas to review practice in Scandinavia.
- An evaluation of the effectiveness of hidden speed cameras in the former Midland Police District in New Zealand is being conducted by LTSA. A report on the first year of hidden speed camera operation was presented at the Road Safety Research, Policing and Education Conference held in Canberra in November 1999 (Keall et al, 1999). Compared with the generally highly visible speed camera enforcement in the rest of New Zealand, the hidden speed camera program was found to be associated with statistically significant net falls in speeds, crashes and casualties, and these effects, unlike the localised effects of visible speed cameras, tended to generalise to all roads.
- A project being undertaken by Transport SA is a three-year evaluation of the effectiveness of different levels of intensity of speed related advertising. Due for completion in early 2001, the project is using on-road speeds as the primary dependant variable, but is also tracking various control variables such as liquor sales and fuel sales. (See section 3.6.2.3, p 68 in Volume 2 for further details).
- Extensive changes were being made to laser and mobile radar equipment in Victoria. A Business Case was made to TAC for the purchase of the equipment. Studies of the actual outcomes are being undertaken by MUARC.
- A recent enforcement program was conducted on 3 main roads in Western Australia, where a speed camera was positioned every day for 3 months. Initial results showed that ehaviour was modified, although this took a month to realise.
- The Road Safety Task Force in Tasmania commissioned research into the effectiveness of the task force operations. The primary focus of the research is the analysis of crash data to determine what proportion of crash reductions (1997 data) could be attributed to the operation of the task force.

## 7.2 Research Needs

In the process of compiling this report many areas requiring further research were identified, either as a direct input from representatives of the various jurisdictions, or as a result of shortcomings in the information available to conduct this study. The potential areas for further work are highlighted below, indicating areas where a better understanding of various speed management processes is required. This will ultimately enable the desired outcome of reduced road trauma to be achieved through maximisation of the benefits to be achieved from the resources available to conduct speed management initiatives.

### 7.2.1 High priority

Further work on dose-response is required - where distinction between practices for road types / times of the day can be determined. The aim being to determine how best to use resources to achieve the best effect.

A focused look at rural enforcement issues and at resource and deployment methods.

‘What is the optimum mix of enforcement and publicity in effectiveness and dollar terms?’ Availability of robust data may make this topic difficult.

Further development and consultation on establishing the consistent performance and outcome measures to ensure ownership and consistency across all jurisdictions.

### 7.2.2 Medium priority

Detailed studies on actual roads to test the use of mobile patrols, and their impact on speeding behaviour:

a) while the police are present; and

b) longer term effects.

Initial thoughts by the author may involve covert monitoring of sites at various intervals along a length of road for a period prior to, during and after the mobile patrols. A variety of control sections may be used - with varying patrol levels trialed on different roads around the jurisdiction, over the same period.

Possible extension to include the various effects of marked police cars versus unmarked cars. How do covert practices for speed cameras compare to overt practices when speeds at the location and across a wider area are taken into account? The outcomes from the hidden speed camera project in the Midland District of New Zealand (see Section 7.1, p 43) should shed some light on this question.

Should consequence advertising focus on the monetary value of infringements or the loss of demerit points? Does one impact on a target audience more than an other?

As intelligence becomes more commonly used, - a project monitoring the actual benefits of intelligence use may enable cost benefit analyses to be completed.

Motorcyclists are not required to affix front number plates to their vehicle and are seen as a potential problem, whereby a group of high risk road users cannot be prosecuted. The possibility of overcoming this problem with innovative design (flexible plates etc.) is seen as an area for further work.

Research is needed on better identification of speed-related blackspots where engineering treatments are unlikely to be cost-effective.

The question of appropriate speed for conditions poses major challenges - how to determine what appropriate speed is in different conditions, and how to enforce it.

'The relative effectiveness of different enforcement methods?' Choices are made in a fairly ad hoc fashion at the moment and field officers would benefit from guidance in this area.

'Relative safety benefit in reducing absolute speeds versus speed variance?' A lingering issue for which there is not much research but sometimes some strongly held views. This could be generalised to 'improving our understanding about the relationship between measured speed distributions and accident rates for both urban and rural areas' (with particular reference as to how this can be influenced by enforcement activities). A literature review of the relative safety benefits from managing absolute speed versus speed variance is currently being compiled by LTSA and PRISM Ltd in New Zealand.

For consideration: NZ legislative practice imposes differential speeds in traffic flow on a predominantly 'two way - two lane' network. What effect does this legislation have on the ability to enforce limits, compliance and safety?

### 7.2.3 Lower priority

Speeding in the vicinity of school buses, and the enforcement of school bus zones is an area where research could be undertaken. Is it a problem in the first instance (a crash analysis) and what technology options are available for enforcement (eg Bus mounted cameras)?

A wider review considering the benefits of expenditure in red light cameras (including processing costs), versus spending in the speed enforcement area. This study could extend to other road safety expenditure such as RBT versus speeding as well as advertising versus on-road presence.

Should states combine tactics on each side of the state borders to ensure a consistent message to drivers travelling from one state into the other? What effects can be noted? A study could consider covert monitoring of speeds on each side of State borders for the National Highway for example.

'Gain more understanding of how attitudes to speeding behaviour are formed and how these can be changed.' The study may risk becoming academic however if any practical results were produced it would provide a much sounder base for educational/publicity programmes.

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Various documents were also sourced from the individual Police Services and Road Authorities. Considerable information was also obtained from personal communications held with representatives of the various organisations as detailed in Volume 2, Appendix 13.

# SPEED ENFORCEMENT IN AUSTRALASIA

## VOLUME 2 — APPENDICES

# Contents

# INTRODUCTION

Relatively little is known about the road safety outcomes of the various strategies and practices used around Australia and in New Zealand for enforcement programs aimed at speeding. There are significant differences in approaches to speed management and enforcement throughout Australasia, but there is at present only a limited picture of these differences, and even less information about how they compare in terms of outcomes. Also, little is known of how actual speed distributions vary from place to place (on comparable roads), or how they are changing over time.

The project output was presented in two separate reports. These reports have been integrated as Volume 1 and Volume 2 within this publication (AP-R189/01).

The first report (Volume 1) provides a summary of published literature on the topic, and a review of enforcement practices in each jurisdiction. Assessment of 'best practice' speed management techniques and systems is provided, and a set of consistent performance and outcome measures is recommended. This, the second report (Volume 2), provides the background details obtained from each jurisdiction in terms of the following:

- Resources,
- Policy and Practice,
- Public Education,
- Police and Community Involvement,
- Changes in Speed Enforcement practices,
- Comparison of Speed Enforcement equipment,
- Existing performance measures and outcome data,
- Unpaid penalties
- Trends in road casualty crash rates,
- Data on crashes at active camera sites,
- Management Techniques, and
- Community Attitudes

# 1 APPENDIX 1: RESOURCES, POLICIES AND PRACTICE

## 1.1 Australian Capital Territory

The ACT is the smallest jurisdictional area in Australia covering just 2,400 $km^2$. The road network within the ACT is generally wide and open, with high standard design. This design does lead to some interesting issues within the ACT, where high speeds are generally possible. The effect of this design standard on crashes was investigated by the NRMA-ACT Road Safety Trust (Jamieson Foley and Associates) in 1995. The demographics and employment distribution of the population resulting in a high proportion of car ownership, and highly defined peak periods also influence traffic flow in Canberra.

The Australian Federal Police (AFP) have a traffic action plan with the aim to 'reduce road deaths and injuries on ACT roads' (AFP Guideline for best practice - 8/98, Traffic Enforcement). Control of excessive speed is listed as priority enforcement in the ACT.

### 1.1.1 Structure and Personnel Issues

General duties personnel now complete speed enforcement operations within the ACT, following the disbanding of a specialist traffic operations group some time ago. There are 2 districts within the ACT with 4 divisions. They are the Belconnen and City Patrol in the North District and the Woden and Tuggeranong Patrol in the South District.

A small traffic operations group has been retained to perform various federal duties relating to the Federal Parliament and the escorting of visiting VIPs and parliamentary members. The group is made up of 9 Constables and 2 Sergeants (9 motorcycles and 2 cars). This group also undertakes traffic roles when not required on other business.

The AFP has approximately 700 personnel, of which general duties personnel within the group undertake speed enforcement activities.

### 1.1.2 Speed Camera Operations

Speed cameras are not currently in use in the ACT, but are under active consideration. When operations do commence, digital capture is the preferred operation with cost of processing estimated at $12 per offence for wet film and less than $1 per offence for digital. Under consideration is the Sony unit from Japan, with a decision expected in 1999, when approval to purchase is likely to be granted. Owner onus legislation will also be put forward as part of the speed camera introduction.

### 1.1.3 Non-Camera Operations

Detection equipment currently used includes:

- 21 LTI 20-20 Marksman laser hand-helds
- 6 LTI 20-20 Ultralights (Class 1 laser) laser hand-helds
- 2 KR11, 14 KR10 and 1 Silver Eagle mobile radar
- 4 slant radars (2 AWA and 2 Fairies)
- 6 new STALKER units have recently been ordered. The units do not require hard wiring, with the system able to plug into cigarette lighters. Both closing traffic and approaching traffic can be detected.
- The new ultralights (Class 1 laser) are being utilised, with a dual-purpose role in assisting the mapping of crash sites, with associated QuikMap software.

Vehicles available include:

- 9 pursuit motorcycles and 2 V8 vehicles in the Traffic Operations Group, and
- 145 (leased) vehicles in the entire fleet - of which 90 are fully marked, 50 unmarked with the remaining vehicles used for SES and support functions.

Standard operating procedures exist for all speed detection equipment. Equipment can only be operated by police who have been certified to operate that specific type of radar, and can only be used on straight sections of roadway. Of all available personnel approximately 80% are qualified to operate laser and 10% qualified for radar operations. Radar and laser is not used in inclement weather.

Operators are required to submit log sheets at the completion of each shift where stationary laser or slant radar equipment is used. Mobile operations are not recorded.

Traffic enforcement quotas are not set, however members are reminded of the role of traffic enforcement and their associated professional responsibilities to road safety.

Targeted campaigns are run from time to time, with a calendar of events listed annually. In many cases operations will form part of a combined approach with the NSW Police Service and the RTA NSW. June and December 1998 have seen operations focused on speeding. Other combined operations include special periods such as the snow season when ‘Operation Snow Safe’ is conducted.

### 1.1.4 Rural Practice

The limited size of the ACT jurisdiction limits the need for specific focus on rural operations. Relationships with NSW Police allow Police from both jurisdictions to cross borders when required to book offending motorists.

### 1.1.5 Intelligence Driven Operations

In November 1997 a steering committee including AFP and Statistical Services undertook to develop a framework whereby speed monitoring information could be made available to the AFP on a timely basis, with information in a form useful for the targeting of operations. The result of this initiative has led to the provision of speed data from particular sites based on the Department of Urban Services' speed monitoring. The following information is provided:

- Time of day
- Volume of traffic
- Minimum Speed
- Mean Speed
- Maximum Speed
- 85$^{th}$ percentile speed
- Standard deviation, and
- The number of vehicles travelling over the 85$^{th}$ percentile in each hour.

This information is then used by the AFP to assist in tasking of activities to areas where the majority of speeding motorists are.

Ongoing discussions are being held with road safety personnel in the Department of Urban Services to improve the level, appropriateness and timing of information share. Crash data is also used as an input to operations.

### 1.1.6 Tolerances

Tolerances for speed enforcement operations are set at a minimum level of 10km/h above the posted speed limit, with an additional 1km/h for stationary mode and 2km/h in mobile mode. Ultimately the officers involved determine what tolerance is allowed.

### 1.1.7 Penalties

Penalties in the ACT for speeding are shown in table 1.1 below.

Table 1.1 — ACT Speeding Penalties

| Range | Fine | Demerit | Licence |
|---|---|---|---|
| 0-<15km/h | $112 | 1 | |
| 15-<30km/h | $179 | 3 | |
| 30-<45km/h | $345 | 4 | |
| >45km/h | $690 | 6 | |
| | | | |
| SCHOOL ZONE | | | |
| 0-<30km/hr | $179 | 3 | |
| 30-<45km/h | $345 | 4 | |
| >45km/h | $690 | 6 | |

The double demerit scheme (for speeding) and single point plus for other offences as used in NSW (refer Appendix 1 Section 1.2.7) was adopted in the ACT on the 1$^{st}$ September 1998.

### 1.1.8 Infringement Issue and Cancellation

Police in the AFP utilise the AUTOCITE system for the issue of TINs. The system is code based and allows officers to electronically issue a ticket to an offending driver on the spot. The system can then be downloaded after each shift directly onto a database. This database allows easy access to details on infringement numbers and types. Cautions are also recorded on the AUTOCITE system. The AUTOCITE system is linked to Urban Services, with 28 days allowed for the payment of fines.

Authority for infringement cancellation is at Commissioner level.

### 1.1.9 Other Issues

Barcode licensing is also currently under consideration, as is the compulsory carrying of licences.

The Department of Urban Services determines speed zones for the ACT. The police are consulted as necessary.

## 1.2 New South Wales

New South Wales, with a population of 6,329,793 (March 1998), has the highest population of all the Australasian jurisdictions. The total area of NSW is 801,600 $km^2$.

Road trauma reduction is the number one priority in NSW. Speed has been identified as a causative factor in 32-40% of road deaths from 1994-1997. Up until 22 July 1998 speed was considered a factor in approximately 35% of fatal crashes (36% in 1997 and 38% in 1996).

At a corporate level the directive is '*to reduce road trauma by encouraging safer road user behaviour and compliance with the road laws'*. Primary performance measures for the traffic services section are listed as the number of fatal and serious injury crashes and community satisfaction with police traffic services (Traffic Policy Statement, June 1998). Investment focus remains on speed with investment now on better use of equipment through the provision of intelligence based information for better tasking of activities.

Enforcement operations generally aim for highly visible presence, with the use of marked cars and in general overt operations, supported by a coordinated media campaign.

### 1.2.1 Structure and Personnel Issues

There are 11 regions within NSW. Dedicated traffic personnel are used. Regional commanders each have a dedicated traffic coordinator. Each region is autonomous, however policy and operational guidelines are centrally driven and form the basis of operation in each region. Application of the guidelines varies from region to region depending on local needs. With the increasing use of intelligence based operation, competition between individual regions is being encouraged, with reduction in road trauma the overall aim.

Regional traffic structures vary from a centrally based task-force serving the whole region, to 2 or 3 area commands, or distribution through each of the local area commands within the region.

Approximately 1,000 police (out of 13,400 sworn members in total) are dedicated to highway patrol and traffic duties.

### 1.2.2 Speed Camera Operations

#### *1.2.2.1 Speed Camera Equipment*

Within NSW there are eighteen speed cameras, (with six of those purchased in May 1998) that are operated by sworn officers (Constables). At least one is held in every region - rural (since 1993) and urban (since 1991) – refer below:

- One in Sydney City
- One in Endeavour
- Two in Georges River
- Two in Macquarie
- Two in North Metropolitan
- Two in South Eastern (part rural part urban)
- One in Northern
- One in Southern Rivers
- One in Western
- Two in Hunter
- Two in Greater Hume, and
- One centrally based (back-up or reinforcement)

There is also one fixed camera site located in the Sydney Harbour Tunnel.

Performance characteristics of the speed cameras include:

- Vehicle mounted cameras capture approach and receding modes simultaneously
- 800 frame cartridge
- Operates day / night and in rain
- Capable of upgrade to digital imaging

Digital cameras have been considered, however concerns over legality and overcoming the issue of proof and protection of images have resulted in this technology not yet being adopted. The current cameras can be updated if required. An Australia wide committee is currently looking at standards for imaging and retaining integrity of the images.

Technicians have also investigated flashes used to enable better detection of obliterated plates at night-time. In overcoming the culling of photos due to difficulties in defining where the vehicle was relative to the radar beam, the German manufacturer developed 3 notches in the base of the camera shot. This enables the notches to be lined up, and the vehicle that appears within the grid can be prosecuted. This has improved the prosecution rate of night-time camera work.

#### *1.2.2.2 Speed Camera Practice*

Speed cameras are only used where they meet certain criteria. The criteria are based on crash history, 85$^{th}$ percentile speeds and complaint information. In determining locations the RTA NSW database of road segments was used with speed camera criteria overlayed across the segments. In this way the section numbers that met the criteria were obtained and following site visits to the locations to verify suitability for camera operations a final list of approved sites was determined.

Camera cars are tasked to specific locations at specific times, based on local knowledge combined with statistical information. Sworn officers operate the cars, generally Constables. Vehicles used are marked police vehicles with signing adjacent to the site (alongside the vehicle) indicating that a speed camera is in use.

When speed cameras were introduced individual locations were signed 'Speed Cameras used in this area'. This practice is currently under review, partly as a result of the need to limit the amount of signs on the road - given the extension of the camera program. General signs that are not site specific are now used, with messages reflecting those being used by the RTA in advertising initiatives.

Within the metropolitan area a private contractor collects the previous days film cassettes each morning, develops the film and delivers the film to the infringement processing bureau. The film is then loaded onto a viewing monitor, the photo checked, an infringement notice generated and posted to the offender. The person then has the option of coming in to view the photograph or paying a fee to have the photo forwarded to them. Time between the infringement occurring and the ticket being forwarded to the offender was up to 4 weeks at one stage, however three weeks is considered the worst case turnaround. This time may extend over holiday periods when many films may need to be processed.

For the 6 months to June 1998, the sum of TINs issued exceeded 80% of the total infringements detected for 5 regions, ranged between 65 and 75% for 3 of the regions and was approximately 45% for one region (as a result of camera malfunction). Cull rates have improved considerably from earlier typical returns. Data on the reason for culling of a photo were not available for this review.

Recent camera training operations have also included viewing of the films from the cameras. The operators are then shown the process from the infringement angle, and obtain an understanding of why frames have to be culled; whether it is the location of the sun relative to the camera, or other causes. The aim is to then have the operators ensure that all controllable factors are taken into account to ensure high prosecution rates from the work effort invested.

Speed camera coordinators meet on a monthly basis to discuss issues with camera operations.

Fixed speed cameras have been located in the Sydney Harbour Tunnel since August 1997. In the first month of operation approximately 3,400 infringements were recorded, with that figure now stabilising around the 1,400 mark. Traffic flow in the tunnel is of the order of one million vehicles a month. The use of fixed cameras in the tunnel is regarded as a site-specific solution, with no real application on the wider road network.

### 1.2.3 Non-Camera Operations

Non-camera equipment available for speed enforcement practices within NSW include:

- 390 highway patrol vehicles with check speedometers. (approx 80% marked vehicles).
- 394 mobile radars (All cars have mobile radars - either Kustom KR10SP or new Silver Eagle.)
- 58 slant radars (AWA)
- 109 lasers (60 motorcycles all fitted with Lidars - Kustom Pro Laser II lidar)

In the first 6 months of 1998, 70% of speeding tickets issued were through non-camera operations, with the remaining being from camera-operations.

No specific directions on locations for enforcement apply to other equipment such as hand-held devices, however a number of guidelines exist. The radar should not be used on a downward grade where the speed of a vehicle will increase without driver acceleration. Previous guidelines stated not within 200 metres of a change in speed zone however that figure is now 50 metres to allow enforcement in 40 km/h school zones where zones are often less than 200 metres long. It is noted that the Act requires motorists to abide by the speed zone from the sign location. As such the guidelines are advisory only, and where crash problems may exist for example at the bottom of a steep downward grade, radar operations may still be undertaken.

Highway cars are tasked to general areas, with emphasis on certain offences depending on local conditions, problem areas or time of day. Where activities fall under enhanced enforcement funding (provided by the RTA), auditing and evaluation of operations are undertaken.

Discretion exists for officers to provide cautions for minor infringements where the circumstances support that action. This practice is regarded as an 'encouragement' process whereby cautioning a driver who is otherwise a lawful driver can provide more benefits in changing driver behaviour as opposed to issuing an infringement notice and fine.

### 1.2.4 Rural Practice

The approach and policy to speed enforcement do not differ between urban and rural environments. Essentially the same intelligence information is being prepared for NSW as a whole, with targeting of enforcement levels tailored towards crash locations and the subsequent reduction in road trauma. Speed cameras have been available for use in rural regions progressively since 1993 (AWA cameras initially and now camera cars), however the reality is that drivers in rural areas are less likely to encounter a speed camera.

Day to day application and tasking of officers does differ in response to meeting policy directives because of the inherent differences encountered. Shift lengths can impact on coverage - for example a patrol can drive 400 km and still be within their region. A round trip for enforcement purposes will therefore not reach the boundaries in many cases. The use of general duties police to supplement the dedicated highway patrols is an option with suitable training and resource provision.

A major operation was conducted on the Pacific Highway in which a camera car was used in addition to a number of mobile patrols. Although no formal evaluation of this operation was conducted it was noted that infringement levels were relatively low at the camera site compared to other cameras around the state. A follow-up study is being considered to reveal if any longer term effects exist, or whether infringement rates increase if the camera car only is used.

### 1.2.5 Intelligence Driven Operations

The provision of formal intelligence to regions is an area of marked changes in 1998. Increasingly the aim is to target speed enforcement operations better, with a higher focus on real time monitoring of crashes, and the performance of the individual regions. As part of the Road Safety 2000 initiative (an integrated framework for road safety activities of all government agencies and the NSW community) targets for the reduction of road trauma were set at:

- 500 (or less) fatalities, and
- 5,500 (or less) serious injuries.

As a result the intelligence operations focus on actual crashes, and operational utilisation details - in particular speed camera activity. As a relatively new initiative within the NSW Police the approach has been to encourage use of the information at a regional level, as opposed to a centrally driven directive. As a result the regions have embraced the information to varying degrees.

Change in methods around May 1998 have seen large increases in usage rates and site selections. There is also a focus on visiting the 'right' locations through the use of intelligence gathered.

Recent intelligence work aims to highlight times of 'local crash problems', with enforcement to be tailored to this information. For example fatal crashes may occur more frequently in a certain time slot that may not be reflected in enforcement deployment. At present the information is being used to varying degrees by the different regions, with preliminary results showing promising signs where it is being utilised.

**Crash Details**

Crash details provided include up to date summary information on:

- Associated factors (such as speed) for fatal crashes,
- Road User Movement (crash type)
- Age range of fatalities
- Speed Limit at the crash locations
- Position of fatal passenger in vehicle
- Details of restraint wearing
- Day, and times of crashes (summary)
- Fatal crashes in the current year compared to the previous four years by region (with differences to the three year average noted)
- Major crashes (defined as P4*****) compared to previous year average
- Ratio of injury crashes - and fatal crashes - to major (P4) crashes and alcohol related crashes.

* P4 is defined as: fatal or injury, drugs or alcohol involved, vehicle towed, driver left scene, or damage to other property exceeds $500.

A difficulty when providing summary details on fatal crashes at a local level is that actual numbers may be small, resulting in percentages of various details that may be meaningless.

**Enforcement Details**

Details on enforcement (speed camera) operation include:

- Comparison of vehicles infringed to operator frames culled.
- Ratio of traffic volume to TIN's issued by month.
- Ratio of traffic volume to TIN's issued by region.
- The number of hours of camera use in the region.
- The number of tickets issued.
- The number of locations visited.
- Vehicles checked vs infringements issued vs proportion above speed limit.

**Intelligence Use in Practice**

With the recent provision of intelligence information (January 1998 - with information to regions in May-June 1998), an opportunity exists to monitor its effect through comparison of regions committed to its use with regions where adoption is slower. The Endeavour Region in Sydney itself has nominated an intelligence officer and has commenced targeted tasking of the speed camera car. Interim results reveal a greater increase in effective use of the physical resources available, and although direct analysis is not possible, and the period involved is still too short to make hard conclusions, crash numbers have reduced considerably compared to the previous three years. Subjective assessment by officers in the region indicates a general reduction in speeds. This reduction is not evident to the same extent in adjoining regions where the intelligence is used less rigorously.

While currently in its infancy GIS based maps (supplemented with crash, cull rate, detection rate and speed data) are being issued to regions, highlighting where and when crashes are occurring, and camera operations relative to these plots.

Another perceived benefit of the provision of intelligence information is in the feedback provided to operational staff. Camera car operators were unsure of the effects they were having on safety and other measures, with the intelligence information now enabling a self-assessment of the effect of any operations.

### 1.2.6 Tolerances

The NSW Police recently conducted a series of workshops for judicial members where all aspects of speed management, enforcement and equipment were discussed and demonstrated. The workshop sought to enhance the knowledge of participants in police policy, practice and procedures in relation to speed enforcement.

### 1.2.7 Penalties

Penalties for speeding within NSW are shown in Table 1.2 below:

Table 1.2 — NSW Speeding Penalties

| Range | Fine | Fine (coaches and trucks > 13.9t) | Demerit Points | Available Points |
|---|---|---|---|---|
| >0-15 | $112 | $172 | 1 | 12 points over 3 years. |
| >15-30 | $179 | $270 | 3 | |
| >30-45 | $500 ($345)[1] | $800 ($517)[1] | 4 + 1 month licence cancellation[2] | |
| >45 | $1,380 ($690)[1] | $2,072 ($1,076)[1] | 6 + 3month license cancellation | |

[1] The fines in brackets were the previous levels prior to a recent review. (30/9/98)
[2] New fine structure includes a mandatory license loss of one month for speeding >30km/h and 45km/h over the limit. Note previous provision allowed return of all points following a license suspension. This has also been altered as part of the recent review.

### 1.2.8 Infringement Issue and Cancellation

Within NSW it is the responsibility of the registered vehicle owner to supply the name of the driver at the time of the offence. A statutory declaration form is provided on the back of the infringement notice to enable the owner to declare the driver at the time. In such an event a new ticket is issued to the actual driver. Penalties and criminal prosecution is possible if false information is provided, or if offender details are not supplied. It is compulsory for NSW drivers to carry and produce a current drivers licence when requested.

The police can only cancel infringements if there is a defect in the notice itself. At the time of writing, an administrative cancellation may occur if wrong details are recorded, in which case a new ticket is issued. Where a person believes there are special circumstances they can write into the infringement notice bureau and request a judgement. In some cases the police officer involved (and their supervisor) may be asked to comment. If the representations are supported, a letter will be forwarded to the person concerned and the ticket revoked. Where a person may claim mitigating circumstances, or a previously unblemished record, a formally issued and recorded caution may be deemed appropriate.

### 1.2.9 Other Issues

Speed zoning is completed by the RTA utilising an expert system designed to maintain consistency across the state in the design and application of speed zoning.

Motorcyclists, who are not required to affix front numberplates, are seen as a potential problem in speed enforcement, whereby high-risk road users cannot be prosecuted. The possibility of overcoming this problem with innovative design (flexible plates etc.) is viewed as an area for further work.

**Additional Funding Provisions**

The NSW Police operates an Enhanced Enforcement Program, with funding made available from the RTA NSW to facilitate enforcement operations aimed at reducing road trauma. A formal system is in place to manage the process with guidelines printed in the RTA/NSW Police publication 'Enhanced Enforcement Program Guidelines, July 1998'. The focus of the program is to have highly visible police operations that are:

- additional to existing baseline levels
- run by the NSW Police
- focussed on key road user behaviours, and
- must be either integrated with major public education phases, or intelligence based.

A key component of the program is the auditing and evaluation of the effect of the enhanced funding provided. A close relationship between the RTA and NSW Police is maintained, where RTA officials have, at times, been taken out in the Police vehicles over the holiday weekends to allow an understanding of the in-field operations undertaken.

Police can make an application for enhanced funding where a formal submission must be completed. Funding criteria require various issues to be covered by the submission. They are:

- Identifying the problem, what action has been taken at a local level and what were the results,
- Identify how enhanced police visibility will be achieved,
- Prioritise road user behaviours to be addressed (speed and drink drive rated highly),
- Identify road safety outcomes (in relation to speeding the number, percentage and rate of speed related crashes and casualties are suggested),
- Specification of operation activities,
- A statement of baseline activities (above which funding will be supplied),
- Determining resource levels and costing of same (including penalties, allowances, overtime, fuel etc),
- Identification of who, what, when and where for the operation,
- Ensuring local coordination with local RTA and Council staff,
- An agreement that (with the exception of crisis or disaster) resources will not be diverted to other duties, and
- Provision of tasking sheets prior to the operation, and actual details (including variations) following the operation.

Source: Enhanced Enforcement Program Guidelines, July 1998

**Auditing**

Formal auditing of actual field operation is undertaken in NSW through the traffic services branch. Officers may be tasked to a location on larger operations with a supervisor responsible for ensuring tasked activities are being undertaken. When enhanced enforcement program (EEP) works are undertaken the RTA (as the funder) will often undertake audits of Police profile for EEP projects in conjunction with Police.

At regional level internal audits are undertaken considering targets set corporately. The Traffic Intelligence and Research Section also maintains and distributes daily statistical results of all aspects of road trauma reduction.

**Variable Speed Limits**

The use of Variable Speed Limits by the RTA is seen as an area of concern for Police. The operational problem of enforcement of variable limits has been raised, as well as the mixed messages related to the enforcement of limits for traffic management purposes as opposed to pure safety objectives. The reaction of people caught for speeding in these areas is seen as a potential area of concern.

**Data Issues**

The database of information that is held on infringements within NSW is not particularly conducive to carrying out analysis relevant to enforcement practices. The system was originally set up to manage infringements from an accounting viewpoint. To overhaul the system would require a large expenditure and extensive investment of time and is not considered practical. Information shortfalls include:

- Unable to obtain location details of actual infringements (non-camera),
- Unable to isolate the postcode of where an offence occurred.

Staff within the statistical services area are attempting to manipulate historical databases to obtain useful information within reason - however the process is difficult. Recent work has occurred to isolate the postcode of the actual offenders - even though the offence may not have occurred in that location. The hope is that the residential area of people charged with offences such as unlicensed driving and speeding may help target specific operations. Preliminary work in this area has shown some rural areas feature as ‘hot-spots’ for selected offences.

In general information sharing between the RTA NSW and the NSW Police is very good, especially in regard to crash data and road section details. Annual speed surveys are also made available to Police, however other possible sources of speed information from the asset management wing of the RTA NSW are not used. Relationships have been strengthened over the last few years, with a team approach fostered by the Road Safety 2000 initiative.

## 1.3 New Zealand

The population of New Zealand (as at July 1997) was 3,587,275 within an area of approximately 268,675 $km^2$.

Within the New Zealand Police the National Road Safety Plan (NRSP) and the Safety Administration Program [S(A)P] dictate service. The former is the national strategic document for road safety and the latter is the annual work program for Police, Land Transport Safety Authority (LTSA), and Territorial Local Authorities (TLA) (including community projects). In the case of Police the S(A)P specifies enforcement hours by TLA area - 'how much' and at 'what cost' police service is to be delivered. Within the broad financial allocations at local level the times and locations for enforcement activity are determined through Risk Targeted Patrol Plans using a new analysis technique called 'Bullseye' developed by the LTSA. Service delivery is prescribed by TLA area that is then aggregated to Police District level.

There is a rigorous annual planning process involving TLAs, LTSA, Police and other key partners before finalising the road safety budget. The TLA involvement is to ensure that local communities are given input into road safety programs. Speed management is one of the 'strategic traffic projects' in New Zealand.

### 1.3.1 Structure and Personnel Issues

Police are instituting dedicated traffic groups to deliver not less than 50% of strategic traffic projects in the 1998/99 year. The commitment to speed control *and* speed camera operations is expressed in detail with:

- 13.1% of total programmed police hours for enforcement is used for speed control
- 5.4% of total programmed police hours for enforcement is allocated to traffic camera operations.
- 12.2% of total programmed appropriation for enforcement is used for speed control.
- 11.4% of total programmed appropriation for enforcement is allocated to traffic camera operations.

A recent reorganisation of the New Zealand Police has seen the elimination of the previous structure of 4 Police regions replaced with a structure centred on 12 Police districts.

### 1.3.2 Speed Camera Operations

Speed camera equipment available for use in New Zealand includes:

- 31 mobile cameras.
- 13 fixed cameras deployed over 60 sites.

Deployment hours are recorded only in respect of speed cameras, with a target of 74,000 hours per year. Strategies used for speed control state speed cameras are best used by deploying them at times and places of crash risk. Speed cameras are deployed only at sites that meet the 'site selection' standard, which is based on crash history.

Speed cameras were introduced in 1993 at sign posted sites throughout the country. Laser was introduced in late 1996. HAWK radar is being progressively replaced by EAGLE radar.

In terms of management there has been a progressive devolution of responsibility to the local level and this is likely to continue. Speed cameras must be deployed at least 250m from a speed change zone.

Infringement notices (IONS) and traffic offence notices (TONS) are issued from the Police Infringement Bureau (formerly known as the Traffic Camera Office). TONS are issued where the speed exceeds any limit by more than 50km/h and this form of notice results in a Court hearing; albeit in chambers unless otherwise requested. IONS and TONS are issued to meet a time frame of not more than 14 days between 'flash' and 'letterbox'.

Data on cull rates is not recorded in New Zealand.

### 1.3.3 Non-Camera Operations

Non-camera equipment available for use in New Zealand includes:

- 60 Lidar (laser) units.
- Approximately 450 HAWK radars.
- Approximately 150 EAGLE radars.

Corporately, strategies provided for speed control state that:

- Laser speed detectors should be used,
- Hawk radar from the maximum number of mobile patrols possible,
- Stationary radar at black spots, sites of public concern over speed or school patrol crossings,
- Breath testing of speeding drivers at night, and
- Positioning of patrols near danger spots eg. Curves at the end of long straight.

Radar is used in both marked and plain cars. Speed checks by 'pacing' (pursuit) are carried out with both marked and plain cars. Laser is used in overt mode at the roadside in either hand held or tripod mounted deployment.

For traffic patrols, crash and other data is used to identify trends within a geographic area and to allocate high risk sites at high-risk times. A program called 'bullseye' is utilised to assist targeting of non-camera operations (refer Intelligence Driven Operations below). Currency of the data within bullseye is considered a possible issue.

### 1.3.4 Rural Practice

Speed cameras are designated to be used in rural areas for 40% of the time in New Zealand.

### 1.3.5 Intelligence Driven Operations

Since the recommendation of a major review of safety programs a more targeted approach to road safety has been established. The strategies discussed in camera and non-camera operations above were devised as a result of this review.

In 1997/98 Risk Targeted Patrol Plans (using a new analysis technique called 'bullseye') were introduced to align police hours with road safety risk areas more appropriately. Computer software is used to produce the patrol plans. Crash and other data is used to identify trends within a geographic area and to allocate high risk sites at high-risk times to traffic patrols. This is done in a random manner to ensure that police presence does not become predictable. These plans can be used for locally and nationally planned road safety campaigns.

**Vehicle Speeds**

Vehicle speeds are measured by the LTSA annually. They provide the following measurements:

- season (summer or winter)
- mean, 85$^{th}$ percentile speeds and other percentiles if required.
- road type (urban or rural)
- vehicle type (light or heavy)
- region of the country (local govt regions and police districts)

There has been little change recorded in speed in recent years

**Crash Data**

Crash statistics are also maintained by the LTSA. Crash numbers in recent years have exhibited a downward trend, particularly in the last 3 years.

**Enforcement Details**

Enforcement details are maintained by police and provide the following for each police district:

- hours spent on speed enforcement
- offence notices issued
- speed camera hours
- speed camera offences
- speed camera photos per hour and per 1000 vehicles
- percentage of vehicles travelling past speed camera sites at up to the speed limit 1-15, 16-30 and 31+ km/h over the limit

These details are published monthly. Site by site information is also available, including duration of operation and vehicle and photo counts.

A hidden camera trial was begun in the central North Island from 1 July 1997, and is continuing. A report on the first year of hidden speed camera operation was presented at the Road Safety Research, Policing and Education Conference held in Canberra in November 1999 (See Volume 1, Section 7.1 Research in Progress). Compared with the generally highly visible speed camera enforcement in the rest of New Zealand, the hidden speed camera program was found to be associated with statistically significant net falls in speeds, crashes and casualties, and these effects, unlike the localised effects of visible speed cameras, tended to generalise to all roads.

Police experts from Victoria and New South Wales have been used previously to 'peer review' aspects of enforcement including speed and tolerances.

**Intelligence Use in Practice**

Crash, casualty and enforcement data are an essential and ongoing input into speed enforcement, advertising and engineering programs.

### 1.3.6 Tolerances

Speed cameras operate at the lower of either the 85th percentile or the 'Commissioner's minimum' tolerance. The latter is 11 km/h over the limit in all sites except motorway sites, which enjoy tolerances of 15 km/h over the applicable limit. Fixed camera sites have a tolerance level of 13km/h in excess of the limit.

### 1.3.7 Penalties

Penalties for speeding within New Zealand are shown below in Table 1.3.

Table 1.3 — New Zealand Speeding Penalties

| Range | Fine |
|---|---|
| Not more than10km/h | $30 |
| More than 10 to 15km/h | $60 |
| More than 15 to 20km/h | $90 |
| More than 20 to 25km/h | $120 |
| More than 25 to 30km/h | $160 |
| More than 30 to 35km/h | $210 |
| More than 35 to 40km/h | $280 |
| More than 40 to 45km/h | $370 |
| More than 45 to 50km/h | $490 |

Changes are proposed in the Land Transport Bill, which is currently before the Parliament. An additional penalty proposed in the Bill is administrative suspension of a driver's licence for 28 days when the driver exceeds any limit by more than 50 KPH.

A discussion document to be publicly released (embargoed information at the moment pending public release) suggests the imposition of demerit points for speed camera offences.

### 1.3.8 Infringement Issue and Cancellation

New Zealand operates an 'owner liability' regime. The corporate owner of a vehicle is liable for the offence unless liability is transferred to an individual. There is no compulsion for such transfer of liability.

IONS and TONS are cancelled if for any reason the notice should not have been issued; e.g. deployment error – misreading of registration details – owner of vehicle deceased etc. Notices that are properly issued may be 'waived' under certain circumstances.

### 1.3.9 Other Issues

Open road limits have altered on a number of occasions in New Zealand (1962, 1969, 1971/2, 1973, 1985). The change in 1973 saw the open road limit reduced to 50m/h (83km/h) as part of the government's fuel conservation policy. This was subsequently raised to 100 km/h in 1985.

Under a new system that will shortly be promulgated, speed limits will be set by road controlling authorities in accordance with rules approved by the Minister of Transport. The Police and other interested parties are required to be consulted as part of the process. There has always been good consultation between interested parties and the new process continues that. Previously the LTSA and the Minister had a much more direct role. The new process is designed to delegate more power to Local Government and Transit NZ.

## 1.4 Northern Territory

The Northern Territory is sparsely populated in relation to the rest of Australasia with a population of 190,453 people in an area of 1,346,200 $km^2$.

Speed enforcement policies are still in the developmental stage and are mainly reactionary. Speed enforcement, drink driving and seatbelts are given equal priority for police attention.

There is no General Rural Limit in the Northern Territory.

### 1.4.1 Structure and Personnel Issues

The Northern Territory traffic section was disbanded some 4 to 5 years ago, and personnel were redeployed in other areas of the police force. The Assistant Commissioner centrally controls operations and examines policy areas concerning speed enforcement. The Superintendent of Road Safety Policy advises in areas of policy, and is responsible for the crash investigation team. The Commanders of the various stations are responsible for traffic enforcement within their regions and report to the Assistant Commissioner.

The NT Police Service consists of some 700 members, from which general duties officers carry out speed enforcement activities. The recent introduction of speed cameras has resulted in some additions with non-sworn members utilised to operate the cameras, and a two person team located in Darwin to process all infringements and issue notices.

### 1.4.2 Speed Camera Operations

The use of speed cameras became effective as of August 1998, with a three-month moratorium, where cautionary notices were issued for lower range speed offences. For higher level offences infringement notices were still issued during this time. There are currently three speed cameras in operation with two located in Darwin and one in Alice Springs. The number of hours speed cameras will be in service per day is yet to be determined although there is an intention to operate them 24 hours. The camera is laser operated and can photograph the front or back of a speeding vehicle.

Committees consisting of police, Transport and Works, the AANT agency (automobile club) and local government have been established to select the sites for camera operation. There are about 350 sites targeted for camera use. In determining the sites speed monitoring was conducted and speed limits reviewed. Information considered included the $85^{th}$ percentile, pace speed and mean speed. From this analysis some speed limits were altered, and potential camera locations determined.

The cameras may be mounted in police cars or on tripods. Speed cameras are strategically deployed to locations where there is a crash history, evidence of excessive speeds or complaints. Police vehicles used may be marked or unmarked. Unsworn members of the police force operate cameras.

Signs have been erected at all road entry points to the Northern Territory and at the airport. There are no signs warning of specific placement of cameras.

At present the structure and operations concerning speed cameras are still being developed and put into practice. Policy documents state that cameras cannot be operated within 200m of a speed restriction sign or where it causes interference with traffic, at the bottom of hills or where the site places the operator in danger.

In regard to cull rates, the Northern Territory are currently monitoring the following:

- Plate not visible / obscured
- Equipment failure
- Operator error
- Multiple vehicles
- Further investigation

With cameras only recently introduced the sample size of data is too small to analyse.

There are no fixed speed camera sites in the NT.

### 1.4.3 Non-Camera Operations

The NT police have used mobile radars for about 17 years. Since that time additional units have been purchased progressively to the current levels of:

- 30 hand-held radars (Kustom Falcon), and
- 28 mobile radars (KR10).

Regional police stations are responsible for their own control of speeding, and choice of targeted speeding spots for non-camera operations. There is no policy in respect to mobile operations. Most operations concerning speed enforcement are operated in the urban areas, due to the open speed zones in the rural areas.

For normal patrol duties manual traffic infringement notices are written out with a copy forwarded to Darwin for record management. All TINs are payable at Post Offices and Court Houses.

### 1.4.4 Rural Practice

Speed enforcement is concentrated mainly in the urban areas. In rural zones there are open speed limits, which makes speed enforcement difficult. A motorist may still be picked up for speeding, on an open road, if they are travelling at a speed dangerous. This is discretionary and takes into consideration speed, the road condition, weather, time of day and the type of vehicle. Heavy vehicles are limited to 100km/h and may be prosecuted on the now speed limited areas.

The main issue in rural areas is speed in combination with drink driving and not wearing seatbelts.

With the vast area and sparse population within the Northern Territory four Remote Area Patrols (RAP) were established to operate throughout the outback areas. These units perform a community policing role in terms of visits to local communities and exert a police presence in these areas on a regular basis. Within aboriginal communities community police officers assist in the policing role across all issues including speeding.

### 1.4.5 Intelligence Driven Operations

The use of formal intelligence measures for speed enforcement methods is still in the developmental stages. Original site selection utilised various sources of information in determining sites.

At present camera sites were chosen by committees in relation to:

- crash history using available data,
- crash potential from a road safety perspective,
- speed profiles at the site including 85th percentile and the appropriateness of the speed limit at the site,
- history of inappropriate road user behaviour at site,
- site consideration has included highways, rural and urban arterial roads and public streets,
- traffic intensity or number of vehicles per hour at a particular site,
- school zones, and
- vehicular traffic and the amount of offences are being recorded for some camera sites.

The effect on these original site criteria from actual camera operations will be analysed in the near future.

### 1.4.6 Tolerances

With the initial introduction of speed cameras (with cautionary notices) a tolerance of 10km/h was given. It soon became evident that drivers realised the tolerance level and drove to a defacto speed limit. Tolerances are now determined on a site by site basis with consideration given to weather road and traffic conditions. For locations near schools where there is a limit of 40 km/h there is a less tolerant approach.

### 1.4.7 Penalties

Penalties within the Northern Territory are shown below in Table 1.4

Table 1.4 — Northern Territory Speeding Penalties

| Range | Fine | Demerit | Licence |
|---|---|---|---|
| 0-15km/h | $50 | | |
| >15-30km/h | $100 | | |
| >30-45km/h | $150 | | |

NT laws were recently amended to mandate licence loss for three months for drivers caught speeding at greater than 45km/h over the limit. For subsequent offences this licence loss is for a period of six months.

### 1.4.8 Infringement Issue and Cancellation

The NT does not use film in its speed cameras. The camera captures a digital image of speeding motorists. The image incorporates this with other relevant information, such as speed, time, date, location and the road's speed limit. This information is downloaded and transferred to a central computer in the camera office in Darwin. The issuing of infringement notices is completed centrally from Darwin. The camera office issues the traffic infringement notice.

The issuing of tickets will occur within 1 to 3 working days from the offence being recorded anywhere in the NT. The issuing of the ticket close to the time of the offence has been highlighted as an important factor. Print outs of digital images are sent out as part of the infringement notice.

Within the NT the registered owner of the vehicle is held responsible for the infringement notice, unless the registration database indicates formal notification of the sale of that vehicle, the vehicle was stolen or someone else was using the car. Fourteen days are given to supply a statutory declaration for the above circumstances to the police. Corporately registered cars must nominate who was driving at the time of the offence.

Certain people nominated by the Commissioner may cancel speeding tickets, although this would only occur in exceptional circumstances, or if the notice was issued with incorrect details. In most circumstances the cancellation of an infringement notice is not likely.

### 1.4.9 Other Issues

As part of the introduction of speed cameras, speed surveys were undertaken to assess the appropriateness of current speed limits, with changes made where necessary. The authorities responsible for the road (Territory or local government) are responsible for setting the speed limit. Police play only an advisory role in the setting of speed limits.

## 1.5 Queensland

The population of Queensland was 3,450,476 as at March 1998. The area of Queensland is 1,727,200 $km^2$ with the population primarily located in the south-east of the State.

There are documented procedures in place within the QPS regarding speed and traffic enforcement policy. Police in collaboration with Queensland Transport, Main Roads and the Motor Accident Insurance Commission have developed a Road Safety Action Plan for Queensland. Four key issues have been identified for enforcement: speed, alcohol, fatigue and restraint use. Pedestrian safety is also targeted. Crash data is used extensively in determining the distribution of enforcement resources. The group also developed the Road Safety Research Network at the end of 1997 to provide an informal forum for the sharing of road safety information.

Speed camera enforcement had previously only been undertaken on State Government owned roads, with Local Government roads recently coming under the QPS's jurisdiction. Enforcement on local government roads formed part of the introduction of 50 km/h speed limits on local roads throughout South East Queensland on 1 March 1999.

### 1.5.1 Structure and Personnel Issues

There are eight police regions in Queensland. They are:

- Central
- Far Northern
- Metropolitan North
- Metropolitan South
- North Coast
- Northern
- South Eastern
- Southern

There are 230 designated traffic police officers in Queensland, and a further 6,000 general duties officers. Trained general duties staff can use hand held radars, laser units or mobile radars. The Government replaces equipment every 5-7 years.

The State Traffic Support Branch (STSB) plays a coordinating role for statewide police traffic enforcement activities and operations within Qld Police Service (QPS). The STSB coordinates the statewide priority offences for each month. Additionally, regions or districts can also initiate their own enforcement programs.

### 1.5.2 Speed Camera Operations

Speed cameras were introduced in early 1997, with a 6 week amnesty on prosecution. There are now 14 speed cameras in operation (Gatso) with two located in each region except Southern where there is only one camera.

The QPS is finding that radar is no longer suitable for metropolitan areas. Laser systems are much better able to cope with the traffic densities experienced. The slant systems and hand held systems are being replaced and the mobile systems are being upgraded. Speed cameras currently in use experience difficulties coping with traffic density in metropolitan areas, but new cameras to be purchased will overcome these difficulties.

As from June 1, 1999 speed cameras have been in operation on local government roads. Camera sites on roads are randomly scheduled, based on crash history and must have had speed reviews carried out. The randomised scheduling occurs in a similar fashion to the random road watch approach to non-camera operations discussed below. Essentially, three candidate sites are randomly generated for enforcement by the scheduling system. The operator for enforcement selects one of these sites. If a site cannot be worked for some reason, it can be overridden in the system. Reports are generated to ensure that those sites are not overridden too often.

Increasingly there is capacity for complaint data to be used to assist in determining traffic enforcement resource deployment. Speed camera sites are signed past the site when in use.

Prior to the expansion to local government roads there were approximately 650 active speed camera zones and approximately 1000 sites within Queensland. The process of identifying sites includes a review of speed related incidents, then potential sites are evaluated by a regional committee with representatives from RACQ, Main Roads, Queensland Transport, local Police and local government.

The QPS are considering the use of two enforcement sites close together to overcome the trend where motorists tend to see a camera, slow down and then speed up after they have passed it. In this scenario, a camera may be backed up by a mobile or hand held unit.

Cull rates within Queensland are categorised as a result of:

- Operator error,
- Administrative culls,
- Equipment failure, or
- Damaged film.

Details on the split between these types are not available. Typically around 30% of frames are unusable, due to poor visibility or to operator error. The infringement office currently view approximately 1,500 frames daily with actual TINs issued generally between 1,000-1,100.

There are currently no permanent camera sites in Queensland. Red light cameras that have been purchased recently have the potential to be used for speed enforcement but are unlikely to be used for this purpose.

Over time Police have found that community knowledge of the location of sites has increased. Some of the sites are becoming too familiar, and as a result are being moved to extend the effect of speed reduction. Police are also operating at a number of approved sites within each zone rather than restricting operation to one site.

### 1.5.3 Non-Camera Operations

Non-camera equipment available for speed enforcement within Queensland includes:

- 133 hand held radars
- 67 newly purchased LIDARs
- 18 mobile systems
- 29 Slant or similar systems

The traditional approach to speed enforcement in Queensland was to have blitzes as often as possible. Every time new recruits graduated from the academy or in holiday times extra staff were assigned to speed enforcement. Over the last two years a more strategic approach has been adapted with the increasing use of intelligence in identifying priority sites. A review of the whole network, in terms of speed limits has recently been undertaken.

Although not specifically speed based the random road watch program carried out by the QPS, in conjunction with Queensland Transport has provided a general police presence across some 60,000 sites within Queensland. The approach utilises a variable stationary method of activity, whereby on a random but managed basis, sites are visited utilising normal resources. The visits generally involve the use of a marked vehicle parked at the location for a period of 2 hours. The activity undertaken by the officer at the site is discretionary.

Essentially the area of Queensland is split into various ‘sectors’ of equal crash size, with programmed visits to the sectors on a regular basis. The basic philosophy behind the managed approach is that police resources will be visible on a majority of roads. That is drivers develop a perception that police presence on any road is possible. This then leads to a more cautious and conforming approach to road rules. Internal analysis of the effectiveness of the program within Queensland, have indicated significant crash reductions (utilising a quasi-experimental approach ie consideration of non-equivalent groups of data). It is also noted Queensland has experienced similar reductions in crashes over time (prior to implementation of speed cameras) when compared to other jurisdictions that have implemented speed camera operations for some time. Following the recent introduction of cameras in Queensland the fatality rate has now decreased further and is now second lowest behind the ACT within Australasia.

### 1.5.4 Rural Practice

The random road watch program as discussed above, ensures that Police activity (although not specifically speed related) is undertaken on a regular basis across a wide area of the state. The availability of speed enforcement equipment is variable across the local police station level, with limited access especially in more outback regions.

### 1.5.5 Intelligence Driven Operations

The QPS intend that traffic enforcement will become increasingly intelligence driven in the future. Reports generated by the QPS Traffic Camera Office indicate what proportion of vehicles have been monitored by a speed camera and also breaks down the speeds of vehicles being monitored.

The monthly traffic review compiled by the QPS State Traffic Support Branch includes details of road crashes, speed camera and RBT activities. Typical details include data by month and regions with comparisons of previous historical results. A breakdown of operations is also supplied indicating actual site details, time and visit duration, vehicle count, infringements and highest vehicle speeds detected.

Presently the principal means of monitoring traffic enforcement activity within Queensland is via 'traffic returns' which is automated through an intranet system.

Analysis of regional questionnaires have indicated that the use of this information is limited at more remote stations - with local knowledge playing a major role in deployment patterns.

The introduction of mapping technology has recently been initiated with promising results. The maps, and associated intelligence, identified black spots within individual Police Regions. Crashes were analysed to indicate sites where drink driving, speed, fatigue and lack of restraint use appeared prevalent. Targeting at these sites over the recent Christmas holiday period resulted in significant levels of infringements being recorded (particularly restraint use).

The bulk of speed data analysis is currently undertaken by Queensland Transport, but the QPS envisages becoming more involved in this in the future.

### 1.5.6 Tolerances

Speed tolerances are determined in part by the speed limit of the area. The tolerance is generally 11kmh for speed cameras, but the tolerance for manual systems may be as high as 15kmh.

### 1.5.7 Penalties

The penalty structure for infringements in Queensland is shown below in Table 1.5

Table 1.5 — Queensland Speeding Penalties

| Range | Fine | Demerit | Licence |
|---|---|---|---|
| 0-<15km/h | $80 | 1 | |
| 15-29km/h | $130 | 3 | |
| 30-44km/h | $180 | 4 | |
| >44km/h | $250 | 6 | |

Automatic Licence suspension for offences >44km/h is currently being considered.

### 1.5.8 Infringement Issue and Cancellation

Infringement notices currently take two weeks to process. A new system is being implemented that will significantly reduce this time.

An infringement notice is issued to all corporate identities at the time of adjudication. Notices issued to corporations attract a penalty, which is five times the penalty applicable to an individual. The corporation has the opportunity of paying the penalty associated with the notice or transferring liability to an individual driver. When liability is transferred to an individual the penalty reverts to a single amount, eg. $130 in lieu of $650.

In the case of non-corporate organisations such as clubs, Queensland Transport is requested to search registration records for a principal of the business or a principal operator of the vehicle in question. A notice is then issued to that person.

All cancellations are addressed individually and have to be approved by the Regional Operations Superintendent. There must be a 'very good' reason for this to occur.

Digital systems are being examined where information can be electronically transferred and linked with infringement and registration databases. Potential technologies for the issuing of camera infringements on the spot (in-car printer etc) are also being monitored.

### 1.5.9 Other Issues

The criteria for assigning speed limits are contained in the Manual of Uniform Traffic Control Devices (MUTCD) which is produced by Queensland Transport. Undertaking the speed limit reviews and the signing of specific streets or roads is conducted by Department of Main Roads on state government-controlled roads and by local governments on other roads.

The speed review process involves an integrated assessment of a number of factors such as traffic, motor vehicle, cyclist and pedestrian volumes, the function of the road, the geometry of the road and the duration of the activity.

Before speed cameras were introduced, speed limit reviews were conducted for all state government-controlled roads where speed cameras were to operate. As a result, some speed limits were increased while others were reduced. Speed cameras are not used on roads unless the speed limit has been reviewed.

With the expansion of the speed camera program onto local government-controlled roads all local governments will have to undertake speed limit reviews on any roads where cameras are to be located. This speed limit review process has been undertaken in South East Queensland in line with the introduction of the 50 km/h local street speed limit in this area of Queensland as of 1 March 1999.

Road user behaviour and perceptions are monitored through surveys that are conducted by Qld Transport. Some Universities are also involved in this survey work. Crash statistics are used in conjunction with these surveys. The QPS intends to become more involved in this process in the future.

Recent surveys undertaken by the Land Transport and Safety Division of Queensland Transport indicate that 95% of respondents think the consequences of speeding are not worth it. On average 86% think that speeding is a major contributor to crashes. 90% of respondents think that people who speed are irresponsible. On average 87% of respondents believe speed cameras were introduced to help reduce the road toll.

## 1.6 South Australia

South Australia spans an area of 984,000 $km^2$, with a population of 1,485,354 people. The majority of this population in located in the southern area of the state, with the north and far west of the state relatively remote.

Speed enforcement does not take the form of campaigns, as it is considered an ongoing issue of enforcement throughout the year. The only time there is a directed speed initiative is when there is a complaint, although the individual divisions may run some operations concurrently.

### 1.6.1 Structure and Personnel Issues

The Police Service in South Australia is split into two commands. The Northern Command consists of 4 metropolitan and 4 country divisions and the Southern Command have 5 metropolitan and 4 country divisions. Within each command there is a separate traffic component. Centrally there is a Traffic Services Division including the Traffic Technical Resource Section (TTRS) and the Traffic Research and Intelligence Section (TRIS). TTRS controls all the purchasing, calibration and control of equipment and resources for traffic. TRIS provides managerial and operational information, which encompasses the whole of the traffic sphere, and is also responsible for promoting road safety.

### 1.6.2 Speed Camera Operations

Speed cameras were introduced in June 1990, with 8 speed cameras operational by August 1991. Civilian staff replaced sworn camera operators in April 1996. There are currently 14 AWA style speed cameras in South Australia.

A separate division, contracted to deliver a set number of hours of enforcement operates speed cameras. This group, the Security Services Division, is ultimately controlled by the Traffic Services Division. This division is responsible for the management and operation of speed cameras. Civilians are contracted to this division for the operation of the cameras.

The civilian staff who are semi-autonomous, are provided with a schedule of locations based on crash data, in terms of speed related crashes. This schedule may be altered, but details and reasons must be supplied. The schedules are now automatically audited on a 3 weekly basis for each operator. General operating practice is:

- Speed camera sites are generally on high volume arterial roads.
- A speed camera must not be set up within 200m of a change in speed limit.
- Operations are both overt and covert. Photos may be taken from the front or the back of the vehicle.

Signage, when used, is positioned some distance past the actual site of camera operation, with discretion for use given to camera operators. Current practice indicates their use approximately 30% of the time.

At the present all cameras are film based, although digital technology is being investigated. The additional 14-17 units currently being purchased are the German 'camera cars' which will all be film based initially with the option of upgrading to digital at a later date. Potential locations for fixed camera sites are currently being examined in conjunction with Transport SA.

Data on reasons for culling of photos were not available for this review.

Red light cameras are not used for speed enforcement.

### 1.6.3 Non-Camera Operations

At present South Australia holds:

- 133 laser hand held units, with 77 of those in country areas,
- 16 mobile radars, and
- <5 older hand-held radars (in outer rural areas - although use is limited).

In the metropolitan area speed detection operations are generally handled by dedicated traffic patrols. There are 315 traffic personnel (with vehicles) within metropolitan Adelaide. In addition to this are country based highway speed patrols that utilise a range of speed enforcement equipment. These patrols operate in Mt Gambier, Port Augusta, Ceduna and Berri. Each of these rural areas has two police officers dedicated to traffic patrol.

General duties staff also undertake speed enforcement operations with equipment required to be used for certain periods each day specifically for speed enforcement purposes. For mobile patrols using a radar, one hour per patrol should be used for speeding detection. For motorcycle patrols the amount of hours for radar use per patrol is two. The police using hand held speed detectors have discretionary power when determining the tolerance level for speed limits.

For laser gun operations infringing drivers also have a breath test, license and registration check.

### 1.6.4 Rural Practice

There is less enforcement on the open roads (generally 110km/h limit) in the rural areas, although two highway patrol officers in each of four locations around the state do conduct regular patrols on major highways.

Country traffic cars are required to use a radar for one hour per day. Highway patrols conduct operations out of their bases in the West, North, East and South East of the state. Local stations conduct various speed enforcement activities - meeting required minimum levels of use for any speed detection equipment they have.

With the introduction of additional speed cameras, requirements for minimum levels of rural activity will be introduced, which will generally be located in rural centres.

### 1.6.5 Intelligence Driven Operations

Individual traffic divisions are provided with statistics relevant to their area, and these are used to assess where strategies should be based. The provision of traffic intelligence to divisions is well established in South Australia, although individual use by divisions is unclear.

Every 6 months an automated divisional profile is put together detailing performance in police activities, including speed enforcement. Information provided includes plots of casualty crashes and drink drive crashes by time of day and day of week. Crash types and vehicles involved are also provided. Attached to this information is a similar plot of RBT hours (person hours and detection rate) and speed detection hours for camera and non-camera activities. Positive readings of BAC are also plotted.

A listing of individual roads is also provided listing crashes and RBT/speed activities undertaken on those road segments.

Speed profiling is done by the Department of Transport, and to some extent councils. Sharing of this information for direct enforcement purposes is limited however.

At present the camera operation is a computerised system that links into crashes, the time of day and the type of crash. Every road that's listed for possible speed protection receives a crash rating by time of day and day of the week. Deployment is then determined based on this rating.

The reporting system for speed enforcement is manually completed by police recording things such as hours spent on enforcement, number of cautions and tickets issued, location etc. This is reported onto a database every day. The reporting system runs parallel to the ticketing reconciliation process.

Every road that's listed for possible speed protection is assigned a speed rating and a crash rating for time of day and day of the week.

A recent project was conducted involving demographic and offence profiling of speeding in SA. The main factors investigated were age, sex, repeat offenders and the various speed groupings. This will assist in the targeting of countermeasures more appropriately.

There is an intelligence unit within traffic, which is responsible for the supply of information to assist in the devising of regional deployment for speed enforcement. If requested officers from the intelligence unit will assist with an operation. It is currently intended that these officers will play a greater role out in the field in the future.

### 1.6.6 Tolerances

Tolerances in South Australia are considered confidential.

### 1.6.7 Penalties

The fees for infringements are linked to the CPI annually, with current levels shown in Table 1.6 below. Exceeding the speed limit by 45 km/h or more is considered serious enough to be dealt with through the court system therefore, no infringement is issued. At present there is no demerit system for camera offences.

Table 1.6 — South Australian Speeding Penalties

| Range | Fine | Demerit Points |
|---|---|---|
| 0-14km/h | $116 | 1 |
| 15-29km/h | $184 | 2 |
| 30-44km/h | $298 | 3 |
| >45km/h | $298* | 6 |

*In general a >40km/h infringement will result in consideration of a 'speed dangerous' charge.

### 1.6.8 Infringement Issue and Cancellation

After the contracted camera operators have completed their hours they deliver the film to the police camera office for development and issue of infringements. The turnaround time between the offence and the receipt of a ticket is between one to two weeks.

Within the infringement branch 2 sworn and 34 public servants carry out relevant tasks including; adjudication of films, processing of handwritten TINs, cash receipting and daily reports. In general films are delivered to the TIN office within 2 days of capture and notices issued within 5 days.

The onus is on the owner of the speeding vehicle to pay any fines. No demerit points are applicable for fines paid without the nomination of the driver. Where a driver is nominated a point loss is applicable. Should offenders wish to view the photograph they may ask to receive a copy of the infringement photo by mail, or view in person at the camera office. Non-Police members respond to inquiries in most cases

In the case of corporate offenders the company would have to pay unless the driver could be identified.

Infringements can be withdrawn where circumstances warrant. Common cases involve the withdrawal of tickets to hire car companies and reissuing to the offending driver.

### 1.6.9 Other Issues

A separate section within Transport SA carries out speed zoning. Notification of changes to speed limits are provided to Police personnel, with recent initiatives resulting in a closer relationship between Police and Transport SA in the initial setting, and also review of existing limits. Transport SA has also recently completed a review of their speed zoning criteria and practices.

Where there were considerable changes in speed limits for zones, police allowed a settling in period for motorists. Now that changes are less frequent enforcement may commence straight away, however policies are currently under review.

## 1.7 Tasmania

Tasmania has a population of 471,336 located within the 67,800 $km^2$ area of the state.

Speed management practices altered significantly in October 1996, when the Motor Accident Insurance Board (MAIB) funded the establishment of the Road Safety Taskforce. The role of this group has been to increase the public awareness of speed as an issue and increase enforcement activity, with the ultimate aim to reduce casualty crashes.

Within Tasmania there is a high focus on rural enforcement levels with targets set at 50% for rural and 50% for urban. This relates to both camera and non-camera hours. Actual records indicate that this target is generally being achieved (although districts with smaller rural area to cover have higher proportion of enforcement in the urban area - for example Southern Region, which also has 2 fixed cameras on the Tasman Bridge). The high focus on these roads is relatively unique amongst Australian agencies - particularly for camera operations.

### 1.7.1 Structure and Personnel Issues

Within Tasmania there are 4 districts, namely Eastern (3 divisions), Western (3 divisions), Northern (4 divisions) and Southern District (2 divisions). A central operations support unit provides intelligence information to be utilised in the formulation of speed enforcement activities. Dedicated traffic police are located in each region with enforcement activities also undertaken by general duties officers. No central support unit exists to back up regional operations with any operations resourced from the region themselves.

Each police station operates an "Accident Reduction Program". This program has been in place for some time, with the focus on high crash sites a typical output. The Division of Transport in Tasmania assists in the provision of this information.

A major directive of note within the Tasmania Police is the target for 50% of enforcement activities to undertaken in rural locations. This includes 100km/h zones.

### 1.7.2 Speed Camera Operations

Speed camera equipment held by the Tasmanian Police for speed enforcement include:

- 15 cameras – with 10 laser cameras (which includes 2 fixed on the Tasman bridge) and 5 AWA radar cameras.

Speed cameras were introduced to Tasmania in 1993 with four operational AWA units and one spare. Initial camera sites were based on crash data and 85$^{th}$ percentile speed information by an inter-departmental committee. Local roads can also meet criteria for enforcement. Around 1995 the Minister broadened the sites suitable for enforcement including history of speeding and complaints to initial crash criteria. An additional 10 (digital) cameras were purchased in March 1997.

Speed Camera site selection and operating criteria are well documented with the information publicly available as a brochure. This was carried out to inform the public of the reasons behind camera operations, to reinforce the device as a safety tool, and to counter the 'revenue raising' concerns. The philosophy as set out in the brochure is 'to provide a community perception that the chance of detection is so high that speeding is not worth the risk.'

Non-sworn members now operate the cameras, with 3 cameras available in each district. Camera operations can be undertaken day or night with photos taken either from the front or back.

Speed cameras are only permitted to operate in approved locations. Some of the selection criteria include:

- Zones will not extend across municipal boundaries,
- Zones will not be granted to areas or suburbs,
- Lengths restricted to 1km in built up areas, and 5km's in other areas,
- Site selection in areas with a steep decline to be avoided unless based upon high crash statistics, complaints or a high degree of potential danger as a result of speeding in the vicinity.

Within the last two years the public have been encouraged to notify Police of sites where they believe speeding to be a problem. An officer will assess whether the site and speed signing and level are appropriate prior to undertaking any operations.

Operations are generally covert, with unmarked vehicles used. The aim is to get total deterrence on all roads.

Signage is not used before or after speed camera operations.

With in the camera office 13 staff are employed on adjudication activities (in addition to non-camera activities). Recent changes now see approximately 22 unsworn camera operators, with only 3 sworn officers remaining in the task.

Detailed information on the type and level of cull rates is recorded within Tasmania. Data for 1998 indicated the following cull rates and types:

Table 1.7 — Tasmanian cull types and rates: 1998

| Cull Type | Number | Percentage |
|---|---|---|
| TOTAL DETECTED | 69118 | |
| Operator Error | 1891 | 2.7% |
| Equipment Failure | 3976 | 5.8% |
| Inspector Discretion | 3 | 0.0% |
| Refer Supervisor | 47 | 0.1% |
| Emergency Vehicle | 78 | 0.1% |
| Plate Unreadable | 6767 | 9.8% |
| Plate Obscured | 2243 | 3.2% |
| No Number Plate | 1189 | 1.7% |
| Plate off Picture | 0 | 0.0% |
| Multiple Vehicles | 2424 | 3.5% |
| Motor Cycle Unreadable | 311 | 0.4% |
| Motor Cycle Towards | 287 | 0.4% |
| TOTAL | 19216 | 27.8% |

### 1.7.3 Non-Camera Operations

Non-camera enforcement equipment available for speed enforcement in Tasmania include:

- 32 hand-held devices,
- 12 mobile radars, and
- 17 hand-held lasers.

There are approximately 72 non-camera traffic operations personnel - with 6 located in each division. General duties staff do undertake speed enforcement activities however this varies from station to station with details of actual involvement not available.

Additional resources for non-camera operations were purchased in October 1997, with 7 additional mobile radars available for traffic operations personnel. Older units were also provided to rural locations. For non-camera activities operations highly marked vehicles and uniformed police are utilised.

Activities are undertaken as part of the "Accident Reduction Program", where particular sites are targeted specifically, as discussed in the section on Intelligence driven operations below.

Actual details of enforcement levels for these operations are unknown however the impression is that use is quite high.

### 1.7.4 Rural Practice

As discussed earlier a high focus is place on enforcement of speeds on rural roads in Tasmania. Camera operations on rural roads (100km/h zones) represent a significant proportion of total camera hours. Excluding the fixed camera sites on the Tasman Bridge the following levels of camera enforcement were recorded.

Table 1.8 — Camera visits and hours in rural and urban Tasmania

| Month | Visits Rural | Hours Rural | Visits Urban | Hours Urban |
|---|---|---|---|---|
| Jul 98 | 254 | 1285 | 380 | 1853 |
| Aug 98 | 246 | 1293 | 292 | 1372 |
| Sept 98 | 283 | 1554 | 186 | 1208 |

### 1.7.5 Intelligence Driven Operations

A detailed procedure is in place as part of the "Accident Reduction Program" in Tasmania. Rankings are based upon the frequency of crashes at appropriate sites over the previous 5 years, with various weightings used based on crash type. The Division of Transport provides this intelligence.

Intelligence provided to districts also includes a listing of the top five suburbs; top 10 routes and top 20 sites based on crash data. A schedule of visits is created for each station in each district. The schedule of visits details a date and start time and finish. A list of optional sites is also provided. Field sheets then record the sites actually visited, the number of TINs issued and the Officer's signature.

Feedback reports are provided to the district taskforces indicating changes in crash numbers in an annual comparison.

The Police Traffic Liaison Unit produces monthly reports on speed camera usage. The primary indicator used is the percentage of vehicles exceeding the enforcement limit. Summary details are also provided detailing the sites where the highest percentages of speeding drivers were detected. Also listed in the number of visits and kerbside hours for rural and urban locations. Trend information is also provided detailing the number of TINs issued, percentage of speeding vehicles and state kerbside hours.

A detailed listing of all speed camera activities is then provided which details the number of vehicles checked, offences detected and the percentage of vehicles speeding above the threshold.

Special operations such as Easter will also see the generation of similar statistical information.

### 1.7.6 Tolerances

Tolerances for speed cameras were initially set at 15 km/h however this has continually been reduced over time. Current tolerance levels are considered confidential. Discretion is available for a higher tolerance depending on a number of road / weather and traffic conditions.

### 1.7.7 Penalties

Penalties for speeding offences in Tasmania are shown below in Table 1.9

Table 1.9 — Tasmania Speeding Penalties

| Range | Fine | Demerit | Licence |
|---|---|---|---|
| 0-14km/h | $50 | 1 | |
| 15-29km/h | $110 | 3 | |
| 30-45km/h | $140 | 4 | |
| >45km/h | $170 | 6 | * |

*A review is currently underway to consider high range speeding offences (>45 km/h) and the possibility of automatic licence suspension.

### 1.7.8 Infringement Issue and Cancellation

Digital camera data is downloaded to the central processing section. For wet film operations the Tasmanian Police have an internal scientific section that process the film. In general a 70% issue rate exists from frames taken, with alignment of the camera, weather, personalised or older number plates creating difficulties in confirming details.

A turnaround time of 3-5 days is aimed for however little control is possible on the number of infringements and frames that are received.

Owner onus legislation applies in Tasmania. A statutory declaration is required to nominate a driver other than the registered owner. In an instance where a driver is not nominated after 21 days of issue an additional $400 fine is included for failure to notify. The issue of 'point-swapping' is not seen as a major problem with criminal prosecution likely for such an offence.

A Constable has the discretion to caution if it is deemed appropriate. For cancellations the Superintendent at a District level has the authority to cancel a notice if required - regardless of type. For example an ambulance is required to have a dispatch notice and similar requirements for Police personnel. Only extenuating circumstances will warrant a cancellation.

A trial is underway to look at a formal cautioning process where information is held on a database.

### 1.7.9 Other Issues

The Division of Transport is responsible for the setting of speed zones, and has a speed zone committee that reviews, sets and analyses speed zones.

Issues arise when considering the timeliness of intelligence data based on crashes, and the true effectiveness of deployment based on what may be outdated data.

## 1.8 Victoria

Victoria covers an area of 227,600 $km^2$ with the second highest population of the jurisdictions considered in this study with 4,648,378 people.

Within Victoria speed management is considered high priority along with drink driving. The Victorian Government Road Safety Strategy "Safety First" recognises speed as one of eleven primary issues to be managed in addressing road trauma. The strategy provides the approaches to be used, leaving local strategies and programs for local development and implementation. Under the strategy, a road Safety Priority Program Calendar is published every six months, detailing the activities being undertaken with regard to each primary issue and the key responsible agency.

Speed is targeted at all times of year, but periods of increased activity are specified within the calendar, where TAC advertising and targeted enforcement are combined. Each police District's Traffic Operations Group (TOG) is required to detail its approaches within its annual action plans, which form part of the Force's Business Planning process. TOGs plan their ongoing activities in line with the calendar.

Whilst a number of state wide coordinated operations are undertaken to manage holidays and major events, District traffic resources are controlled and deployed by local management. Locally driven initiatives are developed and implemented in consultation with Community Road Safety Councils and local communities. Multi-district operations are also a feature on certain occasions, for example the routes to the snowfields during the snow season.

### 1.8.1 Structure and Personnel Issues

There are 17 police districts within the Victorian Police Force - 11 located in the metropolitan area and 6 in country Victoria.

The Traffic Operations Group is approximately 8% of Victoria Police personnel, representing about 800 members. Other Police enforce traffic matters in the course of their normal duties.

Little change to resource levels occurred prior to November 1998, after which the operation of the camera office was outsourced. Outsourcing camera operations has provided the potential to free up approximately 4,000 police hours for other activities. These hours are freed for distribution to other police activities.

Quarterly meetings of Traffic Operations Group managers are held to identify and implement best practice and coordinate traffic policing activity across the State.

### 1.8.2 Speed Camera Operations

There are 54 speed cameras available for use in Victoria, however as the equipment is comparatively older when compared to other jurisdictions not all cameras are operational on a continuous basis. On average 29 cameras are deployed on a regular basis across the State, 60per cent in urban and 40 per cent in rural areas.

Speed cameras were introduced into Victoria in March 1986. As discussed previously the out-sourcing of speed camera operations, including processing and procurement of equipment became effective on 1 November 1998. In preparation, Civilian operators were trained and introduced in July 1998, being transferred along with other administrative staff as part of the outsourcing project. LMT Australia were awarded the contract, which requires the company to undertake all activities which are technical or administrative in nature. Responsibilities involving law enforcement or quasi-judicial functions involving discretion in decision making remain with the police. Police manage the deployment of the speed cameras through the District Traffic Operations Group Senior Sergeants, who decide location and time deployment within their area. LMT is expected to upgrade the camera technology during the year 2000

Approximately 400,000 speed camera penalty notices were issued during the 1997/98 financial year, with $45 million paid in speeding fines.

Comprehensive guidelines are in place for camera site selection, including:

- Proposal initiated by State or district traffic coordinator on basis of crash record, or public complaint.
- Qualified operator makes determination if site is suitable.
- Proposal to community road safety council for approval.
- Accepted by Camera Office as an approved site.
- Site removed from list if it ceases to have crashes.

There are comprehensive procedures and instruction documents for speed camera operations, with qualified operators required. Enforcement is generally a mixture of overt and covert operations. In general, steep down hill sections are avoided, as are buffer zones, unless a crash problem is evident. Camera activities are carefully documented and published, with audit systems also in place to monitor operations and ensure only approved sites are enforced.

Responsibility for crash reductions rests with individual coordinators who have authority over their resources to achieve the reductions.

Cull rates within Victoria are currently running at 19%. Cull types considered include:

- Blurred,
- Obscured,
- Poor light, and
- Camera set-up fault.

Details of the actual levels for each of these cull types was not available for this review.

There are no fixed speed camera sites in Victoria.

### 1.8.3 Non-Camera Operations

Non-camera enforcement equipment available in Victoria includes:

- 350 Hand held radars,
- 75 Mobile radars,
- 70 Laser speed guns, and
- 129 (Approx) Elecdetectors

As for speed camera operations, comprehensive procedures relating to the operation of the various equipment types are documented. Enforcement is generally a mixture of overt and covert operations, and that may change over time, eg initial high profile enforcement using laser guns to make it clear to the public that this form of enforcement is being undertaken.

Different road types mean most camera and laser enforcement is in the metropolitan area, with mobile radar in rural areas. The various methods of enforcement are suited to different circumstances. The process is driven by crash occurrence resulting in limited need for speed enforcement on freeways with the majority tasked to two lane two way major country roads and urban arterials. Typical applications are:

- Mobile radar - rural and outer suburban - 2 lane 2way roads
- Hand held radar - lower traffic flow situations
- Laser - only form which is suitable for heavy traffic, but now being used in other situations, 2 lane 2way roads.
- Elecdetectors - used mainly for covert enforcement with trucks.

As for speed cameras policy on enforcement practice is to avoid bottom of hills and buffer zones unless there is a crash problem.

In recent times the only major policy change has been the use of mobile radar in 80 km/h zones, flanked by 100 km/h zones, whereas previously operations were limited to 100 km/h zones.

### 1.8.4 Rural Practice

Speed cameras are used in some rural locations, however mobile patrols are commonly used for rural connector roads. Intelligence information is based on the same set of information as the rest of the state, with local officers delegated authority to determine the best methods of enforcement.

Mobile radars were introduced to rural Victoria in December 1993 and lasers were introduced in November 1996.

### 1.8.5 Intelligence Driven Operations

Comprehensive monitoring of crash data is completed to select camera sites, and determine enforcement patterns at the local level. Crash data are geocoded and mapped out via the ArcView software - crashes can be plotted by speed or alcohol involvement, DCA, etc.

A monthly report of offences and collisions for each District is compiled. Offences are separated into those detected by TOG and General Duties. Individual members' performance includes monitoring of TINs issued.

Monitoring of enforcement operations indicate that approximately 1 speeding offence is issued per 4 drivers and riders in Victoria each year.

Speeds of vehicle passing cameras are the only ongoing source of information on speeds currently used for intelligence purposes. Some concerns about the usefulness of the data is noted, as it probably reflects public knowledge of sites where cameras operate and increased watchfulness for camera enforcement activity.

VicRoads have commissioned a one-off survey of 61 sites the results of which suggest that approximately 14% of vehicles exceed the speed limit by 10 km/h or more. Lack of a regular speed survey independent of

camera sites is recognised by Police as a weakness in the present system. VicRoads do possess significant additional information on speeding behaviour, however the accessibility of this information is limited. An investment in retrieving and analysing this data may provide extremely useful information for analysing the effectiveness of various strategies undertaken in Victoria.

### 1.8.6 Tolerances

Generally a 10km/h tolerance exists for camera work. For offences detected by patrols, the officer has discretion up to 10 km/h, with policy stating that an infringement notice should be issued for speeding over 10 km/h except in exceptional circumstances.

### 1.8.7 Penalties

Penalties for speeding infringements within Victoria vary depending on the speed zone in which the infringement is relevant. Details of penalties are provided below in Table 1.10.

Table 1.10 — Victorian Speeding Penalties

| Range | Fine | Demerit | Licence |
|---|---|---|---|
| 0-15km/h | $105 | 1 | |
| >15-<30km/h | $165 | 3 | |
| 30-<40km/h | $220 | 4 | 1 month |
| 40-<45km/h | $300 | 4 | 4 months |
| 45-<50km/h | $300 | 6 | 4 months |
| 50km/h + | $360 | 6 | 6 months |
| Speeding in a 110km/h zone | | | |
| >15-<20km/h | $165 | 3 | |
| 20-<30km/h | $165 | 3 | 1 month |
| Large Vehicles | | | |
| 0-<15km/h | $140 | 1 | |
| >15-<30km/h | $220 | 3 | |
| 30-<40km/h | $450 | 4 | 1 month |
| 40-<45km/h | $450 | 4 | 4 months |
| 45-<50km/h | $900 | 6 | 4 months |
| 50km/h + | $900 | 6 | 6 months |

### 1.8.8 Infringement Issue and Cancellation

Wet photography is used in Victoria with electronic dispatch of infringement notices. The target is to dispatch notices within ten days. Measuring how well the target is met by the contractor is constantly monitored as part of the contract. The contractor is required to meet a standard or suffer a penalty.

Infringements can only be cancelled if a mistake appears to have been made in issuing the TIN, with the process rigorously controlled. The Penalty Review Section at the Traffic Camera office has the discretion to withdraw penalties and issue a caution for marginal speed offences if the person has no offences in the last 5 years. The process is completed centrally and audited.

Penalties for failing to disclose the actual driver of a speeding vehicle are very severe.

### 1.8.9 Other Issues

VicRoads has total responsibility for setting speed zones in Victoria. Speed zone change assessments may be initiated by VicRoads Regions, local governments, Police and the general community. All assessments

are undertaken at the regional level and are approved by Regional Managers. Should disputes arise at the local level the matter is referred to the Road Safety Department for resolution.

The Victorian Police were involved in developing criteria that now forms part of the V-Limits software routinely used by VicRoads to set appropriate speed limits. Speed limits are generally seen by the Police as reasonable, with good community acceptance, and reasonably good compliance in most circumstances.

In regard to information sharing, extensive cooperation exists in the collection, interpretation and distribution of road safety information and data between the three key agencies in road safety in Victoria: VicRoads, Transport Accident Commission and Victoria Police.

## 1.9 Western Australia

Western Australia has a total area of 2,525,500 $km^2$. Within that area the total population is 1,181,576 mainly concentrated in the south-west portion of the state.

There are four high priority areas for the WA Police Service (WAPS). These are:

- fatigue,
- drink driving,
- speed, and
- seat belts.

Recently the Enhanced Traffic Enforcement Project (ETEP) has been implemented in West Australia, concerning speed camera operations. This is a joint project operated by the Road Safety Council and involving Transport, the Police Service and the Ministry of Justice. It is directed by a task force consisting of the Commissioner of Police, the Director General of Transport, the Director General of the Ministry of Justice and the managing Director of the Insurance Commission of Western Australia. ETEP is an initiative aimed at modifying road user behaviour and improving road safety.

The focus of the initial phase of ETEP is the optimisation of existing resources, with a steep increase in camera hours and vehicles checked since commencement of the program.

### 1.9.1 Structure and Personnel Issues

In WA there are 4 police regions. Within these regions are 15 districts, which consist of:

- 6 Metropolitan,
- 5 Southern (Geraldton - Albany),
- 2 Northern, and
- 2 Central,

Within the central Traffic Operations Group (located in Perth) 54 personnel are currently dedicated to traffic related issues. The original central TOGs for all districts was disbanded on 1 April 1996, with traffic related resources now determined at a local level.

### 1.9.2 Speed Camera Operations

There are currently 16 speed cameras available in Western Australia, with 13 currently in use – refer below:

- 2 country
- 6 metro districts
- 5 central
- 2 being repaired and 1 for training

The use of cameras in speed enforcement in Western Australia has recently been revised with the introduction of the Enhanced Traffic Enforcement Project (ETEP). 'This project aims to change that by enhancing the effectiveness of speed cameras. It has two main elements - optimised use of cameras to detect speeding; and quicker enforcement processes' (http://www.roadsafety.wa.gov.au)

At present there are 89 personnel in the camera section (including operators). Nineteen of these are sworn staff. At present there is the capability to process up to 2000 infringements a day. Staffing levels within the camera operations have recently increased as part of ETEP. Three unsworn speed camera operators have been supplied to each metropolitan district in recent months (also to maximise use of the cameras). This has allowed the release of 17 sworn officers to other police duties.

There are approximately 3,500 speed camera approved sites in WA. Of these the top 200 (based on crash statistics) are focused on for speed camera operations. When a site is enforced the camera should be placed in that location for a minimum of 2 hours.

Unsworn operators are now used for speed camera operations, with consistent markings (blue stripe) used on all vehicles.

All speed camera enforcement in WA is conducted overtly. Signs are always used to inform motorists that they have just passed a speed camera.. Permanent warning signs that inform motorists that speed camera operations may operate in the area have been erected in several locations in Perth.

Detailed information on cull rates and types were not available for this review, although in general prosecution rates range between 75 and 80%.

Speed enforcement activities are not normally set up at the bottom of hills.

An area of significant change with WAPS is the quality control of operations in the camera section. A highly formal method of auditing has been devised whereby operators are audited once to twice a week, with ongoing quality checks required to be made by the operator every 15 minutes. Activities within the camera office are also audited including the adjudication of notices, notice issue and inquiry operations. While in its infancy the practice is developing quickly with results encouraging. Desired outcomes include reduced cull rates and wasted films, higher productivity and a more efficient inquiry service. Considerable effort has been invested in the development of the quality control system and supporting infrastructure and software development.

The WAPS will continue to fund its baseline camera operations from core funding. The funding for the optimisation of camera use in the initial phase of ETEP will be provided through the Road Trauma Trust Fund. The Insurance Commission of WA assisted in meeting any outstanding costs for the WAPS in 1997/98. Further assurances have been given for funding the completion of the initial phase of camera optimisation by the Road Safety Council.

### 1.9.3 Non-Camera Operations

Non-camera equipment available for speed enforcement in Western Australia includes:

- 136 mobile radars (Kustom KR10 and Eagle 10337)
- 125 hand-held units (Kustom falcons)
- 71 laser hand-helds (LTI 20-20)
- An aerial patrol plane is also used for detecting speeding on some specially marked roads.

There is a specialist traffic operations group consisting of 54 members who are based centrally in Perth. This group has more dedicated traffic roles which include speed enforcement. Within the regions speed enforcement practices are left to the discretion of the regional coordinator. Each district is responsible for their own coordination and control of speed enforcement. As a result the methods may vary somewhat in deployment and tasking, however policies exist regarding actual practice.

Determining the level of speed enforcement involvement from 'Integrated duties' personnel is a difficult task. At a regional level, the focus on speed enforcement can be varied as required (or desired) for that particular region. This flexibility can also exist to a local station level. Due to this, data on the number of hours or personnel involved in speed enforcement is not readily available. The WAPS however is currently developing internal performance indicators to address speed enforcement activities amongst other issues.

### 1.9.4 Rural Practice

Speed enforcement is the responsibility of the district officer. At present cameras in rural areas are being trialed. Unsworn members will be used to operate them initially. If there proves to be too much hostility towards those unsworn members, uniform police will operate them. The district officers still have to work within the criteria supplied by a central body. The districts are supplied a list of the top 100 local crash sites to work within. Currently cameras operate in the Northam and Bunbury areas. Further cameras are planned for Geraldton, Northam and Albany. Currently outback traffic doesn't warrant the use of speed cameras. Mobile and hand held radars are the main resources for outback and also rural areas.

### 1.9.5 Intelligence Driven Operations

Each district within Western Australia has a district support information centre, which provides local intelligence information. In addition to this, the Central Traffic and Operations Support research and development section supply intelligence.

Currently statistical information on crashes (supplied by Main Roads WA) and Police speed camera information is converted into a mapping system, which visually shows areas and overlays the crash locations and speed camera kerbside hours.

Other details that form part of the intelligence system include crash details such as:

- number of fatal crashes,
- fatal crash rate per 10 000 registered vehicles,
- number of fatalities,
- fatality rate per 100 000 population,
- number of critical injuries,
- critical injury rate per 100 000 population,
- total number of fatalities and critical injuries,
- fatality and critical injury rate per 100 000 population,
- fatality and critical injury rate per 10 000 registered vehicles,
- fatality and critical injury rate per100 million vehicle km,
- number of pedestrian/cyclist fatalities and critical injuries, and
- pedestrian/cyclist fatalities & critical injuries per 100 000 population.

Enforcement details reported include:

- the number of locations visited,
- number of kerb hours,
- infringement notices issued,
- the amount of prosecuteable images, and
- proportion speeding > speed limit.

The information being collected as part of the quality control system as discussed earlier, will also form part of the intelligence provision to optimise the effectiveness and efficiency of speed enforcement operations.

### 1.9.6 Tolerances

Tolerances are considered confidential in Western Australia.

### 1.9.7 Penalties

The penalty structure for speeding offences in Western Australia is shown below in Table 1.11.

Table 1.11 — Western Australian Speeding Penalties

| Range | Fine | Demerit | Licence |
|---|---|---|---|
| <10km/h | $50 | 0 | |
| 10-19km/h | $100 | 1 | |
| 20-29km/h | $150 | 3 | |
| 30-39km/h | $250 | 4 | |
| 40km/h + | $350 | 6 | |

### 1.9.8 Infringement Issue and Cancellation

Changes to infringement issue and processing have occurred in Western Australia as part of the ETEP program. Planned changes include:

- Modification and introduction of new infringement forms. These will now include bar coding, optical character recognition, road safety messages and payment options.
- Infringement payments will be able to be processed by the Department of Transport rather than the Ministry of Justice.
- Modification of computer systems. The planning, development and implementation of an integrated system that links all aspects of detection and enforcement for speed and red light cameras, including on the spot infringements, will be introduced. This will shift away from the current paper system that is in use for on the spot infringements. This is planned to be operational by Jan 2000 and is part of phase two of ETEP.
- The recording of driver addresses from infringements will also be possible.
- The introduction of a public information system.

Prior to ETEP the turnaround from detection to issuing of delivery was approximately 2 - 3 weeks. Current changes as part of the ETEP project aim to reduce this period and also the backlog of inquiries regarding offences.

The responsibility for an offence is on the registered owner of the vehicle, unless another driver is nominated. In the case of corporate offenders a corporate notice is issued requiring the details of the person driving the car at the time of the offence.

Owner onus legislation is not in place in WA, however demerit points are issued for speed camera offences. As a result camera operations involve a front-on operation whereby drivers can be identified if required.

Where a corporation does not identify the driver the fleet manager is considered the nominated driver - with associated responsibility for the fine and demerit point loss. Initial demand on inquiry personnel was high as a result of questioned corporate infringements. To counter this demand personal visits were made to various corporations to discuss issues such as vehicle logs. The initiative has resulted in a 60-65% decrease in the number of inquiries.

Under consideration presently is the introduction of increased fines (five times current rates) for corporate offenders where the driver is not officially nominated.

Cancellations are not common, with central approval required before any ticket can be cancelled. A cancellation is generally only considered when an error has occurred in the issuing of the notice, or if circumstances support withdrawal.

### 1.9.9 Other Issues

Main Roads WA assume responsibility for the setting, control and maintenance of all speed limits and speed limit signs in Western Australia. Police are consulted in regard to crash experience and practical considerations for enforcement. Local government is also consulted.

Within Western Australia unlike other states, the locations for speed camera enforcement are advertised openly. On the evening television news the locations for speed cameras for the following day are listed by road and suburb location. A similar broadcast is made on radio stations the following morning with both messages accompanied with a road safety related comment. The time of operation is not provided however a competing radio station runs a speed camera location hotline as in many other states stating where cameras actually are. The effect of this method as either positive in raising awareness of camera activity or creating knowledge of places where drivers can speed is unknown.

# 2 APPENDIX 2: WORKSHOP — SPEED ENFORCEMENT PRACTICES

**Workshop Minutes**

**Road Safety Conference**

**Research — Policing — Education**

**(November, 1998 — Wellington, New Zealand)**

## 2.1 Speed Enforcement Practice Workshop

In November 1998, a workshop was held as part of the Road Safety Researchers' Conference in Wellington. The workshop was seen as an opportunity to gather together a group of individuals with specific interest in speed enforcement practices, and discuss preliminary outcomes of the project. The main focus of the workshop was to discuss speed enforcement principles and agree on elements of best practice. A secondary element of the workshop was to identify those issues that would benefit from additional research.

It should be noted that the details as presented below represent the educated opinions of those present at the workshop. As discussed in Volume 1, the task of drawing 'hard' conclusions from data collected by various authorities is difficult. Comments should therefore be considered subjective in nature.

Specific issues discussed included:

- the role of intelligence-driven operations,
- methods of enforcement,
- appropriate levels of enforcement,
- tolerances,
- enforcement outputs,
- penalties,
- monitoring and evaluation, and
- role of the media.

## 2.2 Role of Intelligence Driven Operations

*Are intelligence driven operations appropriate?*

- A balanced approach to intelligence is required. General deterrence is also important.
- By concentrating the bulk of resources on a narrow range of targets enforcement may become more predictable and reduce overall effectiveness.
- Targeted enforcement may be effective at targeted locations but not so effective overall. A significant reduction in crashes at one blackspot may only represent a very small reduction overall.
- There needs to be a balance between targeted sites, recidivists and the general driving public as well.
- It is necessary to address whether long term enforcement at a given site is the most appropriate approach. Addressing problems through engineering may be more efficient.
- Police speed operations should be intelligence driven, but how intelligence is applied needs to be decided.
- Enforcement has a strong educational component. People learn quickly where to expect enforcement.
- Are the resources available to use a more general approach?
- In order to reduce the 'revenue raising' perception, a speed enforcement program should be highly targeted initially, with strict criteria for enforcement sites. Later these criteria should be slowly expanded.

## 2.3 Types of intelligence

*What sort of data is necessary?*

- mean speeds, crash data, public complaints / opinions.

## 2.4 Methods of enforcement

*What is the best mix of fixed/variable and covert/overt?*

- Visible enforcement discourages extreme speeders but covert provides general deterrence.
- It may be appropriate to use more fixed sites in order to free human resources.
- Speed, unlike drink driving or vehicle fitness is a constant choice. Perhaps the wrong model is being applied. We are possibly expecting too much from enforcement alone.
- To achieve a balance between targeting enforcement and the resulting predictability, more covert enforcement may be the most appropriate approach.
- Speed enforcement may need to be less predictable to be effective. Enforcement activities should be highly visible after the site, but not before (eg 'you have just past a radar').
- Enforcement should not be considered a 'cure' for poor engineering. However, funds may not currently be available to fix the engineering problems.
- Speed management needs to be built in at the design phase. Design speed should be taken into account.
- Road Safety Audits should be conducted at potential speed enforcement sites, to identify areas where engineering improvements might be applied.

## 2.5 Levels of enforcement

*What level of enforcement achieves a given level of compliance?*

- Most jurisdictions increase enforcement in holiday periods. There is a risk that people will perceive that holidays are the only time you have to modify your behaviour. Additionally, the amount that enforcement can be reduced at other times needs to be identified.
- A change in public opinion is an important outcome.
- It is important to re-evaluate speed limits to make sure they are appropriate.
- Gaining public support allows for improvements in enforcement.
- System wide changes may be best brought about by a 'hard' approach initially which is gradually reduced to a maintenance level.
- Very intrusive programs may be rejected by the community and therefore fail.
- Political opinion is very important. If public opinion is low, there is a risk that the Government will no longer support a speed enforcement initiative.
- Public outrage may be a sign of success.
- Community surveys show the level of public support for enforcement.
- Punitive enforcement can be used if the public believe it is a safety issue.
- The majority of people only speed moderately.
- Is TINs issued an appropriate performance indicator? Number of speeds checked may be a better indicator.
- It is critical to convince the public that there is a safety outcome. Therefore good data is necessary.

## 2.6 Tolerances

- Research shows (eg. Swedish work cited in Zaal, 1994) that reduced tolerance results in increased compliance. Consistency of application is important.
- Lower tolerances may result in resources being overwhelmed.
- Once the tolerance level becomes known, it becomes an unofficial speed limit.
- Using the $85^{th}$ percentile speed as a guide for tolerance may aid in reducing speed, while maintaining public support.
- The appropriateness of speed limits is important.
- There are legal constraints involving the accuracy of both detection instruments and in-vehicle speedometers. How low can a tolerance go?
- One method to counteract the question of equipment accuracy is to apply the alcohol model - put the onus on the driver to be responsible for their own instrument inaccuracies.
- Tolerance levels need to be supported by the court system as well. If tolerances are lowered, but people know that they will be cleared of the infringement in court, effectiveness is reduced, and pressure on resources is increased.
- High tolerance levels reduce the effectiveness of advertising. If the advertising says 'every 10km makes a difference', yet the tolerance levels are higher than this, people won't believe the education campaigns.
- Either the tolerance or the speed limit needs to be reduced.
- If tolerance is reduced, it should be done gradually.
- National support is necessary.
- There is a need to address differences in enforcement levels in urban vs rural areas.
- Speed cameras reduce speed, therefore reducing impact speed in a crash. In urban areas a relatively small reduction in speed results in a large improvement in safety. In rural areas, the reduction of speed needs to be much greater. Therefore the goal of urban enforcement should be to improve the outcome of the crash, but in rural areas, the goal should be to prevent the crash from occurring.
- It may be that other issues deserve higher priority than speed in rural areas, for example the high level of non-use of restraints.

## 2.7 Enforcement outputs

*Is it appropriate to set targets? Perhaps they should be locally based.*

- Information such as offences per hour, cull rates etc may not be appropriate for public dissemination.
- There appears to be a difference between Australia and New Zealand in that Australia focuses more on crashes, but New Zealand focuses on speed.
- Key difference between police and education. For education, the desired outcome is zero offences, but this would mean that police would lose resources to target offences that are no longer committed. Therefore police need a certain number of offences to justify enforcement.
- The distinction between outputs and outcomes must be made. An output must be considered a step towards an outcome, not the outcome itself.
- Outputs will vary between locations.
- Outputs are vital for internal police management.

- Offences detected are only one factor to be considered. Other important factors include:
  - number of vehicles past the site
  - number of TINs issued
  - number of speeds checked
  - number of vehicles exceeding the speed limit
  - different sites visited
- Best practice needs to be presented as a list of outcomes.
- Should 'all crashes' be monitored or just 'speed related'. There is a problem that 'all crashes' may not be highly sensitive to changes in speed, but 'speed related' is known to underestimate true numbers, particularly because the definition is conservative. Also the number of 'speed related' crashes may not be high enough for planning purposes. Possible 'speed sensitive' crashes such as pedestrian crashes should be profiled.
- In reality, both types (speed related and all crashes) needs to be studied.
- Need to take into account the types of crashes that were used in identification of sites. The same crash type should be used for monitoring.
- There is a need to develop an independent speed measure such as unobtrusive measurement at a variety of sites (eg using culways). Other speed data needs to be collected - not just from the police.

## 2.8 Penalties

- Probability of detection, rather than the size of the penalty is the key.
- Penalties have to reflect community expectations.
- Divisions in penalty levels should reflect tolerance levels (ie should the lowest level of offence be 0-10 or 0-15 km over limit?).
- Perhaps the lowest level of offence should be penalised by demerits only. If there is a non-financial penalty for lower level offences there will be less impact on the court system. This will allow tolerances to be tightened.
- Generally, the majority of offences charged are between 11 and 15 km, but there are issues related to tolerance and genuine versus alleged speed that should be addressed.
- If avoidance of paying the penalty is reduced then the penalty will discourage offending.
- Police officers may resist issuing notices at the lowest level because of the risk that they will have to take time from their duties to go to court, and the offender will quite likely be cleared.

## 2.9 Public education

*What is the balance between education for deterrence and education for general behaviour change?*

- There is a need to target the audience, people who consistently speed vs those who occasionally speed, people who speed by a large amount vs those who speed moderately.
- Speeding can be compared to drink driving 20 years ago. People do not think speeding is 'bad'.
- There is a need for education to portray very basic issues - speed causes crashes - try to get speed on the public agenda.
- There is also the problem of good speeding vs bad speeding. Also when police chase an offender they are displaying the same 'bad' behaviour (speeding, maybe more than the offender).
- People make a speed judgement based on road conditions, more than speed limit.
- Speeding should be made more visible - speed warning devices (such as those that alert the driver when their speed passes a preset value) in all vehicles. Make use of future technologies.
- The evidence for the danger of moderate speeding is very recent. The public would not believe it.
- Individual risk when speeding is perceived as very low with so called 'rewards' great.
- Need to recognise that speed behaviour is very different from other key offences. Perhaps a 'public health' model is more appropriate.
- Speed and its risks need to be brought into public consciousness before 'persuasive' or 'educational' campaigns can be considered. The focus needs to be on deterrence.
- Media without backup enforcement will fail.

## 2.10 Other Issues

- Acknowledge that future technological opportunities will be available. These will control speed, not punish it.
- Take into account definitions of speeding other than breach of the speed limit. Speeding given the conditions and tailgating should be addressed.
- Current enforcement of speed is counter productive (ie the police have to speed to catch them). This does not teach the public that speeding is dangerous.
- Uniformity of laws should be addressed. Also legal options to target speed.
- Recognise that education and enforcement cannot be separated.
- How do you recognise best practice?

# 3 APPENDIX 3: PUBLIC EDUCATION

All jurisdictions engage in public education strategies related to road safety. The extent to which these focus on speed issues varies, as does their degree of coordination with actual speed enforcement activities. Jurisdictions also vary in their approaches to speed related public education programs, including the main focus of public education strategies, media mix, types of messages used, and audience targeting.

## 3.1 Australian Capital Territory

### 3.1.1 Organisation and Funding

Road safety strategies are currently under review in the ACT, with the focus on updating strategies that were completed in 1994. One recent change has been the appointment of a Road Safety Manager within the ACT Department of Urban Services, where previously there had been no-one solely responsible for that area. Public education strategies are likely to be developed as part of this position.

#### *3.1.1.1 Coordination and Police Involvement*

When campaigns are undertaken a combined approach is adopted between the AFP and the Department of Urban Services - with joint launches common. AFP officers are empowered to talk to the media when required - for example at the scene of a crash.

New road safety strategies are currently being developed for the ACT. One of the elements of this will be a high level of coordination and cooperation with the police. Enforcement in Canberra is recognised as needing more attention. About 40% of serious crashes that involve ACT motorists actually occur outside of its boundaries, making it difficult to construct a complete representation of road safety problems faced by ACT drivers.

Public education campaigns are currently linked to the enforcement schedule of the police.

The establishment of stronger links between Police and road safety education personnel is in a formative stage, with informal meetings now held on a regular basis.

#### *3.1.1.2 Funding*

Funding for large-scale public education campaigns in the ACT is limited. The priority and funding for speed related education initiatives are undergoing a raise in profile at present. Speed related issues are currently addressed in approximately 25% of road safety advertising.

### 3.1.2 Public Education Strategy

The media are focusing on speeding in the community more than previously, yet not in a concentrated approach. The reason behind the lower profile of speed related education and publicity is the small size of the population.

The layout of the city of Canberra encourages people to use their cars a great deal. The perception amongst the public is that they are unlikely to get caught speeding and that exceeding the speed limit is not dangerous. The intention of speed related road safety publicity is to alter the community's perception in relation to speeding.

Loss of mobility (licence cancellation) is believed to be an area where ACT residents will feel most effect.

#### *3.1.2.1 Methods Used and Local Considerations*

The road system in the ACT is not greatly variant, due to its size, and it consists mainly of urban arterial roads. Most rural roads in close proximity to the ACT are under the jurisdiction of the NSW RTA. For this reason a media concept for the ACT does not need to be altered to suit different geographical areas, and is aimed at road safety in the urban environment. The ACT government at present does not have the funding to invest in significant road safety advertising campaigns. There is very limited ACT specific advertising displayed on television.

Television and radio have been found to be the most effective road safety publicity tool in the ACT, and are utilised the most. The use of pamphlets and brochures is generally viewed as minimally effective.

The advantage of the ACT being an island within NSW boundaries is that any television advertising to the surrounding areas will go through the Canberra TV networks. Therefore, much of the road safety advertising conducted by the RTA will have a flow on effect to the ACT. However, in some instances the content of some advertisements is linked to specific issues or enforcement blitzes in NSW, and may therefore have little relevance to those living in the ACT.

#### *3.1.2.2 Timings and Intensities*

Where radio advertisements are used, drive-time periods are targeted (morning and afternoon peak hours). Refer to Specific Public Education Campaigns below for details on timings and intensities for a particular example.

#### *3.1.2.3 Performance Measures and Public Perceptions*

The relative size of Canberra and the amount of resources available to the road safety arena spreads media output fairly thinly. The small size of the annual crash statistics base can pose difficulties in determining real change due to public education initiatives.

### 3.1.3 Specific Public Education Campaigns

A current campaign aims to combine the efforts of enforcement, public education and community work to produce a synergistic effect. The campaign focuses on the reinforcement of road safety messages through low level advertising in the major local newspaper (weekly), advertisements on one television station (twice per week - delivered by news readers) and two radio stations (daily). These cover various themes that will be based on and tailored to the enforcement timetable of the police at the time. Speed is included in this campaign.

### 3.1.4 Other Public Education Issues

No additional issues raised.

## 3.2 New South Wales

### 3.2.1 Organisation and Funding

In NSW the RTA conducts public education initiatives in regard to speed (and other road safety issues).

#### *3.2.1.1 Coordination and Police Involvement*

The RTA relationship with the NSW Police has expanded considerably over the last few years. There is high coordination at a strategy level, with relationships extending to a local level, where RTA officers and local Police often collaborate regarding road safety issues. The benefit of a two pronged combined attack is recognised with relationships becoming stronger.

The education activities undertaken are aimed at:

- linking enforcement with the road safety benefit,
- raising drivers' awareness of the Police enforcement of speeds, and
- promoting to all drivers the consequences of being stopped by police.

(Source: 1997/98 Road Safety Action Planner)

The Police receive details in advance of major media campaigns carried out by the RTA NSW, with communication levels improving recently. Prior to this some media releases related to speeding were not always provided to Police prior to release. With that information now supplied a comment to media outlets from 'Police' about the issue can reflect the message of the release, or resources can be deployed to back up the campaign or message.

Within NSW there is a strong interaction directly between the Police and the various media outlets. The focus is on obtaining 'free' publicity about various operations and concern about road trauma. The initial spark for publicity may come from a Ministerial announcement (for example regarding new fine structures), or as a result of other advertising campaigns that are linked to an initiative - such as double de-merit points over holiday periods, or from Police initiated media operations.

On a daily basis details of collisions in the previous 24 hours are provided to the media, with a brief summary of the crash details. The paper prints details of the number of fatalities compared to the same period in the previous year each day. In some cases recent crashes may provide an opportunity for Police comment on the crash cause. In this case the approach is to include a message with the details, and reinforce facts like 'speed is the single biggest contributing factor in serious and fatal collisions'.

Where required, efforts are made to provide the media with the type of information they require as commercial enterprises. That may mean localising the issues to the target audience in a certain regional area, and having statistics relevant to that area ready at hand. The approach may also be directed to obtain 'talk-back' on relevant stations depending on the nature of the issue. Although not monitored or measured, considerable exposure is apparent from this means of utilising the media in NSW. The NSW Police has a media unit that is staffed by approximately 10 qualified journalists to assist in matters relating to the media. This group forms part of the larger public affairs branch. The Commander, Traffic Services would participate in approximately 600 media interviews annually.

#### *3.2.1.2 Funding*

Speeding remains the key factor in fatal and serious road crashes, and therefore is seen as a key road safety priority. This has changed from a focus on drink driving 5-6 years ago. Fatigue is another area with considerable funding.

Funding for publicity campaigns has undergone some recent changes with reviews currently occurring at a corporate level. There are also some relationships with other government bodies interested in road safety.

### 3.2.2 Public Education Strategy

Since 1993 the main aim has been to place speed as an issue in the minds of road users. The focus of advertising in NSW targets a number of motivating factors such as, physical consequences of speeding related crashes, emotional consequences (family, friends, loved ones, feelings of guilt, etc) rational consequences ie fines, licence loss and being stopped by the police, and the need to drive within the speed limit or at a speed appropriate for the conditions. Main media used include television, radio, print and outdoors (billboard etc).

The approach to advertising is consequence based, without gory images aimed to shock. The target is more aligned to generating an emotive response and to represent the situation as something that could possibly happen to the viewer. Empathy with the audience is critical. The focus is on the cause of the crash and not so much the scene of the crash. Advertisements developed in NSW are free for use by other authorities.

The most recent campaigns have focused on creating a behavioural change from a belief that there is a practice called 'safe speeding'. That is, to counter the belief that travelling over the limit by a small amount is acceptable, and there are no risks associated with it. A primary target group is young males but care is taken to ensure campaigns also communicate with the community at large. Regionally, it is noted that more severe crashes occur in rural areas, however more crashes occur in the city area. Statewide campaigns target all audiences with a similar weight level (TARPS) in each regional television viewing area, or the same frequency targets, usually 5 plus for radio campaigns. It is not unusual for more money to be spent on Metropolitan media than Regional media due only to the higher cost of the former. However, this is not always the case.

Advertising focuses on the cause and consequences of a crash or of being caught. A secondary impact noticed in campaign evaluations (even where enforcement levels have not been mentioned) is that there has been a perception of increased enforcement levels while actual levels have remained constant. The wider knowledge of speed as an issue is believed to have influenced this perception. Experience has also shown that the message needs to be clear and singular in most cases to ensure that the consequence is clearly seen as a result of speeding and not confused with other road safety issues or distractions. The target audience may not understand a general safety message as the purpose of the advertisement may be confused.

A supplementary aim is to have speeding seen as a major problem across the public health sector. Surveys concerning issues in public health have shown that public perception is that drink driving is the number one issue, with speeding number two. These are followed then by alcohol abuse, drugs and other issues.

#### *3.2.2.1 Methods Used and Local Considerations*

Advertising in cinemas is seen as useful to target specific audiences, however recent trends have moved away from this form of advertising. Recent campaigns around the double demerit point scheme in NSW have involved print media to disseminate detailed information about the changes, with awareness messages supplied via television and radio. The approach is to make television advertising quite involving to gain the attention of viewers.

Determining the effect (and comparing) various media types is seen as difficult, with radio seen as flat (no colour or picture) and television where colour, music and light can be combined to deliver a message. The different types of media serve various purposes however. Radio is seen as a way of delivering a message to drivers as they are in their car. Current radio campaigns utilise the message 'How fast are you going now?'. Some billboards also provide a similar opportunity.

The value of unpaid media publicity in NSW is regarded highly. For the initial introduction of double demerit points in Easter 1997, exposure of approximately $700,000 (double demerit specific) of equivalent value was created from unpaid media publicity. This level has now declined to approximately $16,000 equivalent value for the June long weekend in 1998, as acceptance of the penalty structure as a normal event increases.

There is a centrally coordinated budget for safety campaigns, with allocations also available in local areas for specific campaigns. For example the Sydney Operations Directorate ran a wet weather campaign designed to encourage people to slow down in wet conditions. The radio stations programmed the advertisements to air when wet weather was actually occurring.

Other activities are localised to provide local road names and the like for local level advertising. For example the Hunter region modified a cinema advertisement for use in the local region. Local RTA regions, local government road safety officers and local police are often involved. The road safety officers may spread the word in other fashions also.

Wollongong (and soon South-Western Region) have undertaken a demonstration project from a publicity angle where a variable message sign is used to display actual driver speeds, with the speed limit also detailed. The project initiated by local road safety officers has had some negative feedback, in particular from Police who see the practice as weakening the enforcement message.

#### *3.2.2.2 Timings and Intensities*

A calendar of events is published each financial year with the 1998/99 calendar unavailable at the time of compiling this report. The 1997/98 RTA / Police Road Safety Action Planner details targeted areas throughout the year.

The calendar highlights the following periods for speeding related activities:

Table 3.1 — NSW Road Safety Education Calendar 1997/98

| From | To | | Focus |
|---|---|---|---|
| Sept 15 | Oct 6 | Publicity: likelihood police enforcement / urban and rural speeds and penalties / consequences (Oct 3-6 double demerit) | Speeding |
| Dec 19 | Jan 4 | Publicity: urban and rural speeds and penalties / double demerit. | Speeding (major Drink Drive also Fatigue) |
| Jan 21 | Jan 26 | Publicity: Double demerit | Speeding and Fatigue |
| Apr 8 | Apr 13 | Publicity: urban and rural speeds and penalties / double demerit. | Speeding and Fatigue |
| Apr 14 | Apr 26 | Publicity: urban and rural speeds and penalties / double demerit. | Speeding |
| Other Areas | | | |
| Jan 4 | Jan 31 | | SOUTH WEST - Speeding and Fatigue |
| April 1 | April 30 | | SOUTH - Speeding |

*(Note all campaigns are planned just prior to and during school holidays - which are also public holiday periods)*

#### *3.2.2.3 Performance Measures and Public Perceptions*

When considering performance measures, effectiveness usually centres on the recall of the message by samples of the community. In considering the wider road safety objectives it is accepted that advertising forms but part of the overall program - with enforcement and engineering also playing important roles. The role of the media is to portray why speed limits are set, and why police want to contain the speeding problem.

Issues considered in the evaluation of a media campaign include:

- awareness,
- attitude
- support, and
- self reported driver behavioural changes.

Evaluations of campaigns have shown good ‘cut-through’ - where the message is understood and can be recalled by respondents.

On a specific campaign various evaluations have also included a study of police infringement levels and crash statistics.

In recent times a ‘tracking style’ (50 interviews a week) campaign evaluation was trialed, however it was discovered that better information focused on the campaign, not the program, was provided by the original pre/post campaign evaluations (via surveys). This type of evaluation has therefore been returned to.

A previous billboard campaign depicting a speedometer with the needle placed at 72 (the billboard is in a 60 zone) and a message 'You're doing $112' achieved a 50% plus awareness (28 sites). This level of awareness is considered high for this form of advertising. A more recent campaign reflected TV advertisements (with a cross on a tree) with awareness running at approximately 51% after four months.

As part of the evaluation of double demerit points survey respondents were identified as being within various risk groups based on whether they admitted to driving at speeds for which they could get booked. A large proportion admitted to slowing down when police enforcement activities were seen and they also had knowledge of the double demerit scheme.

### 3.2.3 Specific Public Education Campaigns

Double Demerit And Licence Loss >30 km/h Over Limit

In 1997, following a poor start to the road toll, the Minister's office initiated a double demerit scheme to run over the following Easter/School Holiday period. Motorists caught speeding over these two weeks would be fined as per normal but would lose two times the standard demerit points for that offence (note interstate drivers are not subject to the point loss). One more demerit point than usual was also applicable for other traffic offences. The trial was found to be successful, with the initiative extended to the Xmas holiday period and long weekends for the remaining part of 1997, up to and including June 1998. Initial media reaction to the proposal resulted in significant 'free' publicity. As that level dropped public education (television, print, radio and billboards) was carried out around holiday periods to reinforce the message. The double demerit campaign was the sole speeding message being delivered over the holiday period.

An evaluation of the double-demerit scheme when first introduced realised fatality reductions of around 23% and serious injuries down by 8% after adjusting for changes in non-holiday periods. Over 7 periods covering a total of 45 days - actual fatalities dropped from 90 to 65, and serious injuries dropped from 323 to 303. It is noted that reductions during some shorter holiday periods such as October have not been to the same extent.

In late December 1997 and throughout January 1998, mandatory licence loss for one month was also trialed for people caught speeding in excess of 30 km/h over the limit. That is, speeding offences more than 45 km/h over the limit attracted the standard 3 month suspension, with speeders caught more than 30 km/h over the limit during late December / January receiving a one month licence suspension. The over 30 km/h provision is now permanent as of October 1998.

Safe Speeding

Research undertaken by the RTA NSW indicated that motorists adjust their driving speed based on road conditions and the likely presence of police. From the research, the message that eventuated was 'Safe Speeding. There's no such thing.' The campaign focuses on the danger of relatively minor infringements of the speed limit. It highlights that in the event of an emergency every km/h over the speed limit takes away from a driver's ability to avoid a serious or even fatal crash. The current television commercial 'Kid Brother' focuses on the emotional consequence of killing a member of the family. The car depicted travels only 12 km/h over the speed limit. This is indicated by a graphic stating '72 in a 60 zone'.

Publicity Around Long Weekends

In general a targeted campaign for a specific weekend will commence on the Sunday before the weekend (Sunday night viewing). Radio generally starts a couple of days prior to the weekend. Advertising continues throughout the long weekend period.

Enhanced Enforcement Program

Enforcement activities that are carried out as part of the RTA NSW Enhanced Enforcement Program are also advertised where relevant. For example radio adverts were utilised over the 1998 Easter school holidays to alert the public to the higher police presence on the road over that period. Localised programs (for example the focus on speeding in school zones in the Liverpool area) also received considerable local publicity and some wider media coverage. A significant amount of this publicity was free.

### 3.2.4 Other Public Education Issues

The balance of publicity campaigns throughout the year is seen as an area where some questions still exist. It is noted that in addition to campaigns throughout the year concentration occurs around holiday periods. The approach to concentrated campaigns during holiday periods is seen as an area for further research. Crash reductions are evident during these holiday periods, but a crash problem remains on other weekends. In this case does the concentrated advertising on a long weekend - providing crash reductions just at that time, outweigh the benefits from a more evenly spread approach or vice versa? A public survey carried out following Easter 1997, indicated public preference for targeted campaigns prior to holiday weekends and periods.

## 3.3 New Zealand

### 3.3.1 Organisation and Funding

The National Road Safety Plan to the year 2001, and the annual NZ Road Safety Programme, deals with speed enforcement and education in New Zealand. The LTSA has the principal responsibility for the advertising campaign, which forms part of the 1995 Supplementary Road Safety Package (SRSP) of increased enforcement and advertising.

#### *3.3.1.1 Coordination and Police Involvement*

The advertising campaign takes place in full consultation and co-ordination with the Police enforcement programme, and carries the logos of both the Police and LTSA.

The LTSA is also producing a road safety education strategy including an action plan associated with the Police / LTSA initiative. An annual Conference was initiated in 1998 by the Automobile Association's Driver Education Foundation to support their '15 Point Action Plan' and promote improved co-ordination and commitment by involved agencies. Speed management is likely to feature in this plan

#### *3.3.1.2 Funding*

In public education terms, speed is one of the highest priority issues in New Zealand public education strategies.

The campaign to discourage speeding drivers and to reduce speed-related crashes and trauma is a major component of New Zealand's current road safety mass media campaign, with approximately $3.0 million out of a $7.2 million budget allocated to the speed campaign. In total the Safety Information and promotion output class funding for 1998/99 is $15 097 000 (GST excluded) or $16 984 000 (GST included).

### 3.3.2 Public Education Strategy

The SRSP campaign is nation-wide, with television advertising using the national TV networks. Similarly, the enforcement programme is nation-wide. The television advertising is very graphic, and although there has been some public outcry, it is felt that the campaign is working well.

#### *3.3.2.1 Methods Used and Local Considerations*

Public advertising in New Zealand generally is split between the various media types with television accounting for 70% of the budget, radio (15%) and cinema, print and outdoor media (15%).

Television advertising associated with the speed component of the New Zealand road safety campaign is scheduled in full consultation with Police to coincide with extra enforcement activity. A joint calendar of activities is developed and published each year to enable other agencies to maximise the effectiveness of their own programs by coordinating with heightened advertising and enforcement activity. Coordination of road safety publicity activities is one of the roles of the Road Safety Communications Working Group which comprises the communications managers from Police, LTSA, ACC (Accident Rehabilitation and Compensation Insurance Corporation), MOT (Ministry of Transport), ALAC (Alcoholic Liquor Advisory Council) and Transit New Zealand.

#### *3.3.2.2 Timings and Intensities*

A number of major national Campaigns are delivered each year and these are supplemented by local campaigns targeted at specific local concerns and problems. The Road Safety Planning Guide, which is produced annually by the Police, outlines the police plan for National Road Safety Campaigns.

#### *3.3.2.3 Performance Measures and Public Perceptions*

The LTSA monitoring system is well structured with performance measures and targets set annually.

The public education campaign on speed is monitored in terms of television advertising levels, audience reactions (recall, relevance, likeability, message takeout), road safety outcomes (vehicle speeds, speed related crashes and casualties) and attitude changes. The 1997/98 TV advertising to June 1998 increased to approximately 4900 TARPs, from 9 flights coinciding with enhanced police enforcement and 4 executions (i.e. different advertisements).

No local control studies have been undertaken.
The LTSA advertising programme within the New Zealand Road Safety Programme for 1997/98 had to deliver:

- an average of 800 TARPs per month for ongoing campaigns in the key areas of alcohol, speed and restraints;
- campaigns to be co-ordinated to support Police enforcement and in consideration of other key agencies' advertising campaigns;
- a minimum of 70% recall of the television advertisements and 70% relevance by the wider community; and
- 100% delivery of road safety promotion campaigns in accord with an agreed programme of TV production (effectively 4 – 5 new commercials each year).

Two comprehensive evaluations are currently planned. The first is being done by Massey University and will examine some very fundamental questions relating to the delivery of traffic education to children of primary school age. The second is an evaluation of the 'Safe Routes to Schools' programme for school children and will, amongst other things, examine any changes to speeds in the vicinity of schools that could be attributed to the programme.

### 3.3.3 Specific Public Education Campaigns

The LTSA produce annual strategic plans related to 'Safety Information and Promotion. Examples of the types of initiatives included in this plan include:

- monthly road safety magazine,
- annual road safety reports,
- road safety advertising packages with on-going campaigns on speed (targeted on identified risk groups - particularly young males 18-24).

### 3.3.4 Other Public Education Issues

No other issues raised

## 3.4 Northern Territory

### 3.4.1 Organisation and Funding

The Department of Transport and Works coordinate road safety public education in the Northern Territory. The Road Safety Council plays an integral role in the development of campaign themes.

Enforcement is seen as the number one priority and education of the public is seen as a supporting initiative.

#### *3.4.1.1 Coordination and Police Involvement*

There are a number of fora at which Road Safety Council and Police liaise, for example within the Road Safety Council itself, Regional Road Safety Committees, Steering Committees for specific campaigns and the NT Aboriginal Road Safety Strategy.

Road Safety Field Officers also support Aboriginal Community Police Officers and school-based constables.

There are four field officers working on road safety promotion, including speeding, and they work with local police including Aboriginal Community Police Officers and school based Constables. The police are informed via their own networks about answering queries related to speed cameras and speeding.

Police are also part of a working group, which is involved in the development of public education. Road safety council committee members, local government and AANT (The Northern Territory motoring association) are also part of this working group.

Within the police force regional commanders are responsible for their own media liaison. At present there is no advertising of the whereabouts of cameras, although if the media request this information it is not withheld.

#### *3.4.1.2 Funding*

The Territory Insurance Office (TIO) funds a number of road safety activities:

- Road Safety Council (RSC) public awareness, education, research and policy development ($816,000 in 1998/99);
- Motorcycle Education Training and Licensing (METAL) contribution of $247,500 in 1998/99 towards the costs of this program;
- Driver Training and Licensing program (DTAL) contribution of $785,400 in 1998/99.

The $816,000 of RSC funding is for the whole range of programs and campaigns including Field Officer programs, school-based education, anti-drink driving campaigns, visitor programs, Aboriginal road safety and others. While speed and red light cameras were a particular focus in 1998, other programs continued and only a portion of the overall funds were used in speed-related projects.

### 3.4.2 Public Education Strategy

Speed enforcement and complementary media have historically been a feature of NT Police / Road Safety Council campaigns. In areas with posted speed limits these focus on driving within the speed limit and to suit the conditions. Particular attention has also been given to school zones (40km/h), with concentrated activity at the start of the first school term each year and then ongoing throughout the year. Until recently however, the main focus of education concerned drink driving and seat belts.

On roads which do not have a posted speed limit, campaigns have emphasised trip planning (to avoid the temptation of driving too fast, or too far) and driving to the conditions. The annual Easter campaigns and 'Dry season' campaigns have promoted safer behaviour on rural roads – sensible speed, seat belts, alcohol etc. Specific messages along these lines have also been developed for visitors from interstate and overseas.

Workshops in late 1996 considered a whole range of issues including the recommendation for the introduction of speed cameras. Prior to speed camera introduction, advertising (when used) generally mirrored FORS commercials relating to the impact of speeding in terms of crash outcome. The introduction of speed cameras in late 1998 was accompanied by an extensive media campaign across many different mediums.

To herald the introduction of speed cameras an intense media campaign was and is currently being undertaken. The form of public education has centred on the outcomes of crashes involving speeding vehicles, the need for speed cameras, how the cameras and the infringement process operates, and how the camera sites are selected and the phasing in of the process.

A school based education program exists for road safety, although speed related issues are limited. Work is also done in the outback communities focussing on aboriginal people and road safety.

The media takes a combination approach, concentrating on both the results of crashes that occur at high speed, and the cost of the infringement. Where appropriate, separate messages may be relayed to aboriginal and remote communities. In regard to camera operations the focus has been on preventing speeding behaviour rather than penalising those who speed. For this reason Police have permitted radio stations to broadcast the locations of cameras and do not penalise drivers for 'flashing' warnings given to other road users.

Crash outcomes, crash reductions and infringement consequences have been the main features of the campaign. Experience interstate was utilised to demonstrate the benefits of the introduction of cameras. Local medical staff (who are generally well known in the community) were utilised to demonstrate the outcome of crashes from the perspective of people who have to deal with road trauma through their work.

#### *3.4.2.1 Methods Used and Local Considerations*

The unique road environment in the Northern Territory also means that the tourist population is also very much at risk due to inexperience on these roads. Visitor fatalities and injuries are monitored. Visitor handbooks are provided and distributed to the tourist commission, hotels, police, hire cars and others.

With the introduction of speed cameras there has been a lot of free feedback in the press. In the initial introduction phase of speed cameras in the NT the topic raised considerable interest and generated free publicity as a result. Speeding in general is therefore raised as a joint issue.

The relatively small population of the Northern Territory is seen as an advantage. The nature of small communities means that information is quickly transferred, particularly if someone has received an infringement.

The community reaction to the Show Displays conducted by the Road Safety Council indicated a high level of support for speed camera introduction, however some public reaction has been negative. An important role of advertising from a public education perspective is to counter these fears and positively promote the use of speed cameras in the community.

#### *3.4.2.2 Timings and Intensities*

There are about 8 public campaigns a year conducted centrally. This is planned in conjunction with the Road Safety Council. These media campaigns do not always concern speed, as offences such as drink driving are seen as higher priority. These major campaigns coincide with the holiday periods eg Christmas, Easter. Speed enforcement is more concentrated during these periods

#### *3.4.2.3 Performance Measures and Public Perceptions*

To gain a better understanding of road safety problems in the NT the focus is increasingly on crashes, particularly on those that result in a serious injury (including death) rather than solely on fatal crashes.

The speed camera program performance measures are likely to include crash data, number of tickets issued and speed profiles. Some professional attitude monitoring has been completed, and included a variety of age groups and also some visitors to the area. People were found to be supportive of the speed cameras.

### 3.4.3 Specific Public Education Campaigns

Intensive media activity as been undertaken as part of the introduction of speed cameras. A main focus was informing the public of the use and need for speed cameras. Various methods have been used to deliver the message including:

- television, radio and print advertising,
- press releases and public relations activities,
- letter box drops,
- Internet information pages,
- NT Road Safety Council displays used on the local 'show circuit' and the 1998 Boating, Motoring and Leisure Show in Darwin, illustrating the benefits of the cameras, with NT Police demonstrating camera operation,
- media conferences,
- speeding cards indicating speeds and stopping distances,
- a compilation of the most commonly asked questions concerning speed cameras,
- local government working groups, and
- corporate consultation, and details on the management of fleet vehicles.

'Explorers Highway'

Initiated by the NT Road Safety Council and developed jointly with the NT and SA Tourist Commission, the 'Explorers Highway' campaign is a program that stretches from Darwin to Adelaide along the Stuart Highway. It involves promoting safe driving habits on lengthy journeys such as breaking up the journey by using rest stops and slowing down. There are games for adults and children included in this package, whilst promoting road safety. Information is also provided at various roadhouses along the way.

Driver Training And Licensing Program

Funded by the Territory Insurance Office the driver training and licensing program is designed for novice car drivers. It is a safety focused education program, with speed covered within the course.

### 3.4.4 Other Public Education Issues

No other issues were raised.

## 3.5 Queensland

### 3.5.1 Organisation and Funding

A speed management strategy has been developed by Queensland Transport and Queensland Police Service in conjunction with Department of Main Roads, local governments, the Local Government Association of Australia, the Royal Automobile Club of Queensland (RACQ) and other key stakeholder and industry groups. This strategy is coordinated by the Speed Management Executive Steering Committee, which was established in 1994. Responsibility for implementing the speed management strategy lies with the Project Board that is comprised of representatives from Queensland Transport, Queensland Police service and Department of Main Roads.

To assist with the implementation of speed management initiatives a number of reference groups have been established. These are:

- The Engineering Reference Group,
- The Communication and Public Education Reference group,
- The Enforcement and Legislation Reference Group, and
- The Strategy and Evaluation Reference Group.

Working groups have also been established to concentrate on detailed aspects of implementation.

Queensland Transport is responsible for developing most of the educational material in conjunction with their media agency and other stakeholders. The media agency is briefed on the project and is expected to develop relevant advertising concepts. Once these concepts have been presented and approved by Queensland Transport, production begins. Any market research that is undertaken through the media agency is completed by an independent organisation.

#### *3.5.1.1 Coordination and Police Involvement*

The engineering, enforcement and educational aspects of speed management strategy combine together to aim to influence the behaviour of motorists and improve road strategy by achieving safer road speeds. The first stage of the strategy was the introduction of speed cameras to state government-controlled roads from 1 May 1997. The second stage of the strategy was the introduction of a 50 km/h local street speed limit in built-up areas of South-East Queensland from 1 March 1999. The third stage of the strategy is the expansion of the speed camera program to allow for operation on local government-controlled roads. This will occur on a progressive basis having commenced in South-East Queensland from 1 June 1999.

Educational programs are completed concurrently with enforcement programs. If there are any regional enforcement programs being implemented by local police, assistance with a local campaign for that area will be provided.

Development of the speed management strategy has resulted in strong links between the Queensland Police Service and Queensland Transport personnel with a focus on road safety and in particular speed management. Representatives from these organisations combine with other stakeholder groups to ensure the effective development and implementation of the strategy. This collaboration is evidenced through the establishment of the Speed Management Project Board, Executive Steering Committee and other Reference Groups all of which comprise Police and transport representatives as well as other stakeholders. This coordinated approach is also evidenced at a regional level through the functioning of the Regional Speed Management Advisory Committees.

#### *3.5.1.2 Funding*

Budgets for various public education campaigns are as follows:

- 1996/1997 - $1M
- 1997/1998 - $1.5M
- 1998/1999 - $2M
- 1999/2000 - $2M

Any revenue received from the speed camera program which remains after the funding of the administrative and operating costs of the program must be used in one of three areas. These are:

- road safety education programs,
- rehabilitation programs, or for
- the treatment of road safety blackspots.

The Motor Accident Insurance Commission provides funding for a number of speed related initiatives.

### 3.5.2 Public Education Strategy

The educational component of the strategy is aimed at delivering clear, consistent, up to date information in a uniform manner. Education consists of mass media campaigns, stakeholder consultation and public relations activities. Information about the speed management strategy and its implementation is relayed using educational tools to the public, the media and key government, community and industry stakeholders.

This enables mass media 'umbrella' campaigns to be delivered across South-East Queensland and statewide. In addition this joint effort enables area specific information to be delivered at a local community level when required. Local governments participating in speed management initiatives are encouraged to undertake additional educational and promotional activities at a local level.

The raising of public awareness in relation to speed management issues is aimed at changing community attitudes to speeding and altering driving behaviour.

At present with the introduction of the 50 km/h local street speed limit the focus is on an educational program that deals with providing information about the issues of speeding and why not to speed. It will also explain the need for introducing the 50 km/h speed limit. The promotion of the enforcement side of the strategy (ie. the fines) is not focussed on in media activities.

The use of speed cameras in Queensland is a relatively new initiative. High levels of media activity which promotes speeding related initiatives were undertaken to inform the public of the introduction and operation of speed cameras. A high profile media campaign is also being undertaken as part of the introduction of the 50 km/h local street speed limit. Speeding related initiatives have been rated as a high priority.

#### *3.5.2.1 Methods Used and Local Considerations*

There are four Queensland Transport regional road safety managers throughout the State who deal with the local media and the dissemination of information in their areas. Between two and six road safety consultants are employed in each region, and undertake local community liaison.

#### *3.5.2.2 Timings and Intensities*

Refer to "specific public education campaigns" below.

#### *3.5.2.3 Performance Measures and Public Perceptions*

The communications unit of the speed management strategy conducts a number of surveys regarding attitudes to road safety issues and recall of media material among the general public.

Through the Speed Management Strategy and Evaluation Reference Group, Queensland Transport and Queensland Police Service produce details on the effectiveness of speed cameras, based on speed related crash data and other indicators such as speed distributions and offence detection rates. These reports are generated periodically and provide the ability for long term monitoring of the program.

Evaluations will also be undertaken of the effectiveness of the 50 km/h local street speed limit. These evaluations will look at similar indicators such as:

- Attitudinal data and level of public support,
- crash rates,
- speed distributions,
- enforcement levels,
- offence detection rates, and
- level of complaints.

### 3.5.3 Specific Public Education Campaigns

The communication objectives of the educational aspect of stage 2 of the speed management strategy are:

- To raise the awareness of the 50 km/h local street speed limit and to increase compliance for the lower limit by communicating information about its application and introduction,
- To raise awareness of the safety aspects and lifestyle benefits of a lower speed limit,
- To raise awareness of the need for compliance with all speed limits and the danger of speeding on any street or road.

During 1996/1997 a public education campaign which was aimed at speed reduction was undertaken.

Public education activities were undertaken during amnesty periods to help assist with the delivery of the road safety message to the public. The introduction of speed cameras was associated with a six-week amnesty and the introduction of the 50 km/h local street speed limit has a three-month amnesty.

*50 km/h Local Speed Limit*

This campaign has a three-tiered message which incorporates 'save lives, reduce crashes and make future communities liveable'. The focus of the campaign is on the reason for the introduction of the 50 km/h speed limit and the benefits of this rather than the penalties for not complying. It helps to take the emphasis away from the revenue slant towards a community based approach. This initiative is at present only covering South-East Queensland.

The public education campaign has and continues to involve the use of television, radio and newspaper advertising which is conducted on a statewide basis, but focuses on the South-East Queensland area. Local level public information and promotional activities are also used.

The educational campaign surrounding the introduction of the 50 km/h local street speed limit were accompanied by an amnesty period from 1 March 1999 to 1 June 1999. Motorists caught exceeding the speed limit by a minor amount during this amnesty period were given a caution and a brochure (about the reasons for the changes) rather than a ticket. However, it should be noted that excessive speeding or dangerous driving was not tolerated and offenders were fined accordingly.

*Road Sense 99*

This campaign follows on from the successful "Campaign 300" initiative run during 1998. Road Sense 99 is aimed at road safety generally. Articles are run in the newspaper daily featuring road safety issues (including speed-related topics).

*Earlier Campaigns*

Themes used for previous advertising campaigns in Queensland have centred on conveying the message that speeding is not safe, with concepts including:

- Do You Drive too Fast for the Unexpected?
- Introduction of speed cameras,
- Even doing 10 km/h over the speed limit can have deadly consequences, and
- There is no such thing as safe speeding.

Significant advertising also accompanied the introduction of speed cameras in Queensland.

### 3.5.4 Other Public Education Issues

No other issues raised.

## 3.6 South Australia

### 3.6.1 Organisation and Funding

Transport SA undertake road safety public education in South Australia.

#### *3.6.1.1 Coordination and Police Involvement*

Through the Road Safety Marketing Strategy Committee, an annual workshop is held to discuss and review strategies and performance, and determine tactics for the following year. Involvement in this group includes Transport SA, the Police, the Motor Accident Commission (MAC), the Local Government Association, the Health Commission and the Education Department.

The media in South Australia uses a two-fold approach to speed education. One is everyday contact with the media through the Police service and the other is the driving focus of an overall media marketing strategy.

Any changes to operations or equipment are relayed to the public, through press releases. The speed camera operations within SA commonly feature in the media - with this publicity seen as positive to the overall aim of heightening the awareness of speed cameras and reducing speed

#### *3.6.1.2 Funding*

Following reviews of the method and funding of public education initiatives, the Motor Accident Commission (MAC) became involved in funding media activity. A high focus was placed on evaluation of the effectiveness of media activity and quantifying any benefits derived from expenditure.

As a result, Transport SA is undergoing a three year evaluation of media effectiveness for speed enforcement. Linked to this is a three year media component, which will consist of integrated television and radio commercials.

Presently the speed campaign, and its evaluation over three years, is budgeted to cost $2.8 million. This involves approximately $800,000 annually on production and placement costs, and $400,000 for the evaluation over a three year time period. The majority of spending in monetary terms remains drink-driving related with approximately 67% of the budget focussed on drink-driving initiatives and the remaining 33% spent on speeding.

### 3.6.2 Public Education Strategy

The focus of advertising in SA is to convey the message that speeding is dangerous and can have consequences for both the individual and other people.

The media campaigns in SA are aimed at educating the public on the links between speeding and the risk of having a crash. A working group consisting of representatives from Transport SA, Police, the University of Adelaide Road Accident Research Unit and others, was formed to develop strategies for public education. Outcomes from the working group led to a main focus of targeting lower end speeding (10-20 km/h over the limit). A reduction in the average speed of the majority of motorists was seen as providing the highest likely road safety benefits. This theme has been consistent throughout all media activities with the approach targeting attitudinal changes over the longer term.

Although the focus of the campaigns was aimed at all drivers, a bias towards younger male drivers was adopted. Sixty percent of media activities focussed on the 16-30 age group, with the remainder dealing with the 31 plus age group. Radio in particular was used to reach the various target markets.

The focus of advertisements used in South Australia had been predominantly rational, with the more highly emotive advertisements the subject of varying opinions.

Prior to 1993, government research and investment in speed related public education was limited. A research study conducted at this time found that the public did not perceive speeding as a crash risk, with speeding considered ‘safe’ in certain circumstances. The results of the survey recommended the instigation of a media campaign to inform the public of the links between speeding and crashes. In addition to this speed was identified as a key issue within other state wide and national strategies. The government of the day also wished to address the issue of speed cameras being viewed as a revenue raising device rather than a tool aimed at improving road safety.

In 1995, a two phase media campaign was conducted in the Adelaide area. The first phase involved the education of the public about risks associated with speeding, and the second phase was a supportive tool for a high intensity police enforcement campaign. Public opinion surveys were conducted in conjunction with this.

A review of speed enforcement and public education was completed in early 1996 by MUARC and is referred to as the Vulcan report. Initiated by the SA Road Safety Consultative Council, the study suggested various changes to the level and form of media involvement in South Australia.

#### *3.6.2.1 Methods Used and Local Considerations*

The campaigns for rural areas attempt to cater for different environments and focus on community related issues. The community is involved and a localised action plan is developed in conjunction with the police and key stakeholders in the community. The police are actively involved in this educational approach.

The State Government in SA purchases media activities across all departments and agencies, with associated savings from bulk purchases. Some free-to-air publicity is provided, however with the current trial on speed related media activities, free-to-air advertisements have been forfeited to ensure units of media activity remain controlled throughout the study. A difficulty seen with free-to-air media activity is that there is less control over ensuring the advertisements fit with the current targeted activities.

At the commencement of major campaigns, the Minister responsible will be involved in the launch to provide added intensity and awareness of the campaign. On an ongoing basis, contact with the media outlets is generally restricted to a Ministerial level, with other contact negligible. The same arrangements are not evident within the Police structure.

Print media is seen as a more appropriate and effective tool in rural areas and small towns, with radio and television the primary medium used in metropolitan areas.

A common trend in regional areas is the separation of radio stations and market share. For example new stations operating on the 'FM' band target the youth market, and the 'AM band station concentrating on other demographic groups. This then creates a problem regarding placement of advertising, within fixed budgets.

Clever advertising methods are seen as necessary to ensure drivers from all backgrounds receive and equally understand the desired road safety messages.

#### *3.6.2.2 Timings and Intensities*

Through the Road Safety Marketing Strategy Committee an annual road safety advertising campaign is devised, with initiatives integrated with enforcement operations. A high priority is placed on ensuring coordination between police enforcement and related advertising campaigns.

#### *3.6.2.3 Performance Measures and Public Perceptions*

In relation to earlier campaigns, surveys of community attitudes (generally samples of 800) have been conducted in relation to the public's behaviour, reasons and attitudes concerning speeding, and issues related to the effectiveness of the particular campaigns.

A three year evaluation on the effectiveness of speed advertising is currently being undertaken by Transport SA. The evaluation commenced on 1 January 1998 and is being conducted by the University of South Australia. This will involve examining in-depth measures including crash data, observational studies of motorists, surveys (with samples of 400 now used) and focus groups. A key component of the evaluation is the regular monitoring of speeds at a number of control sites around Adelaide. Data from these sites will be recorded at designated times throughout the three year period. Various types and levels of media exposure are planned throughout the period. A number of other factors are being tracked throughout the trial, including seasonal liquor sales and fuel sales, in an attempt to isolate influencing factors.

Given the nature of speeding behaviour - and the likely long-term influence needed to change it- attitudes and more importantly actions, care is being taken not to draw major conclusions at the interim stages of the project.

An issue related to workshops, focus groups and survey results is the 'third person syndrome'. Respondents tend to report the effect that the issue will have on other people, not the effect it will have on themselves. To minimise this, it is important that the format of questions be carefully considered.

### 3.6.3 Specific Public Education Campaigns

Speeding - Think About The Impact (Mid-1995-Mid 1997)
The message was adopted for a series of different advertisements over the two year period. Focus groups were used in testing the message, and the ranges of possibilities of expressing the message were considered. Over the period the 'impact' considered personal, emotional, loss of licence, loss of status and damage to property amongst others.

3 Year Media Campaign And Evaluation
As mentioned above, SA is currently introducing a three year media campaign concentrated in the Adelaide area. This will be coupled with an evaluation program designed to assess the effectiveness of media and education in reducing speeds and speed related crashes, and ultimately determines the dose relationship for media activities.

The aim specific to 1998 is to convince motorists that;

- there is a link between speeding and likelihood of a crash, with particular reference to lower end speeds above posted limits
- if they speed they are likely to get caught
- the consequences of a speed related crash will affect them personally.

Stemming from the strategies developed in 1995, the current campaign aims to continue the three-part education strategy involving elements of enforcement/deterrence, consequences and information. The issues relevant to these areas are:

Enforcement /Deterrence

- increase the perceived risk of the likelihood of being caught, and
- increase fear of the penalties applied if caught.

Crash Consequences

- increase perception of likelihood of crashing due to speeding,
- increase fear of hurting someone else if involved in a speeding crash, and
- increase fear of hurting oneself if involved in a speeding crash.

Information To Be Relayed

- Crash causation
- illustrate a statistical relationship between speed and crash risk,
- demonstrate an increase in stopping distance in relation to increased speeds,
- communicate fallibility of hazard perception if drivers not travelling at anticipated/average speed, and
- show increase in crash severity in relation to increased speeds.

Personal incentive

- identify trade offs for travel at reduced speeds.

### 3.6.4 Other Public Education Issues

In selecting appropriate mediums pay-to-air TV operations create some difficulties when selecting appropriate stations and time-slots for advertisements given the large selection available to the viewer. Advertising on the Internet is also recognised as an emerging medium with potential.

## 3.7 Tasmania

### 3.7.1 Organisation and Funding

The approach to media and enforcement in Tasmania changed significantly in October 1996, with the introduction of the Road Safety Task Force and funding from the Tasmanian Motor Accident Insurance

Board (MAIB) at least until June 1999. The desired aim of the funding is to reduce the number of serious injury crashes in Tasmania, through a combined education and enforcement initiative. Prior to the establishment of the Road Safety Task Force advertising initiatives were conducted by the Road Safety Branch (RSB), Education Section of the Department of Transport, with advertising levels generally limited compared to current levels.

#### *3.7.1.1 Coordination and Police Involvement*

The Road Safety Task Force includes representatives from the Tasmania Police Service, and any educational initiatives are scheduled to coordinate with Police activities. Police are generally involved in any new campaign launches, and a program of media activity is provided to the Police on a regular basis. The Police provide strategy information one month in advance and report on progress regularly. Any concentrated enforcement activities are backed up with associated press releases and other public relations activities.

The Division of Transport provides regular intelligence information to the Police through the Accident Reduction Program. The program splits crash data into 34 police jurisdictional areas, with blackspots identified and attendance schedules for enforcement activities provided. This program has been running for approximately six years. Crash data is also provided to the Road Safety Task Force, split into the four Police Regions.

The Tasmanian Police do not have a budget available for paid advertising.

#### *3.7.1.2 Funding*

The MAIB provides funding (in the order of $1.246m) for the operation of the Road Safety Task Force. Approximately half of the budget is used for enforcement activities with the remaining half utilised for media activities. The majority of this funding is used for speed and drink driving initiatives. The Road Safety Branch of the Division of Transport has maintained its funding levels over successive years for use primarily in a school education and statistical research capacity, and some public education activities.

### 3.7.2 Public Education Strategy

The focus for advertisements was based on a series of focus groups undertaken across the main centres of Tasmania. Quantitative research was conducted to identify those groups for whom a significant reduction in serious injury crashes may be possible, with speed, drink driving and knowledge of road rules identified as potential areas for improvement. The 17-25 age group and the 25-55 year old group were identified as target groups.

When determining whether to adopt a rational or emotive approach to advertising, focus groups were asked what type of message would be more likely to persuade a change in behaviour. The groups generally felt that the risk of being involved in a crash was remote, and therefore emotive type advertising was unlikely to create a change. The threat of being caught, and subsequently fined or the threat of loss of licence was seen as a greater deterrence to speeding. Relaying a ‘social responsibility’ message on why people shouldn’t speed remains an option for the future, however the primary aim at present is to increase the awareness of enforcement.

From the consultation phase, the message ‘Think Again’ was adopted as a ‘brand’ for all advertising. From a speeding perspective this was related to the threat of being caught, with television, print and radio, in conjunction with public relations activities, used to deliver the message. The Think Again brand is utilised with all advertising - whether drink driving, speed or road rules related.

Funding from the Road Safety Task Force was also used to increase knowledge of Police and speed camera presence on the roads, thereby ensuring that the perceived increased risk of being caught was reflected in practice. In relation to speeding, enforcement sets the agenda, with education and media activities existing to promote enforcement, and to promote the way motorists should drive.

#### *3.7.2.1 Methods Used and Local Considerations*

Relationships with the media outlets in Tasmania are strong. Two commercial television stations support the road safety cause by providing free commercial slots for each paid advertisement placed. Further provisions

for airing the Road Safety Task Force advertisements is made through available 'Community Service Announcement' time slots. The ABC also plays some advertisements as community messages.

Arrangements with radio and print media are similar, with bonus advertisements also provided. These provisions have developed from the Road Safety Task Force approaching individual managers of the various outlets.

One of the radio stations in Hobart broadcasts the actual location of speed cameras. Although not supported by Police or Road Safety Task Force members, a secondary outcome of the initiative has been to raise the awareness of speed cameras. Through consultation with station managers, road safety messages are also provided with the location information.

As part of the education program of the Road Safety Branch (RSB) of the Division of Transport the Year 10 school program includes details relating to speeding and drink driving. Road Safety Officers talk to students and deliver various messages, with teachers also informed of the road safety message. The road safety message is being progressively incorporated within the curriculum of the Department of Education.

#### *3.7.2.2 Timings and Intensities*

In the first year of operation, high levels of advertising were used over short periods to make the message known. Research indicated lower infringement rates during periods of advertising, with the approach altered to provide consistent levels of advertising in the second year of operation.

#### *3.7.2.3 Performance Measures and Public Perceptions*

When evaluating advertising initiatives, the main parameters relate to driver attitudes, and to behavioural aspects. Focus groups have been used to address these issues. Budgetary constraints have limited post-evaluation of the 'Smile' and 'How's That' campaigns (refer "Specific Public Education Campaigns" below), however a more extensive evaluation of the 'chameleon' campaign is planned. During a campaign, tracking activities are undertaken focusing more on the retention of the message. Initial tracking studies indicate a high level of retention and behaviour alteration in response to this campaign.

The Road Safety Task Force has been established with the mandate to reduce serious injury crashes. The MAIB hold their own crash and crash outcome records, and they produce a quarterly report based on them.

When considering speed data, the whole speed distribution and any shift in that distribution is considered valuable, although evaluation of this nature is not currently conducted.

The potential to undertake a detailed evaluation of the Road Safety Task Force's contribution to road safety has been completed by Monash University. The group considers that data available from Police, the Division of Transport and the Road Safety Task Force is sufficient to conduct a meaningful evaluation of Task Force operations. At present the 'evaluation' is nearing completion, with report outputs expected later in 1999.

### 3.7.3 Specific Public Education Campaigns

Prior to the establishment of the Road Safety Task Force the primary campaign utilised was based on the message 'Don't Lose It'. Running over a period of two years, the campaign involved 6-8 people actually injured in road crashes. Some targeting of this message was carried out, and was run in conjunction with concentrated Police activity. Some minor market research and evaluation of the campaign was completed.

The Think Again brand is now utilised with all Road Safety Task Force campaigns. The aim of the campaign was to inform people that the likelihood of detection committing an offence was higher. This was achieved by using actual speed camera photographs (with background music) and was known as the 'Smile' campaign. With different background music the series was repeated the following year and was known as the 'How's That' campaign. Television, press, radio and public relations activities were used to deliver the message.

The latest (award winning) campaign was designed to reflect a change in technology for speed cameras. With the devices now able to photograph forward or backward, a chameleon was used indicating shots in any direction.

When programming advertisements, bookings are made well in advance - providing competitive rates in addition to the bonuses offered by the media outlets. Advertising is similar across the state, however some tailoring has occurred to reflect local community's individual needs.

### 3.7.4 Other Public Education Issues

The various definitions and recording methods for crash data are highlighted as a difficulty in measuring the effectiveness of campaigns based solely on crash numbers.

The need for educating initiatives targeted at drivers 'travelling too fast for the conditions' is recognised, however methods of defining and relaying such a message are considered difficult.

## 3.8 Victoria

Speed (and road safety) related advertising and publicity is the responsibility of the Transport Accident Commission (TAC) in Victoria. In addition a Police schools program takes local Police into schools to discuss traffic, speed and other key issues. There is also an active Police role in addressing a variety of community groups. VicRoads also has a public information and schools program.

### 3.8.1 Organisation and Funding

The Transport Accident Commission (TAC) was formed in 1986, with a primary objective to reduce the incidence and cost of road trauma. An integrated approach with VicRoads and the Victoria Police was adopted in 1989, with the TAC focussing on a marketing role which targets excessive speed as one of its key issues. Prior to that date, VicRoads was responsible for road safety advertising, with funding support provided by the TAC over a period of some years.

Police have a key role in developing programs and materials, and have twice yearly consultation with TAC and advertisers.

#### *3.8.1.1 Coordination and Police Involvement*

Campaigns are developed in close cooperation with Victoria Police. Efforts are made to ensure that police practices mirror the communications and, where practicable, enforcement activity is boosted in coordination with advertising campaigns.

The TAC has donated speed enforcement equipment to the Victorian Police on a number of occasions. A Memorandum of Understanding accompanies the donation between the two agencies concerning the 'level of use' of the equipment over its lifetime. For large-scale donations, an independent study is usually commissioned to evaluate equipment deployment in terms of crash-based outcomes. The Victoria Police then undertake various audits of use with regular performance reports provided to the TAC.

A consultative committee structure has been established to oversee the implementation of Victoria's road safety strategy 'Safety First'. There is not, however, a specific task force to deal with the issue of 'Speed'. Outputs of the committees include policy decisions, strategy development, review of strategy implementation, calendar of events etc.

#### *3.8.1.2 Funding*

The TAC invests approximately $3m annually in public education that addresses speed (compared with a total media budget of about $18m: other areas include drink driving, poor concentration, fatigue and non-restraint wearing). These costs include production, media and supporting market research costs. Three to four separate campaigns addressing 'speed' are put to air on average each year.

### 3.8.2 Public Education Strategy

Campaigns related to speeding have focused on challenging driver attitudes toward road safety. Market research indicated that emotive, realistic advertising detailing the consequences of road trauma should be adopted to promote awareness that 'this could happen to me'. The development of 'brand' names, which

were memorable, striking and short, was seen as useful in giving the campaigns a strong presence. From the TAC homepage at *www.tac.vic.gov.au* the campaign objectives are listed as:

- to get the key road safety issues on the public agenda,
- to increase the perceived risk of being involved in a (crash) through the portrayal of crashes and their consequences,
- to deter road users from unsafe behaviour by promoting the risk of police detection,
- to support the police in their enforcement role, and
- to provide information to assist road users in making sensible decisions regarding their behaviour on the road. (*www.tac.vic.gov.au*).

With regard to media activities targeted at speed, the brand 'Don't fool yourself, speed kills' was adopted. This brand has been continuously sold with a variety of different campaigns as is highlighted later in the section detailing specific campaigns.

The TAC develops public education campaigns targeting speeding, including 'inappropriate', 'excessive' and 'safe' speeding - that is speeds up to about 10km/h over the limit. Two main types of communication are used:

- increasing the perceived risk of crash involvement due to speed and to highlight the tragic consequences that result, and
- highlight speed enforcement activities, support police and increase driver perception of the risk of detection.

In recent years, a greater emphasis has been placed on communications that portray enforcement practices with a view to increasing the perceived risk of detection. Currently, approximately equal weighting is assigned to the two main types of messages – those with an enforcement focus and those with an 'emotive' element focusing on crash outcomes and their aftermath. Communications are increasingly combining an 'emotive' element with an 'instructive' element for example. '10 k's less'.

The over representation of young drivers in road trauma was recognised, and a specific youth strategy was developed. Research that identified typical aspects of Victorian teenager behaviour, concluded that 'overall attitudes and behaviours of 13-17 year olds carry over and influence road safety and road use when a young person comes of driving age and becomes an adult road user'.

As a result, the TAC produced an in-school education program (RAW) aimed at 12-16 year olds (years 7-10). Through the encouragement of positive social attitudes the program allows youths to develop their own conclusions in regard to high-risk behaviours. Information is also directed to learner drivers following the issuing of a learner's permit.

Research undertaken by MUARC suggested that the combined influence of enforcement plus media resulted in significant cost-beneficial returns in terms of reducing the level of serious casualty crashes. Updated information in terms of dose-response is currently unavailable.

The main focus of advertising in Victoria is on campaigns where an integrated approach involving communications and intensive enforcement activity is practical. 'Speed' and 'Drink-drive' are the main programs, for this reason but significant resources are also devoted to 'Fatigue' and 'Restraint use'.

#### *3.8.2.1 Methods Used and Local Considerations*

The media approach differs little between metropolitan and country areas. However, the use of roadside mobile billboards is more usual in country areas.

At times, advertisements are customised to suit metropolitan and country audiences. In some instances, the locations and talent are chosen to ensure equal relevance to the audience in each region.

Television is the primary means of communication in most campaigns but it is usually supported with a range of ancillary media including radio, press and billboards (static and mobile).

It is difficult to separate out the individual effects of each media type on road safety. Tracking surveys would suggest that television achieves the greatest reach and recall, which is likely to be a function of both the level of 'stimulus' provided by this medium and of the relative level of expenditure.

Both radio and outdoor advertising are viewed as an effective means of communicating with the target audience while they are on the road. Radio is particularly effective in targeting young people. Level of recall of radio and outdoor advertising is commensurate with the level of expenditure.

Mobile billboards are commonly used at times when crash risk is higher (at a cost of approximately $150,000 annually). Billboards have the added benefit of being seen when drivers are in their vehicles and can be targeted at problem locations. Police enforcement campaigns and reinforcement of television campaigns are often displayed on billboards.

Sponsorship is viewed as an adjunct to the media-based campaigns, the opportunity to extend message reach to key high risk groups (for example, sponsorship of sporting events in an effective way to reach young males), and to niche markets not readily reached through mainstream media.

The use of the Internet as a further form of communication is being expanded incrementally. Access to this medium is increasing rapidly, but currently its role is in support of the main media.

All radio stations offer some free community service announcement spots with each paid schedule. Bonus spots on TV are available but they are used with care as they can lead to over-exposure of specific advertisements. Public relations activities are seen as an important part of the communication process as they increase the salience of the message and provide the context for a particular public education campaign. A variety of means are used to generate publicity including launches, media packs, editorial, radio talk back etc. Assessment of public relations has been undertaken only in terms of the levels of media coverage generated. It is viewed as one component of a total communication process, which is subject to overall assessment.

#### *3.8.2.2 Timings and Intensities*

A Committee representing VicRoads, Victoria Police and the TAC has reviewed timings of campaigns. A number of factors are involved in final selection of the campaign calendar including the incidence of relevant crash types and linkages to major events or seasons including Christmas, Easter, football finals etc.

Media intensity has been reducing in recent years for two primary reasons:

- MUARC research that suggested that certain styles of drink-drive enforcement in rural areas combined with high levels of drink-drive advertising gave rise to increased crash numbers on back-roads.
- The idea that impactful advertising needed fewer repeat viewings by the intended target audience – an audience that is now very familiar with the key campaign slogans.

Typical weekly TARPs for a launch are about 200 while maintenance levels are between 100-150.

#### *3.8.2.3 Performance Measures and Public Perceptions*

Tracking surveys are completed on a regular basis to determine the relevance, reach and acceptability of communication methods. In some instances questions are included to determine the community's perception of levels of enforcement activity.

Market research suggests that the most effective approach is single-minded with one campaign message running at a time.

The surveys are also used to gauge audience response to advertising approaches, ensuring that any issues that emerge (eg. audience wear-out) are identified, and appropriate communication responses are developed.

MUARC has conducted a number of evaluation studies concerning the effectiveness of speed camera operations in conjunction with mass media support. Results have been favourable with both 'localised' and 'generalised' effects evident. Independent evaluations (crash-based) of the deployment of moving mode radar units and laser units have recently been completed and are detailed in the literature review within Volume 1.

From a TAC perspective, BCR analysis is undertaken before equipment is donated to Victoria Police. This ensures that the likely financial returns, in terms of reduced claims, significantly outweigh equipment costs.

### 3.8.3 Specific Public Education Campaigns

Speed related campaigns conducted by TAC are listed on their web page at 'www.tac.vic.gov.au' as follows:

**'April 1990. Beach Road** - Distraught mother cradles her little boy, run down by a speeding driver.

**April 1990. Speed Camera** - Dr Michael Johnston talks about the introduction of speed cameras by the Victoria Police to reduce speeding related trauma.

**August 1990. Tracey** - Young woman driver changes a tape while speeding; has a crash that kills her best friend.

**September 1993. Six O'Clock News** - Young men set out on fishing trip. Shocked family recognises their mangled car on the television news.

**November 1993. Courtroom** - Impatient woman passes on emergency lane; kills man changing tyre; is charged with manslaughter.

**September 1995. Mum in a Hurry** - A young mother takes short cut to school and kills a young boy. Crash due to excessive speed.

**June 1996. Gravel Truck** - Car load of young people; driver passes on a narrow road and loses control of vehicle, clipping an oncoming vehicle and crashing into a tree.

**November 1996. Laser** - Victoria Police demonstrate the effectiveness of the new laser speed equipment which can pinpoint individual speeding cars in traffic.

**November 1996. Mobile Radar** - Young men speeding on a country road are caught by an unmarked police car using mobile radar equipment.

**May 1997. 10 km Less** - A car travelling at 70 kph hits a pedestrian, and the severe trauma caused is explained by Dr Richard, a surgeon. A vehicle travelling only 10 kph less is shown pulling up before hitting a pedestrian. ‘

### 3.8.4 Other Public Education Issues

Evaluation of earlier campaigns indicated the need for realistic and credible advertising to ensure the public could fully relate to the causes and consequences being delivered, and could relate then to their own behaviours. Reactions that appear staged may allow the viewer to distance themselves from the cause and consequence.

A need is seen for ‘action’ based research in which varying speed strategies, coupled with promotional support, are compared across districts or regions. The role of predicability in mitigating the effects of enforcement programs is also seen as an issue requiring further work to develop practical guidelines for speed enforcement practices.

Speed related crashes are viewed as the ideal outcome measure; however there is difficulty in identifying a valid sub-set of the mass crash data that reflects ‘speed’ as a causal factor in the crash. Tracking speed profiles is an important intermediate measure, although often time-consistent longitudinal data at representative sites is difficult to obtain.

When considering the balance of enforcement / media activities, there appears to be strong evidence that automated, covert speed camera enforcement activity at a sustained, high level with supporting mass media can result in significant reductions in speed-related crashes through a general deterrence process. Predicability of enforcement by time and location is, however a threat to the system’s effectiveness. There is less evidence that limited deployment of manually operated speed detection devices requiring interception at the location results in a general deterrence effect.

## 3.9 Western Australia

### 3.9.1 Organisation and Funding

The Department of Transport undertake public education initiatives in Western Australia. These activities are coordinated through the Road Safety Council with members including an independent chairperson and high level representatives from the WA Police Service, Office of Road Safety, Health Department, Main Roads WA, Education Department, Insurance Commission, local government and the automobile club (RAC).

#### *3.9.1.1 Coordination and Police Involvement*

Speed education campaigns are closely tied to speed enforcement initiatives. Consultation and coordination exist and are considered essential between the police and road safety education personnel. High level representation exists on the Road Safety Council, and relationships have developed at other levels between Police and public education personnel. Coordination between Police enforcement and the education initiatives is sought prior to the release of any campaigns.

In April 1997 the WAPS initiated a public information strategy to alter the low perceived benefit of cameras as a road safety tool. This includes the daily advertising of speed camera locations on radio and television.

#### *3.9.1.2 Funding*

During 1997 the total cost of the road safety education programs in WA amounted to approximately $6.8M. In terms of funding, speeding has been allocated the greatest priority in the road safety budget. The allocation for education funding for speeding during 1997 was divided between the two target markets defined as likely to speed. The primary target market was males and education spending in this area totalled approximately $1.2m. The secondary target market was drivers under the age of 30 and funds allocated totalled approximately $1.1m. Approximately 18% of the funding for speeding was spent on the regional media mix.

The budget for speeding education in 1998 was $2m.

### 3.9.2 Public Education Strategy

Speed issues are covered within the guidelines of a 5 year road safety plan in Western Australia. This education initiative will involve the close coordination and cooperation between public safety and police enforcement initiatives. The intent of the road safety action plan was to reduce road trauma through the changing of driver behaviour.

The examination of research has prompted the Road Safety Council to devise a campaign which focuses on the risk of speeding in injuring others and that 'even a small reduction in speed can make a big difference to crash severity'. It has been found that speeding drivers are not very concerned about their own safety. The concepts of the campaign were tested on the target group to determine which was the most effective. In addition to this a secondary focus for speed education is reinforcing the message that if you speed you are likely to get caught. This in particular refers to the use of speed cameras. In WA it is seen as important to closely link community education and police enforcement in order to alter road user behaviour.

Male drivers between 17-39 (particularly 17-24) are seen as the main target group for speed campaigns. A secondary target group is all drivers under thirty. Material relating to those under 30 is given more attention in the Southern and Metropolitan regions. There is no distinction made between metropolitan and regional areas in terms of the message delivered.

#### *3.9.2.1 Methods Used and Local Considerations*

Television, radio, press and outdoor advertising were typically used in 1997 media campaigns.

In addition to public education initiatives the general locations of speed cameras are advertised on one television and one radio station daily. Another radio station encourages callers to ring in with the precise locations of speed cameras that they have seen operating in the metropolitan area. These initiatives are seen as positive and serve to raise the profile of speed enforcement and the risk of being caught. From a Police perspective it is seen as demonstrating to the public that the camera program is not about revenue raising.

#### *3.9.2.2 Timings and Intensities*

In line with other areas of road safety speed is allocated specific times during the year for campaigns to be run.

Speed has been identified as one of the most important road safety issues for community education. Similar time frames for educational campaigns have been identified as relevant to both drink driving and the excessive use of speed, such as the Easter holiday period. Although similar periods are important for intense publicity, drink driving and speeding campaigns do not normally overlap because of their individual significance.

#### *3.9.2.3 Performance Measures and Public Perceptions*

The five year action plan for road safety in WA has outlined its intended overall performance outcome as being a reduction in the number of fatalities and serious injuries of 10% in the year 2001 relative to the average level between 1993 and 1995. (With a projected growth in population of 9% this represents a 19% reduction per 100 000 population).

In general community education intends 'to reduce road trauma by changing road user knowledge, attitudes, behavioural intentions, actual risk behaviours and the number of crashes caused by the risk behaviours.' (Cameron et al, 1997). The achievement of these aims will be measured as well as an economic assessment of the program value.

The evaluation and monitoring of the road safety community education program will involve the following (as provided by Cameron et al, 1997);

- Documentation of the media campaigns. This would record the media initiatives undertaken; the length, duration, content, types of media used, target market, TARPs etc.
- Recording of surveys concerning public knowledge, attitudes and likely behaviour.
- The evaluation of on road behaviour through such things as the number of speeding infringements issued, or speed monitoring.
- The amount of road trauma related to specific behaviour such as speeding
- The use of modelling analysis after an initial period of 2 years to more clearly determine the involvement and relevance of separate factors of the road safety campaign. This will help to isolate the effectiveness of speed reduction related material in comparison to other road safety initiatives.
- Regular reports will also be produced to monitor the ongoing effects of the road safety education program for WA. These will be produced quarterly or 6 monthly to provide on going feedback and suggest any improvements in the current programs.

Detailed market research was conducted for the initial phase of the speed reduction campaign that occurred in February and March 1998. This indicated that the recall for the road safety message was high and that the campaign had been effective in educating the community on the risks of speeding. Issues investigated in this evaluation considered:

- Advertising awareness and recall,
- awareness and understanding of the campaign messages,
- effect of the campaign on target consumer attitudes and beliefs,
- effect of the campaign on behaviour or behavioural intentions, and
- effect of other campaign elements - eg radio press coverage etc.

A focus of the evaluation was identification of the effectiveness of the campaign relevant to both metropolitan and regional Western Australia. (Donovan Research, 1988).

### 3.9.3 Specific Public Education Campaigns

1998 Speed Campaign

Speed campaigns were carried out during August and September 1998. The initial campaign was conducted during February and March 1998. This proved to be successful. The focus of the campaign is emphasising the risk of harming others through speeding and that by reducing speeds by only small amounts the risk of harm to others decreases dramatically. The campaign is based on the premise that 'every 10km/h in vehicle speed can affect stopping distance by up to 50%'. The television advertisement looks at the consequences of an unexpected event (a mother and child in pram crossing the road) and the scenarios associated with different speeds (50, 60 & 70 km/h). The July /August phase of the campaign also included a radio advertisement which focused on the likelihood of being caught for speeding.

### 3.9.4 Other Public Education Issues

With an increasing number of community service advertisements being shown relating to a myriad of health and well-being issues, the need for 'clever' advertising is recognised. To ensure that road safety messages achieve their desired outcomes the education initiatives must be tailored to gain maximum attention and influence.

# 4 APPENDIX 4: POLICE AND COMMUNITY INVOLVEMENT

## 4.1 Australian Capital Territory

The Australian Federal Police play an active role in schools. For senior students the approach is to discuss real stories - from the personal level. Often people injured in road crashes will also be involved in the program. In junior schools the focus is more on the ability of the children to judge distances, speeds and appropriate gaps in traffic streams.

## 4.2 New South Wales

Local Police across NSW are generally involved in local traffic committees. On a site specific basis, Police may also become involved with RTA NSW staff in the assessment of the safety of a location with engineering and enforcement options considered in consultation. Police involvement also occurs at the school level through a 'care' program, with issues broader than speeding discussed.

## 4.3 New Zealand

Community projects at District, City and Regional Council level are funded through the New Zealand Road Safety Program, which distributes $2.47 million and 19,200 Police hours over 14 program areas, one of which is speed – the speed program area in 1998/99 comprises 12 projects, accounting for $41,500 and 560 Police hours.

In 1998/99 each district is to choose three periods, of one month duration each, to conduct any type of campaign (not necessarily speed related) that is relevant to that district (other than Christmas or Easter). Outcome charts are supplied to assist districts in identifying problem areas.

## 4.4 Northern Territory

Aboriginal officers play a role in dealing with problems in local communities. Remote area patrols are also effective for displaying a presence and dealing with problems in rural areas.

A speed camera display was exhibited at local country shows in the rural areas of NT. Police were on hand to illustrate how speed cameras worked and to answer any questions. This helped to raise the awareness of the imminent introduction of the cameras.

## 4.5 Queensland

A focus in Queensland in recent years is the consideration of "Problem Orientated Policing". This approach focuses on the involvement of the community in the identification of problem areas. Primarily completed from a crime perspective an increasing focus is on traffic issues. Local 'intelligence packs' are prepared (maps of problem areas and enforcement levels), as a resource for use in local consultations.

Traffic Advisory Groups are also common across Queensland, and although no rigid structure is in place, the groups are coordinated at a station level (eg Townsville has one major group). These groups discuss all issues in regard to traffic and road safety.

Coordination of inputs has recently commenced with a 'complaints database' now set up and accessible statewide on the police intranet bulletin board.

The local paper ("The Courier Mail") have a regular placement of a column called 'Road Sense' which addresses various road safety and traffic topics on an ongoing basis.

## 4.6 South Australia

Within South Australia there are a number of Community Road Safety Groups established. The groups have in general been initiated by local police, and include local medical staff, local government staff, Transport SA staff and local members of parliament (eg Wattle Ranges in the South-East of the state). The membership of these groups vary depending on the desires of the local people involved. Traffic and road safety related issues are discussed within these groups with local initiatives generated as a result.

Transport SA has recently recruited personnel with the aim of coordinating the Road Safety Groups on a statewide basis.

## 4.7 Tasmania

The Road Safety Branch (RSB) of the Division of Transport are primarily responsible for education level initiatives. The RSB are currently programming initiatives at a local community level where, through the use of road safety consultants funded by the Division of Transport various programs are developed. Currently one local government area (Circular Head) has adopted the program with a series of community workshops being held. Extension of this program is expected within the near future.

At a local government level there is Police involvement as part of various ongoing initiatives.

## 4.8 Victoria

The Policy and Education Unit of the Victorian Police employ eight people on a part time basis. These officers liaise with the community and industry. At a local level, police are involved with Victoria's 23 Community Road Safety Councils, which represent community interest in developing and implementing road safety and trauma reduction strategies. Victoria also has a police schools involvement program which sees specially trained police providing policing support to the school curriculum. Police also have a role in providing input and suggestions to local councils.

## 4.9 Western Australia

RoadWise committees have been established in every major district area within Western Australia (initiated by the Department of Transport and administered by the local government organisation – WAMA). The police take an active role in these committees. Membership on the committees varies however there are usually representatives from local government, local schools, the road authority, local identities and community newspapers. Medical staff are present on some committees. The activities of the group focus highly on community policing issues.

# 5 APPENDIX 5: TRENDS IN ROAD CRASH CASUALTY RATES

Speed enforcement practices have varied over time within every jurisdiction considered as part of this study. Practices vary to a large degree in terms of methods and deployment. A study of the historical trends of measures such as crash data therefore, provided an opportunity to gain a picture of how major initiatives have influenced the ultimate aim of enforcement methods - that is to reduce crashes (refer to Appendix 6 for major changes in speed management practices within each jurisdiction).

Casualty data for the jurisdictions were obtained to consider general trends. In general all jurisdictions have experienced a downward trend in road casualties in recent years, expressed as fatality and hospitalisation rates per 100,000 population and per 100 million vehicle kilometres travelled (mvkt).

## 5.1 Persons Killed per 100,000 Population

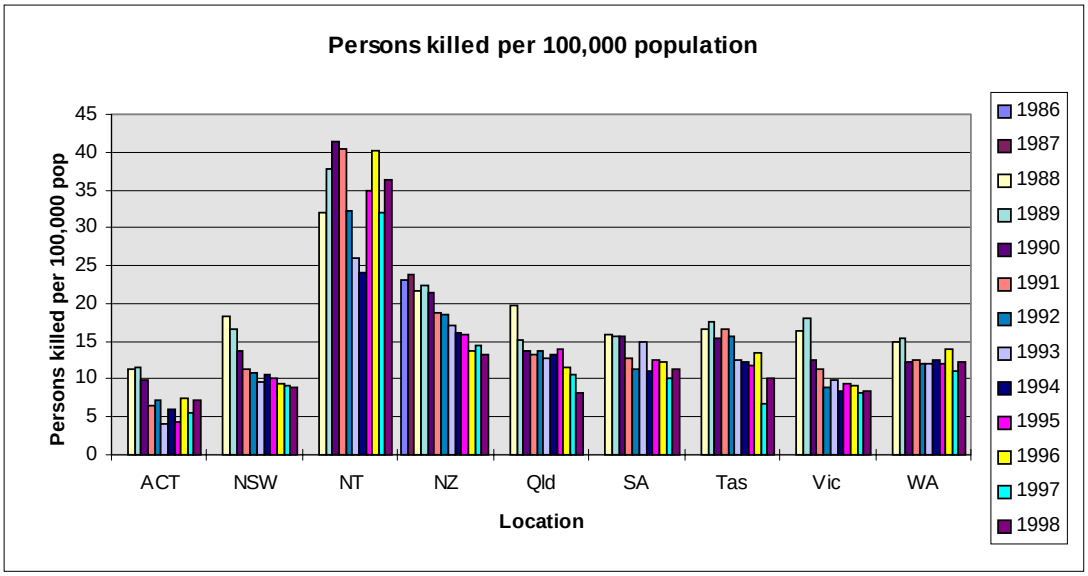


Figure 5.1 — Persons killed per 100,000 population

## 5.2 Persons Killed per 100 Million Vehicle Kilometres of Travel

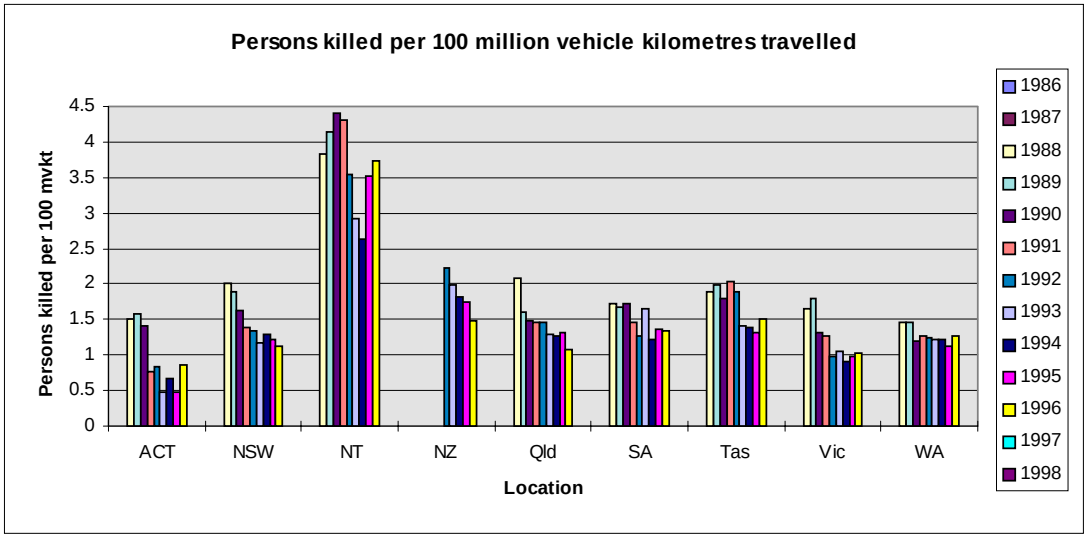


Figure 5.2 — Persons killed per 100 million vehicle kilometres travelled

## 5.3 Persons Injured per 100,000 Population

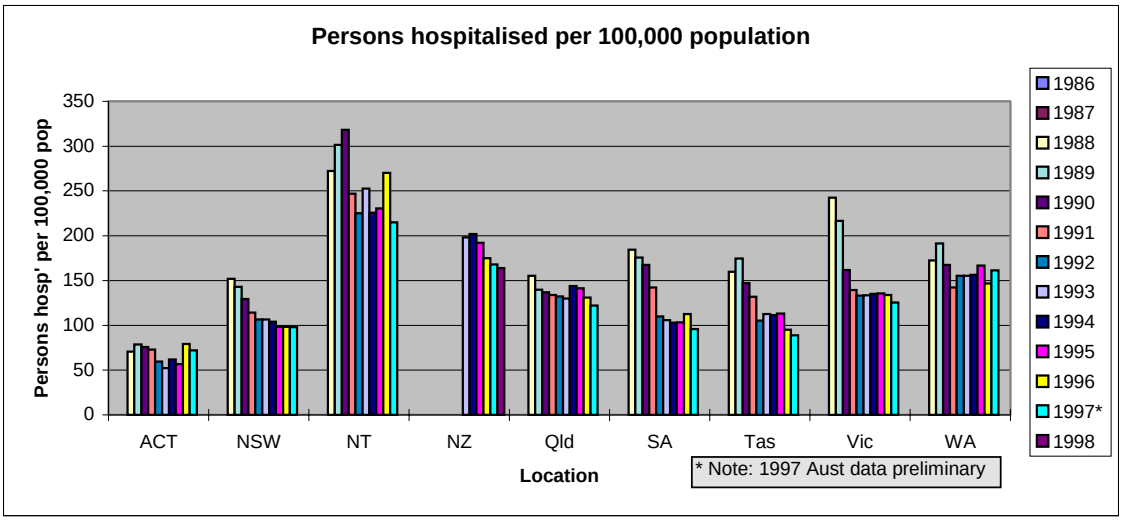


Figure 5.3 — Persons hospitalised per 100,000 population

## 5.4 Persons Injured per 100 Million Vehicle Kilometres of Travel

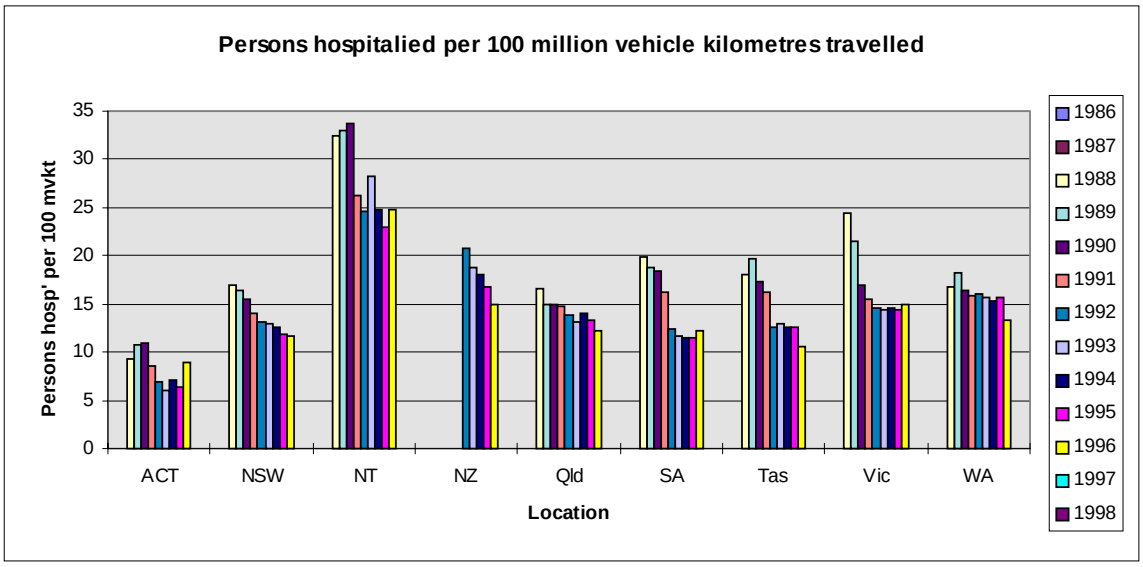


Figure 5.4 — Persons hospitalised per 100 million vehicle kilometres travelled

## 5.5 Summary of Casualty Trends

Based on the crash data presented above, the following summary of trends is provided.

Table 5.1 — General Jurisdiction Crash Trends

| Jurisdiction | Comments |
|---|---|
| ACT | Crash rates have generally decreased, with a noticeable low in 1993. Rates are the lowest across all jurisdictions. |
| NSW | In the last 10 years crash rates within NSW have decreased considerably, with rate of decrease slowing in the last 5 years. |
| NT | Crash rates within the Northern Territory exceed those in every jurisdiction. Results are generally scattered with a low in 1994. Hospitalisation rates indicate a slight downward trend. |
| NZ | A steady decrease in crash rates is evident in New Zealand. |
| Qld | Queensland crash rates have decreased considerably since 1988, to a level in 1998 which represents the lowest rate amongst the jurisdictions studied for 'persons killed per 100,000 population'. Hospitalisations also exhibit a similar drop although not to the same extent. Major changes are evident in 1989 and 1996 and 1998. |
| SA | Fatality rates within South Australia exhibit a downward trend, with some variation from year to year. Hospitalisation rates revealed a sharp decline from 1990, with the effect subsiding in recent years. |
| Tas | Tasmanian crash rates have decreased substantially from 1993 in particular, to a low in 1997, however the trend was not sustained considering 1998 fatality data. |
| Vic | Crash rates experienced considerable reductions around 1990, with the effect sustained, although tapering off in recent years. |
| WA | Western Australia had one of the lowest rates at the commencement of this analysis. Despite drops evident in 1990, levels have remained relatively constant since that time. |

# 6 APPENDIX 6: CHANGES IN SPEED MANAGEMENT PRACTICES

## 6.1 Australian Capital Territory

Table 6.1 — ACT History of Speed Management

| Date | Initiative |
|---|---|
| Sept 1998 | Double demerit scheme on long weekends. Penalties also raised for all offences. |
| _____ to Now | General Duties (or 'Expert Generalist') responsible for speed enforcement |
| | Dedicated Traffic Operations Group disbanded. |
| _____ to Now | 145 patrol cars in total - all with certified speedos (leased vehicles). |
| | Introduction of AUTOCITE operations for issuing and recording of infringement details. |
| Ongoing | Intelligence provision raised. Speed details provided for roads by times by 85$^{th}$ percentile - indicating number of infringing vehicles that could expect to be caught. Current effort to form a partnership with Urban Services to share data on a timely basis. |
| RECENT | 6 new ultralights purchased (Class 1 laser - battery powered) with flexibility to use for crash investigation survey techniques (with appropriate software and training). |
| FUTURE | Introduction of Bar-code licensing details (which will be linked to AUTOCITE, 6 new STALKER units on order (rearward closing and front-on operation - plug into cigarette lighter), cameras currently under investigation with a Sony digital camera and Lasertech units being considered - introduction likely in 1999. |

## 6.2 New South Wales

Table 6.2 — NSW History of Speed Management

| Date | Initiative |
|---|---|
| March 1969 | Demerit point system introduced |
| late 1970's | Slant radars introduced |
| December 1985 | RBT permanent operations |
| 1987 | Move away from use of unmarked vehicles to predominantly marked vehicles, with all police vehicles to be viewed as speed enforcement vehicles. |
| 1990 | The use of radar detectors banned. |
| 1991 | BAC limit of 0.02 introduced for professional drivers |
| 1991 | Introduction of speed cameras (20 AWA cameras - attached to slant radar) |
| 1993 | Expansion of speed camera equipment with cameras located to regional centres. |
| August 1993 | Red light camera program expanded to 39 cameras between 54 sites. |
| 1994 | RTA NSW Enhanced Enforcement Program commenced - with role increasing over the following years - providing additional on-road profile. |
| Easter 1997 | Double Demerit Scheme initiated for holiday periods. |
| August 1997 | Fixed camera site installed in Sydney Harbour Tunnel. |
| December 1996 | 12 speed camera cars (reduced use of slant radar cameras, as maintenance required increased). |
| May 1998 | Intelligence levels considerably raised with input provided to regions |
| May 1998 | Additional six speed cameras (camera cars) purchased. Currently 7 located in regional areas. |
| 1 July 1998 | Habitual traffic offenders act passed, with 3 serious offences in 5 years resulting in additional 5 year loss of licence - with some court-room flexibility to a minimum of 2 years. |
| 30 Sep 1998 | Fines for serious driving offences (speed and drink drive) increased considerably (Approximately doubled) |
| Recent | Ban on radar detectors extended to include laser detectors and all devices that either jam or detect Police speed detection equipment - to cover future technology changes. |
| GENERAL | Ongoing program to replace technology with LIDARs replacing slants. Similarly mobile radar technology is upgraded on an ongoing basis with the phasing out of KR10 models with Silver Eagles used as replacements. |
| Nov 98 | Magistrate Information Day - To provide legal professionals with knowledge of Police speed enforcement practices including deployment methods and operating practices. |

## 6.3 New Zealand

Table 6.3 — NZ History of Speed Management

| Date | Initiative |
|---|---|
| 1971 | Speeding Infringements introduced for the less serious offences |
| 1987 | Minimum level of 35 demerit points for speeding infringements. |
| 1988 | HAWK radar introduced. |
| 1989 | Safety Administration Program (SAP) for funding and road safety introduced. |
| 1992 | Dedicated MOT (Ministry of Transport) traffic enforcement group merged with NZ Police. |
| 1993 | Speed Cameras introduced at designated sites. |
| 1994 | Fixed speed cameras introduced. |
| 1995 | Greatly increased publicity combined with enforcement of speed through a Supplementary Road Safety Package. (also included drinking / driving and seat belts). |
| 1999 | Immediate roadside licence suspension for speeds 50km/h over the limit. |

## 6.4 Northern Territory

Table 6.4 — NT History of Speed Management

| Date | Initiative |
|---|---|
| App 1971 | Mobile radars introduced |
| 1981 | Mobile radars (KR11) introduced - progressive purchases to present day levels of 28 units (KR10). |
| App 1989 | Hand-held radars introduced (Kustom Falcon) - progressive purchases to present day levels of 30 units. |
| App 1993 | Dedicated Traffic Section disbanded |
| 1997 | 5 hand-helds purchased for school based constables for use in school zones |
| August 1998 | Speed cameras (2 Darwin, 1 Alice Springs) trial commenced. |

## 6.5 Queensland

Table 6.5 — Queensland History of Speed Management

| Date | Initiative |
|---|---|
| App 1962 | Slant Radars introduced |
| Late 1996 | Mobile data terminals installed into vehicles. |
| up to 1996 | Practice generally revolved around regular 'blitzes' |
| 1997 onwards | A more targeted approach has commenced with intelligence support supplied. |
| April 1997 | Speed cameras introduced (with 6 week amnesty) |
| April 1997 | Speed regarded as a priority offence for the month |
| May-Aug 1997 | Phasing in of speed camera operations up to 14 in total with approx 2 in each region. |
| May 1997 onwards | Increasing levels of intelligence provision. |
| August 1997 | Speed regarded as a priority offence for the month |
| Dec 1997 | Speed regarded as a priority offence for the month |
| 1997 onwards | Ongoing speed management and speed camera related publicity. |
| January 1998 | Launch of Campaign 300 - to reduce fatalities below 300 for the 1998 year. |
| March 1998 | Speed limit reviews on local government controlled roads. |
| July 1998 | Additional 67 LIDARs purchased. |
| ? | Equipment purchases over time to the current level of 133 hand held radars and 29 slant radars. |
| Jan-June 1999 | Public education on 50 km/h local street speed limit. |
| March 1999 | 50 km/h local street speed limits introduced in south east Queensland |
| June 1 1999 | Speed camera program extended to local government roads (following a 3 month amnesty on prosecution). |
| FUTURE | |
| App Dec 99 | Every Police station will have access via an intranet service to map based information detailing crash locations and other information. |
| next 2-3 years | Provision for up to 25 fixed camera sites is being built in to the Pacific Motorway construction works - with fibre optic cabling and data access points being installed. |
| Next x years | Plans are underway to overhaul the data management systems in Queensland to ultimately allow simple and accessible information share between various government authorities. |

### 6.5.1 South Australia

Table 6.6 — SA History of Speed Management

| Date | Initiative |
|---|---|
| 1962 | First radar detection devices introduced. |
| 1974 | Radar speed checks carried out in metro and country areas. |
| 1976 | 8 new MESTA radar units replaced the existing Marconi units. |
| 1977 | Traffic Section decentralised - with a speed detection section established. Traffic Intelligence Centre established. |
| 1982 | The Traffic Infringement Notice (TIN) introduced. |
| 1985 | Hand-held radar gun trial for Highway Patrol. |
| February 1985 | 2 person permanent Highway Patrol Team stationed at Mt Gambier. |
| 1986 | RBT block testing stations introduced. Sixteen (16) metropolitan sub-stations were established. |
| January 1987 | 2 person permanent Highway Patrol Team stationed at Port Lincoln. |
| 1989 | Trialing of a speed camera unit. |
| February 1989 | 2 person permanent Highway Patrol Team stationed at Berri. |
| 1990 | All patrols issued with KDT-840 data terminal computers |
| June 1990 | 2 speed cameras operational |
| December 1990 | 4 speed cameras operational |
| August 1991 | 8 speed cameras operational |
| June 1992 | Laser hand-helds introduced (up to 30) to replace radar guns. (Some Radar guns still utilised in remote areas). |
| App 1996 | Camera operations utilising unmarked vehicles with government plates replaced with unmarked / non-uniform 'normal' vehicles. |
| App Jan 1996 | 100 extra Laser hand-helds purchased. |
| April 1996 | Sworn camera operators replaced by civilian staff. |
| 1996 | Approximately 240,000 RBT tests undertaken - however a large input of money (in the order of $1m a year) to increase operations significantly. |
| 1997 | Approximately 600,000 RBT tests, with rate maintained into 1998. |
| Future purchases | 7 additional mobile radars on order to supplement the existing 16 (in highway patrol cars - 8 rural, 8 urban). New mobile radars will be placed in general duties vehicles in country areas. More laser speed guns are also on order. |
| Camera Expansion | 14-17 new speed cameras are likely to be available in 1999. The units will be set as film based camera cars (German equipment) multi-directional capabilities. Potential to change to digital. A program to ensure regular rural visits is included as part of the initiative. |

## 6.6 Tasmania

Table 6.7 — Tasmanian History of Speed Management

| Date | Initiative |
|---|---|
| 1972 | Compulsory Seat belts |
| 1983 | RBT and 0.05% |
| 1985 | Regional Crash Reduction Programs initiated with considerable intelligence supplied ongoing from the Tasmanian DoT. (eg top 10 routes / 5 suburbs and 20 sites where crash problems exist). |
| 1993 | 4 speed cameras introduced (plus one spare). Camera locations determined based on crash blackspots only. |
| Late 1994-Now | Camera locations extended to include any area with a speeding problem. |
| October 1996 | Road Safety Taskforce established by the Motor Accident Insurance Board (MAIB). Data made available to Police from the Motor Accident Commission. |
| 1997 onwards | Input from the public on speeding locations actively encouraged. |
| March 1997 | Additional 10 digital laser cameras purchased (2 of which were designated for the Tasman Bridge fixed site) |
| March 1997 | Hand-held lasers provided for traffic operations. |
| July 1997 | 2 fixed cameras for the Tasman Bridge operational. |
| October 1997 | 7 mobile radars purchased for traffic operations, 4 existing units dispersed to regional areas. |
| Confidential | Tolerances lowered on an annual basis. |
| Trends | From 1993 when approximately 3.5% of vehicles passing the station were speeding, the rate is currently 0.5-0.7%. |

## 6.7 Victoria

Table 6.8 — Victorian History of Speed Management

| Date | Initiative |
|---|---|
| Jan 1974 | Maximum rural speed limit set at 100 kph |
| Aug 1983 | Red light cameras |
| Mar 1986 | speed cameras introduced |
| 1989 | excessive speed legislation - infringements 'on the spot' suspension - exceed 30kph or more |
| | radar speed surveillance |
| 1990 | enhanced radar enforcement / traffic camera office introduced with full camera rollout. |
| 1991 | Establishment of Road Safety Councils / coordinated approach to road safety introduced. |
| Dec 1993 | Mobile radar introduced to rural Victoria |
| 1995 | Road Safety Strategy 'Safety First' |
| Nov 1996 | Lasers introduced |
| July 1998 | Civilian camera operators |
| Nov 1998 | Traffic Camera Office administrative processing outsourced. |

## 6.8 Western Australia

Table 6.9 — WA History of Speed Management

| Date | Initiative |
|---|---|
| 1967 | Hand-held radars introduced |
| 1979 | Mobile radars introduced |
| 1986 | Trial of Multanova radar system (Zellweger Uster) |
| 1989 | 3 speed cameras operational |
| 1991 | 2 additional speed cameras purchased taking the total to 5 |
| 1992 | Approx 40 Laser speed guns purchased |
| 1993 | 2 additional speed cameras purchased taking the total to 7 |
| 1995 | 4 additional speed cameras purchased taking the total to 11 |
| 1996 | 5 additional speed cameras purchased taking the total to 16 |
| February 1997 | Road Safety Council Established (Police, Main Roads WA, RoadWise, Health Dept, Education Dept, RAC, SGIC, Office of Road Safety) |
| February 1998 | ETEP Optimisation Phase 1 Stage 1 commenced |
| June 1998 - Jan 2000 | ETEP Expansion Phase 1 Stage 2 - integrated computer system |
| GENERAL | Mobile radars (KR10 and Eagle 10337), Lasers (LTI 20/20 and hand-held (Kustom Falcons) progressively purchased as required (by districts) to current levels of 136, 71 and 125 respectively. |

# 7 APPENDIX 7: PERFORMANCE MEASURES AND OUTCOME DATA

Speed enforcement performance and outcome data available from the jurisdictions varied considerably. As such, detailed comparative analysis of the information was not possible. Information below has been presented in a graphical format to reflect various types of indicators available for use.

It should be noted that some items of data were considered confidential by the various jurisdictions and have therefore not been available for the purposes of this study.

## 7.1 Australian Capital Territory

The AFP presents a statistical report on a monthly basis. The report details all operations, including traffic information. Regional and TOG break-up of infringement notices and breaches issued are reported. Also listed are the number of fatal and injury crashes, and people involved in crashes. Monthly comparison figures are calculated as is the mean figure and rate per 1,000 persons.

### 7.1.1 Crash and enforcement data

Examining crash data in the ACT can be difficult because all crashes are recorded - including a scratch that occurs in a car park. As such, data for injury and fatal crashes provide a more reliable measure of the effectiveness of operations.

With the ACT having a small area of jurisdiction the fatal crash figures are not robust enough to reveal any significant results or trends. There is a greater tendency to consider changes in speed counts or speed levels, from Police data, and casualty crash data. The current development of the road safety strategy will most likely include various performance measures, such as the incidence of speeding, public education and speed enforcement.

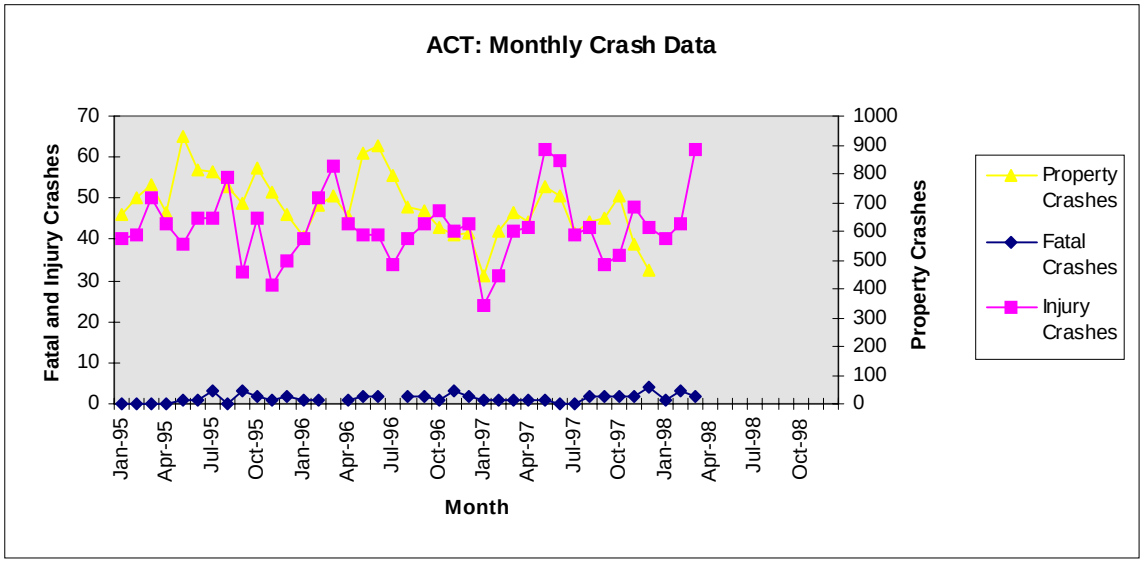


Figure 7.1 — ACT Monthly Crash Data

### 7.1.2 Non-enforcement speed data

Speed data is processed and evaluated by the ACT Department of Urban Services. These speed surveys are generally related to complaints or queries regarding the appropriateness of limits, and consequently sites are rarely revisited, precluding the determination of trends.

Information on traffic speeds in the ACT was obtained from the ACT Department of Urban Services publication "Traffic Speeds and Vehicle Classifications on ACT Roads" - May 1996 (1995 data), April 1997 (1996 data) and August 1998 (1997 data).

The information reported in these publications lists the results of any speed monitoring surveys carried out in the ACT. The report lists the locations that showed the highest 85$^{th}$ percentile speeds.

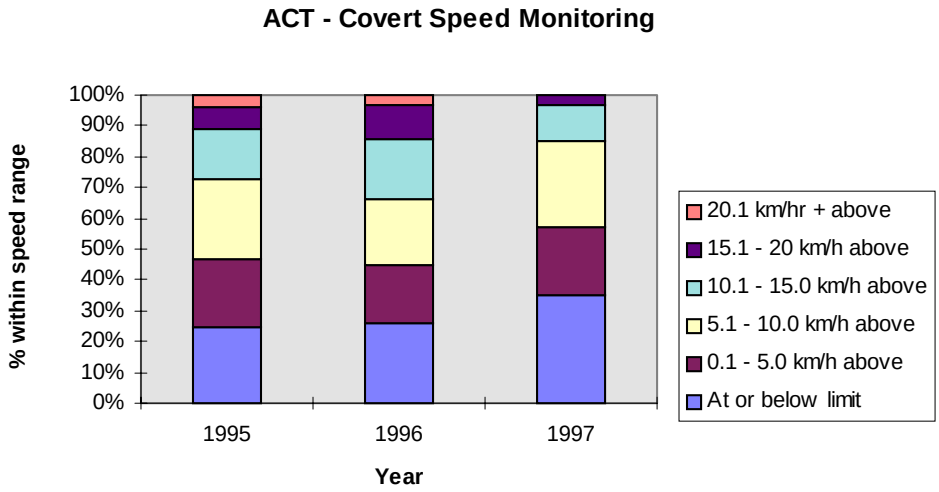


Figure 7.2 — ACT Covert Speed Monitoring Information (note sites and speed zones surveyed are not consistent from year to year)

## 7.2 New South Wales

Although a reduction in road trauma is a primary aim, it is accepted that the nature of crashes and crash causes are such that drawing direct parallels between speed enforcement methods and crash figures can be difficult. The preference of the NSW Police service is to consider data on speeds, although this information is still in the process of being developed. Useful measures (in addition to operational measures discussed in Appendix 1, Section 1.2.5) may include:

- Changes in the ratio of vehicles passing the camera that exceed the threshold,
- Local changes in speeds measured independently following enforcement operations,
- General surveys (as conducted on a 6 monthly basis by the RTA) of free speeds, and
- In general a focus on the 85$^{th}$ percentile (although this is considered habitual and information is collected by the RTA although not used as an input on a regular basis).

There is a move away from measures related to the number of tickets issued, and the focus is currently on effective use of resources, targeted deployment and ultimately reductions in road trauma. General evaluation of performance covers a wide range of factors and relates generally to the information presented as part of the discussion on intelligence in Appendix 1 Section 1.2.5.

Current processes in NSW are relatively new, with a change point expected from about June / July 1998, where enforcement practices in the field have changed markedly. It is hoped that significant reductions in road trauma will occur from this date, with practices in place to monitor the effects.

Other qualitative data is seen as important, for example the result of public surveys and perception surveys of enforcement methods. The RTA have completed surveys of driver's perception in relation to the likelihood of being reported for drink drive or speeding in NSW compared to Victoria over the Christmas / New Year period. The possibility of using the NRMA to conduct member surveys on opinions regarding the effect of enforcement, the perceived purpose of enforcement and the methods of enforcement is being investigated.

### 7.2.1 Crash and enforcement data

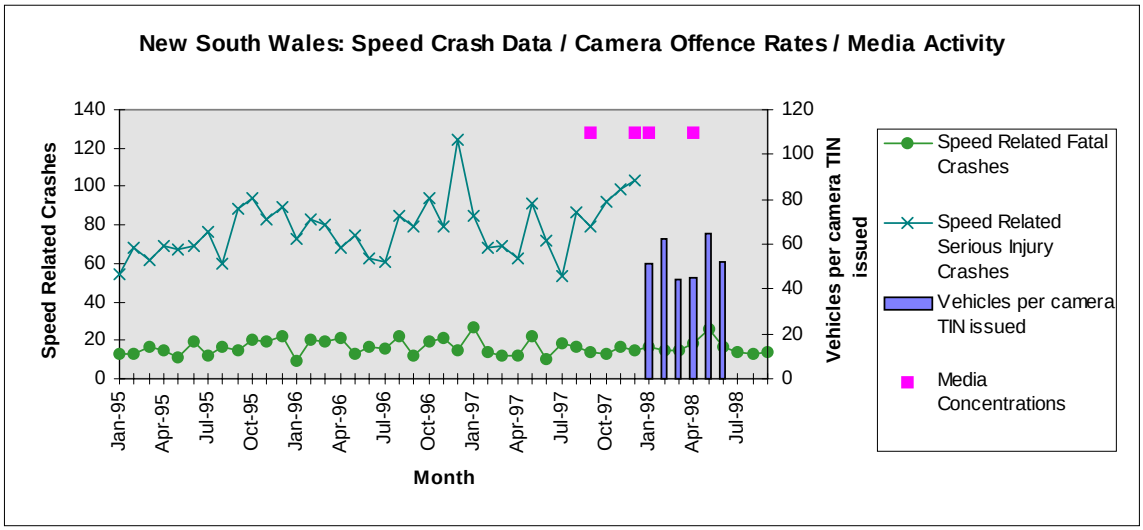


Figure 7.3 — NSW Speed related crash data, camera offence rates and media activity by month

### 7.2.2 Non-enforcement speed data

The RTA is currently completing projects looking at data integration to see where data primarily used for other purposes may have relevance to other areas of the RTA. Speed data from permanent traffic counting sites is seen as a potential area where information can be obtained. CULWAY (heavy vehicle monitoring system) data was obtained by the project team and analysed to identify any trends in mean and 85$^{th}$ percentile speeds. The analysis failed to identify any significant trends, however this source of monitoring data may provide a useful measure with adjustments made to collection methods and recording.

Specific speed surveys are carried out in May of each year, considering speeding trends in both country and city locations. May is chosen to reflect non-holiday periods and enables consistent results for comparison over consecutive surveys. The information is then utilised in various forms. The 85$^{th}$ percentile speed provides an indication of general behaviour, whereby a 2 km/h drop in speed for an urban road would be a significant change. Considering the proportion of motorists travelling in excess of 20 km/h over the limit may monitor higher risk behaviour. Preliminary conclusions from this area has indicated a decrease from 16% of motorists exceeding the limit by more than 20 km/h in 1990 to 4-5% in 1997.

In terms of resource demand in collecting and collating this information, the investment is relatively large, with increasing pressure to reduce the effort required. As such, a backlog of data analysis is evident in NSW.

Police data on speeding behaviour is becoming increasingly available as the Police intelligence systems develop further. The information is generally provided from speed camera activities.

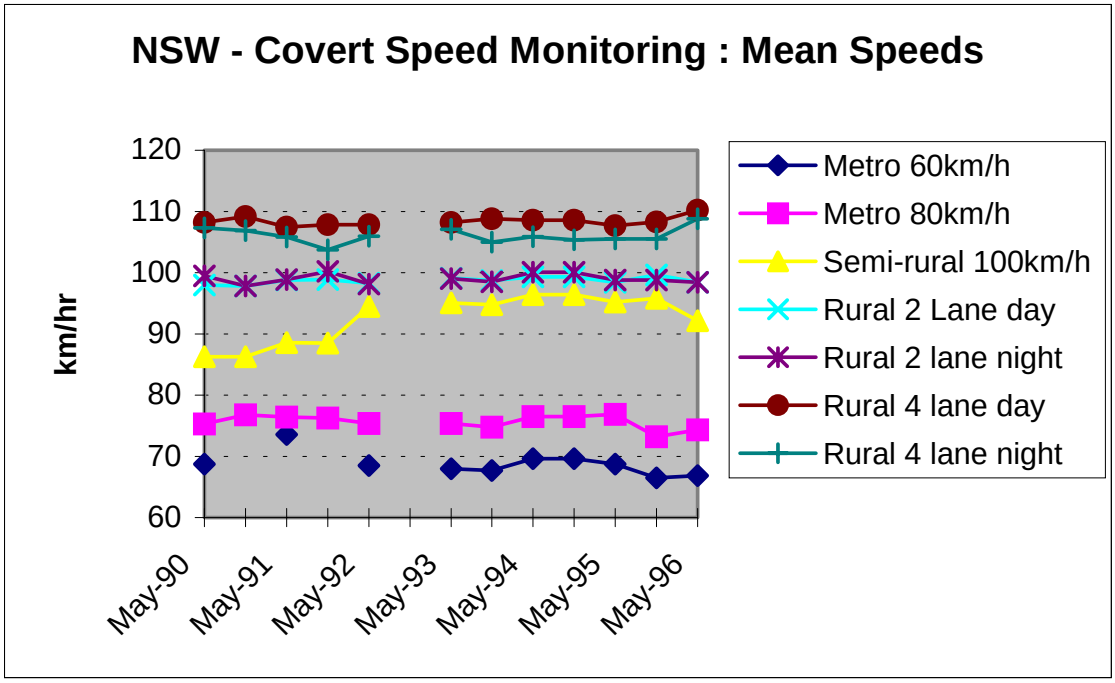


Figure 7.4 — NSW Covert speed monitoring – mean speeds

## 7.3 New Zealand Analysis

As part of NZ's National Road Safety Plan, outcome targets have been set for mean and 85th percentile winter open road speeds, and the percentage of vehicles exceeding 110 km/h on the open road (national speed limit is 100 km/h). These outcomes are available and regularly monitored, as are urban speeds, summer open road speeds, crashes in which excessive speed was a contributing factor, and certain key public attitude indicators (refer *Road Safety Progress* - a quarterly report produced by the LTSA).

Cost-benefit analysis of road safety programs is based upon the benefits from reductions in road crashes and road trauma, expressed in terms of a measured willingness to pay by society for such reductions, compared with the costs of those programs or initiatives.

The social cost of road crashes in New Zealand in 1997, is estimated at $NZ3.0 billion in 1998 dollars, down from $NZ3.2 billion in 1996 and $NZ3.6 billion in 1995.

The results sought for speed control and traffic camera operations in 1998/99 are:

- a reduction in the mean rural speed to not greater than 102.3km/h,
- a reduction in the 85$^{th}$ percentile rural speed to not greater than 111km/h,
- no more than 18% of rural drivers travelling faster than 110km/h, and
- a reduction in the casualties of road crashes to no more than 470 people killed and no more than 5850 people injured and admitted to hospital by June 1999.

Performance outcomes to be achieved are:

*Quantity*

- One national and a minimum of five local campaigns in each police district
- 74 000 hours of traffic camera operations,
- Between 100 000 to 120 000 traffic offence and infringement notices issued from on-road activities, and
- Between 320 000 to 380 000 infringement offence notices to be issued from camera activities.

*Quality*

- Output to be delivered in accordance with Risk Targeted Patrol Plans (RTTP's).
- Percentage of respondents who believe there is a high probability of detection of speeding as measured by an annual LTSA survey to have results equal to or better than those for 1997/98.

Percentage results of Local Authorities responding to an annual survey coordinated by the LTSA who are satisfied:

- with police consultation processes in the development of RTPPs relating to the delivery of this output; and
- that targeted issues have been addressed.

*Timeliness*

- 95% of speed offence notices will be issued no later than 14 days after the traffic camera photo is taken
- 100% of speed offence notices will be issued no later than 30 days after the photo is taken

*Cost*

The output will be delivered within budget at a cost of $NZ34,159,000 (GST exclusive)

In addition to this a minimum 70% recall and 70% positive response to television advertisements for safety info and promotion should be achieved.

Audits of police activity are conducted by Audit NZ, Police Management Review, NRSP survey, Peer review, LTSA traffic surveys, MOT quarterly reports on road safety performance and more recently by Monash University in their report on the 'supplementary road safety package' - this was a substantial injection of government funds to specifically target alcohol, speed, occupant restraints and rural areas. LTSA surveys are conducted annually and are reported on later.

### 7.3.1 Crash and enforcement data

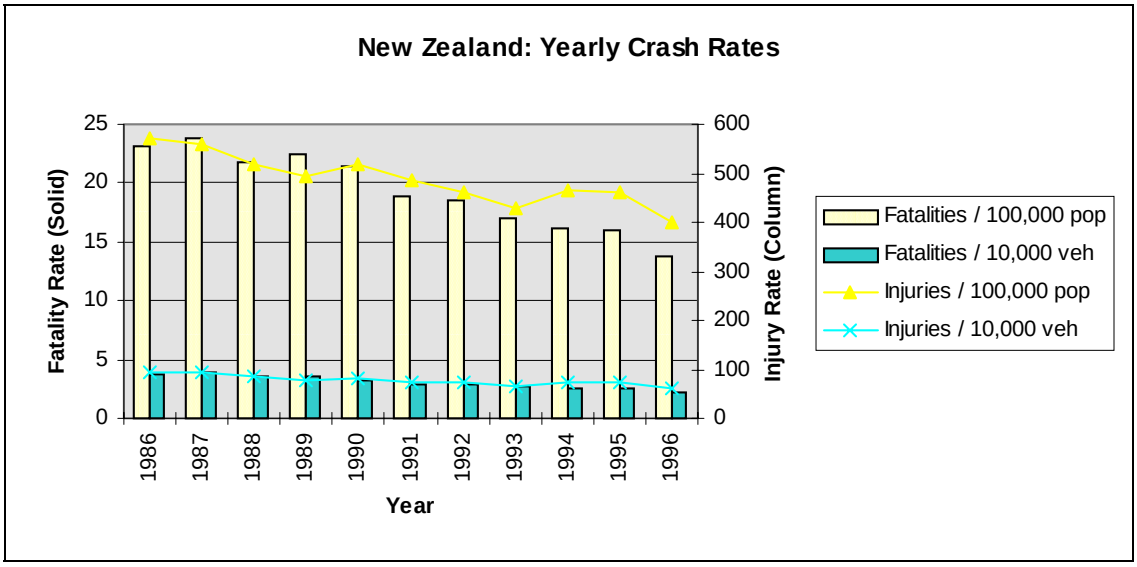


Figure 7.5 — New Zealand Crash Rates

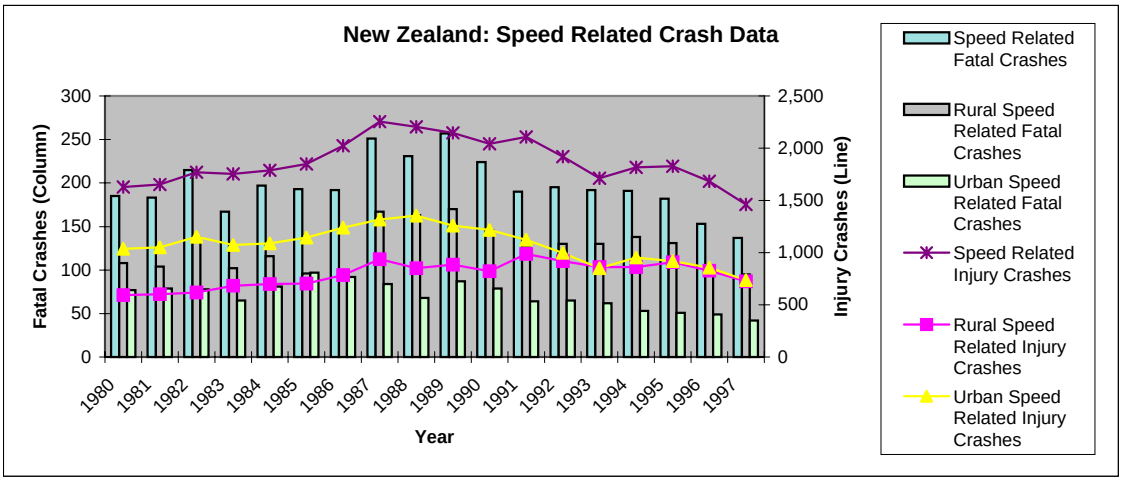


Figure 7.6 — New Zealand speed related crash data – urban and rural

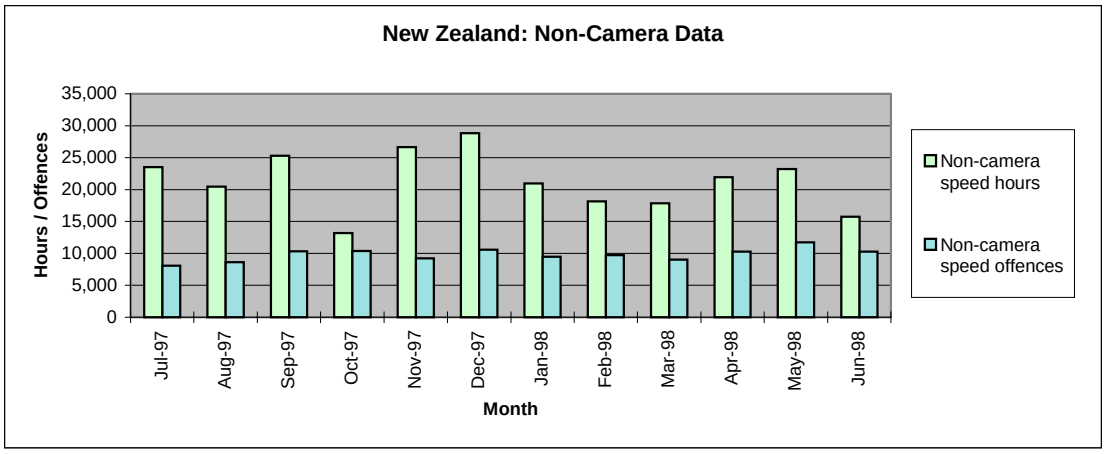


Figure 7.7 — New Zealand non-camera enforcement hours and offences issued

### 7.3.2 Non-enforcement speed data

The inclusion of standard deviation as a performance outcome measure for traffic speed surveys has been suggested at various levels within New Zealand. LTSA and Ministry of Transport have not yet formally accepted this. Those in favour of using standard deviation cite studies indicating that consistency of traffic speed is a primary issue for traffic safety.

An element of subjectivity in assessing the contribution of excessive speed to a crash has meant that 'percentage of fatal crashes involving speed' or similar measures have not been seen as sufficiently reliable to use for outcome targets.

The LTSA conducts extensive monitoring of vehicle speeds across New Zealand. This has been conducted for some time and provides historical trend information related to:

- mean speeds,
- standard deviation,
- $85^{th}$ , $90^{th}$ and $95^{th}$ percentile, and
- Percentage exceeding certain speeds.

This data is recorded at a series of rural and urban sites throughout New Zealand (local government regions and Police districts), with summer and winter readings undertaken. The speed data is also categorised by vehicle type. The data is stored such that information on variable percentile speeds, and proportions exceeding any selected value can be easily retrieved.

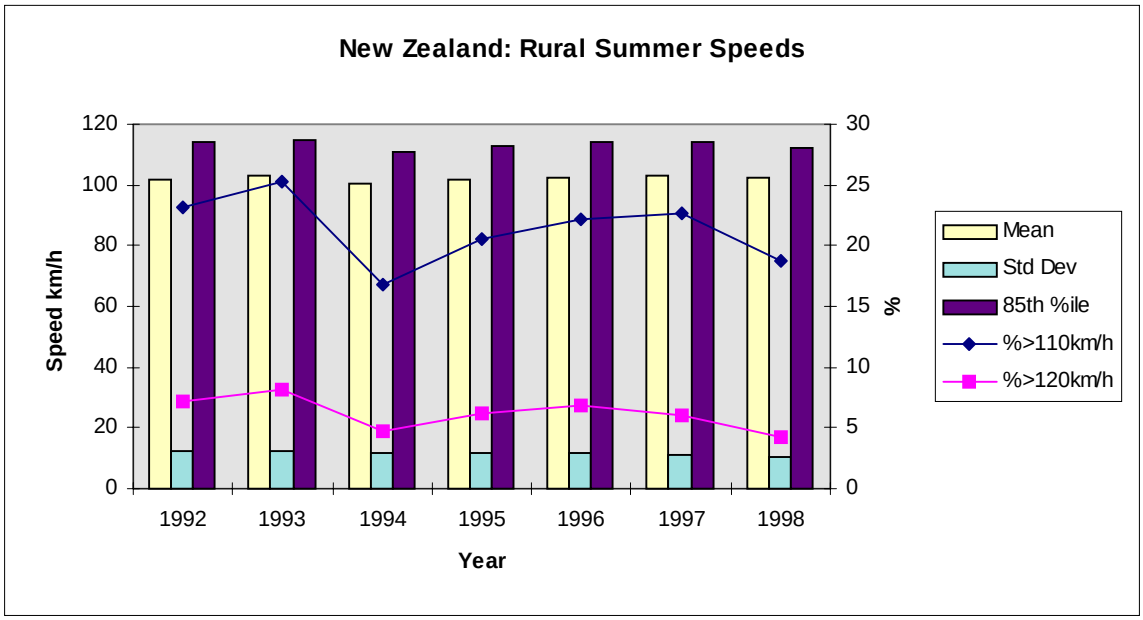


Figure 7.8 — New Zealand historical rural summer speeds

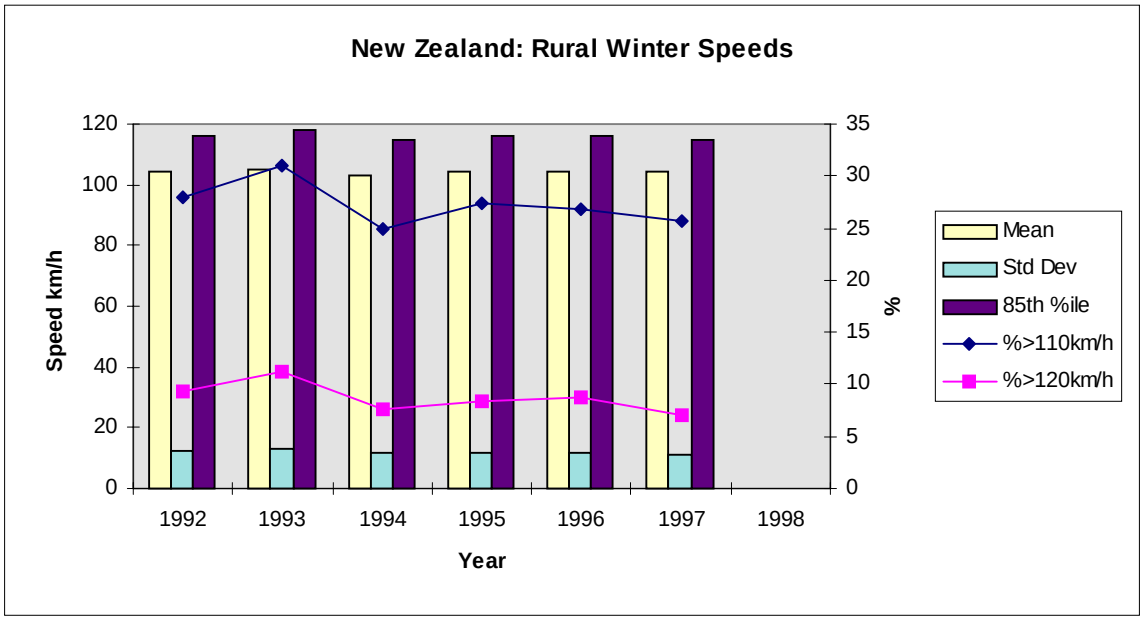


Figure 7.9 — New Zealand historical rural winter speeds

In 1995 a new series of more comprehensive checks was started to enable better analysis of speeding behaviour, with winter speed estimates summarised below. The pre-1995 series of winter speed surveys was carried out at sites in the more heavily trafficked parts of the network; they are used in the national target-setting process, for reasons of continuity.

Table 7.1 — Winter Speed Estimates (km/h)

| | 1995 | 1996 | 1997 |
|---|---|---|---|
| Rural Mean Speed | 102.4 | 102.3 | 101.6 |
| Rural 85th percentile | 115 | 115 | 113 |
| Urban Mean Speed | 57.4 | 56.5 | 56.3 |
| Urban 85th percentile | 65.5 | 63.5 | 63 |

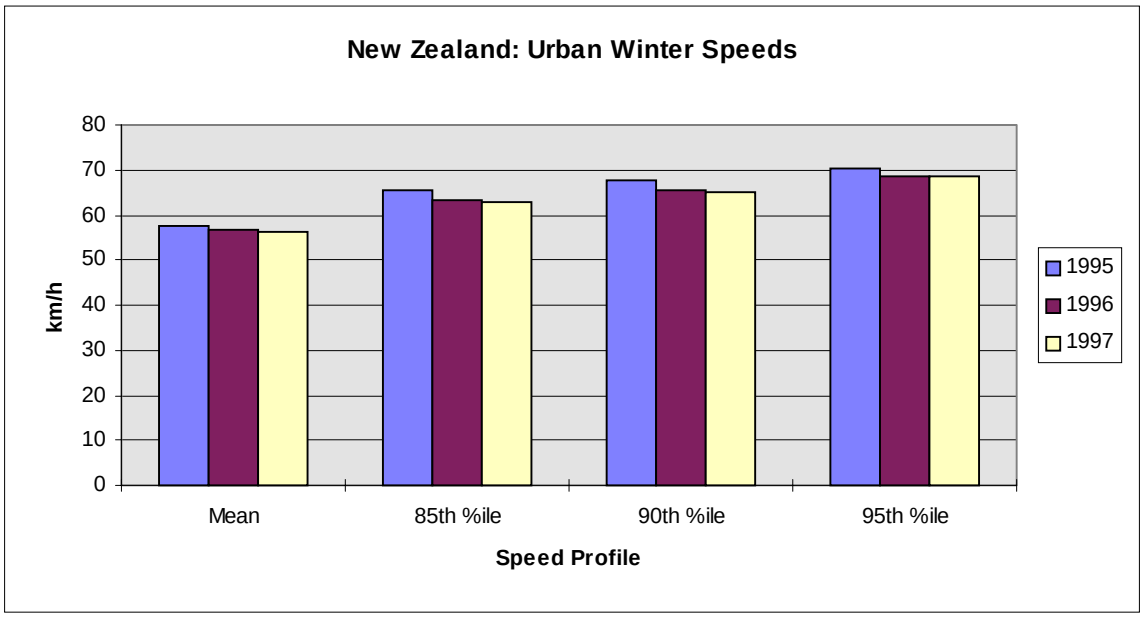


Figure 7.10 — New Zealand historical urban winter speeds

## 7.4 Northern Territory

Speed cameras were introduced in the NT in August and evaluation measures are currently in the developmental stage. Some data is being collected at selected camera sites measuring the amount of vehicular traffic, in comparison to the number of motorists speeding.

### 7.4.1 Crash and enforcement data

As speed cameras are in their infancy, data will not be available for 6 - 12 months. When the police complete their reports, the information is sent to the Department of Transport and Works, entered onto a database and statistical research is conducted. Detailed statistical information concerning TIN's is being developed.

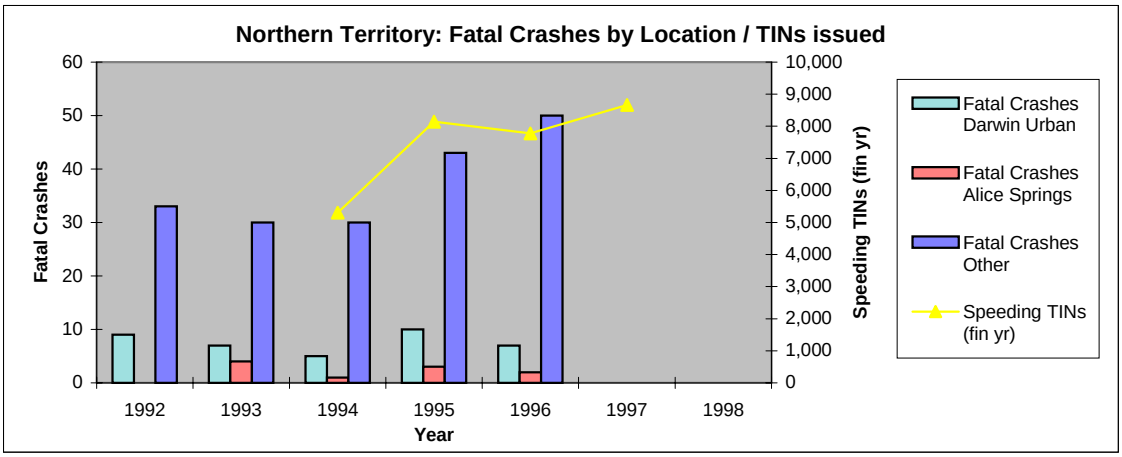


Figure 7.11 — Northern Territory Fatal Crashes by location and annual TINs issued

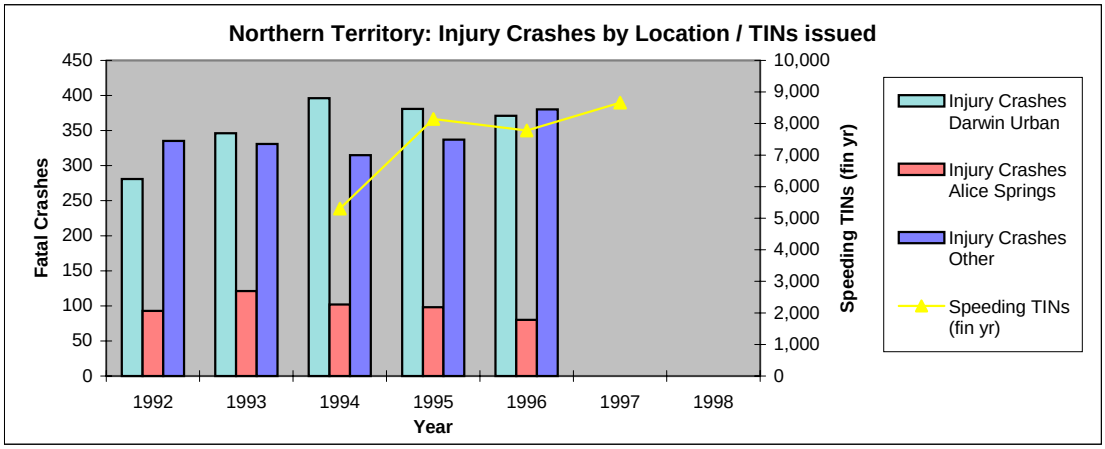


Figure 7.12 — Northern Territory Injury Crashes by location and annual TINs issued

### 7.4.2 Non-enforcement Speed data

As part of the introduction of speed cameras, short speed surveys were conducted on a number of roads when considering suitable sites. These are likely to provide base levels for future evaluations of the effectiveness of the introduction of speed cameras.

## 7.5 Queensland

The State Traffic Support Branch and Qld Transport monitor the effect of police enforcement activity based particularly on crash trends. The social costs of crashes are also examined.

The introduction of speed cameras has been found to have a significant effect on road user behaviour. This is demonstrated through a reduction in the frequency of all crashes, and particularly speed related crashes since their introduction.

Public perception surveys by Queensland Transport and RACQ show that there appears to be acceptance that speed cameras have contributed significantly to a reduction in the level of road trauma in Queensland.

### 7.5.1 Crash and enforcement data

Graphs of fatalities, hospitalisations, breath testing activities, speed camera activity; road crashes and fatalities per 100,000 population are issued to operational staff on a monthly basis.

For example January/February 1998 figures demonstrated a 37% drop in fatalities compared to the five year average for those months.

The Far Northern, Central, North Coast, Southern, South Eastern, Metro North regions all experienced a decline in the fatality rate per 100,000 population compared to January and February of previous years. Northern and Metro South regions experienced a slight increase.

All regions except Southern showed a reduction in speed camera operating hours, overall this reduction was 18%. There has also been a reduction of 24 % in the number of TINS issued.

Presently, cameras work an average of 4.5 hours per day, as compared to their optimum use of 12 hours. The QPS would like to ensure that cameras within each region achieve a minimum of 4 hours per day, averaged over the month.

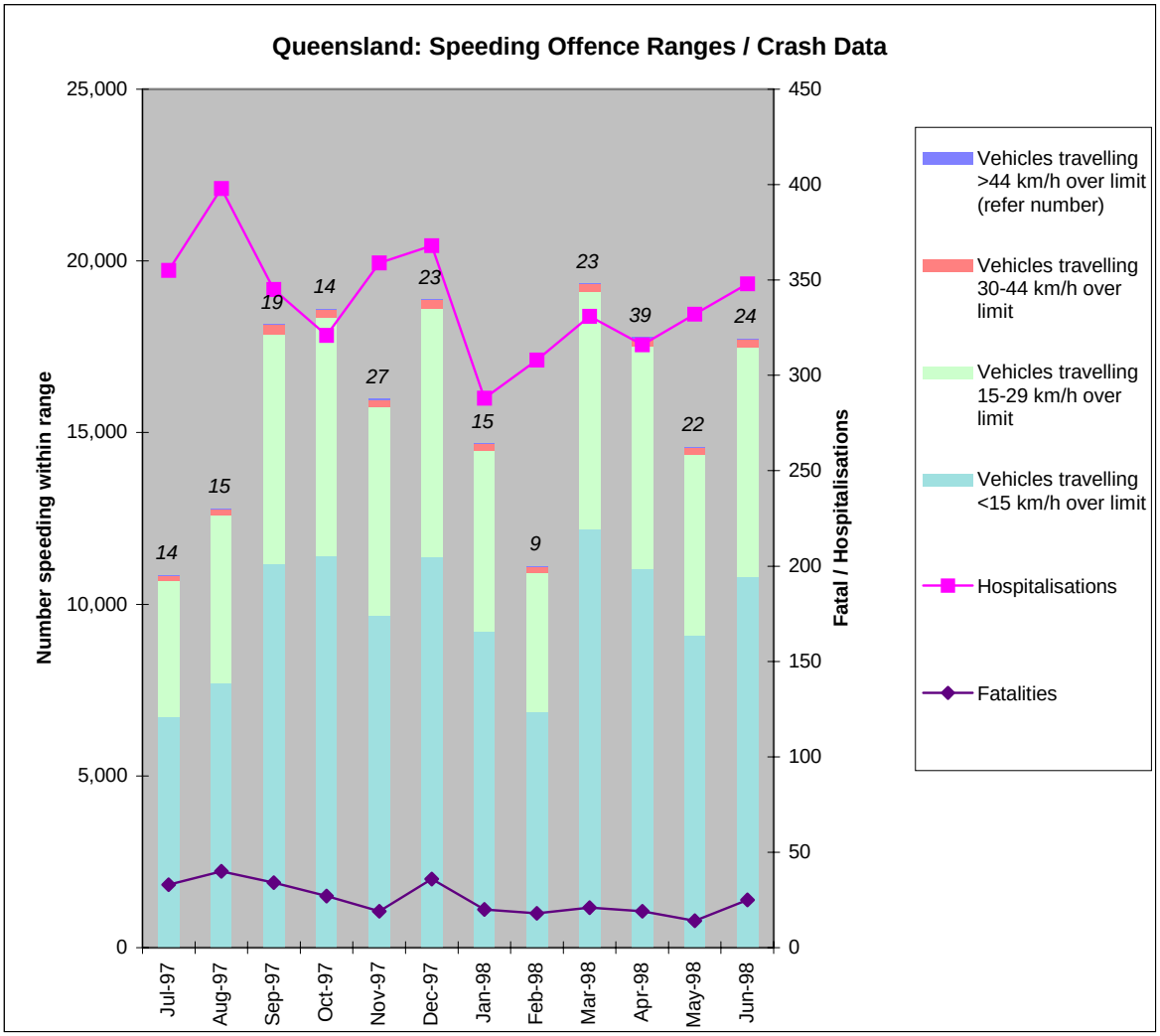


Figure 7.13 — Queensland speeding offence profile, fatal and hospitalisation data by month

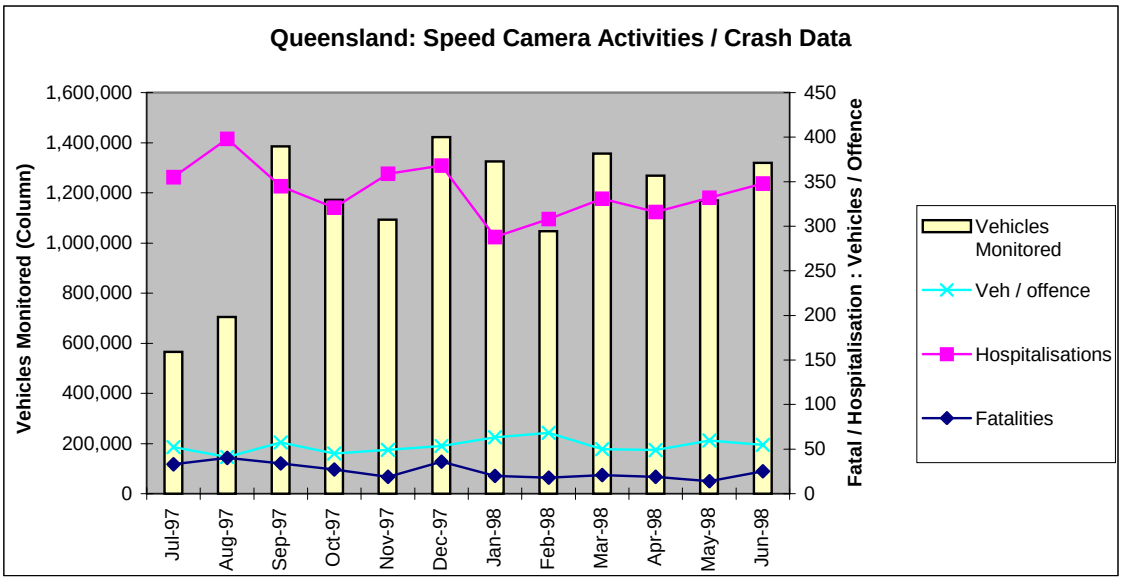


Figure 7.14 — Queensland speed camera activity, fatal and hospitalisation data by month

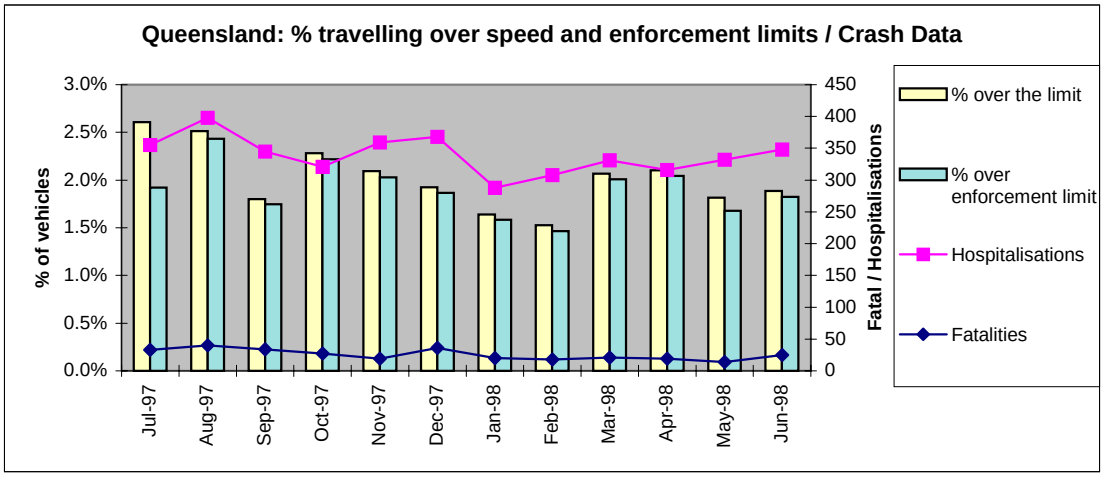


Figure 7.15 — Queensland proportion of speeding vehicles, fatal and hospitalisation data by month

Table 7.2 — Queensland details of speeding behaviour / cull rates and crash data

| | % Over The Limit | % Over Enforcement Limit | Cull Rate | Fatalities | Hospitalisations |
|---|---|---|---|---|---|
| Jul-97 | 2.6% | 1.9% | 0.2% | 33 | 355 |
| Aug-97 | 2.5% | 2.4% | 25.5% | 40 | 398 |
| Sep-97 | 1.8% | 1.7% | 25.0% | 34 | 345 |
| Oct-97 | 2.3% | 2.2% | 28.5% | 27 | 321 |
| Nov-97 | 2.1% | 2.0% | 28.0% | 19 | 359 |
| Dec-97 | 1.9% | 1.9% | 28.9% | 36 | 368 |
| Jan-98 | 1.6% | 1.6% | 30.1% | 20 | 288 |
| Feb-98 | 1.5% | 1.5% | 27.7% | 18 | 308 |
| Mar-98 | 2.1% | 2.0% | 28.9% | 21 | 331 |
| Apr-98 | 2.1% | 2.0% | 31.4% | 19 | 316 |
| May-98 | 1.8% | 1.7% | 25.7% | 14 | 332 |
| Jun-98 | 1.9% | 1.8% | 26.2% | 25 | 348 |

### 7.5.2 Non-enforcement speed data

As part of the evaluation procedures for the speed camera program and 50 km/h local street speed limit, Queensland transport is undertaking a number of speed surveys. The data is being collected from control sites as well as targeted sites to allow for data benchmarking and comparison.

Local government and Department of Main Roads also undertake speed surveys as part of their monitoring process and for other research purposes.

## 7.6 South Australia

The Traffic Research and Intelligence Section of the SA Police (TRIS) update Road Safety Performance Indicators on a regular basis.

### 7.6.1 Crash and enforcement data

TRIS provide summary information to management and the districts with measures including the following:

- Fatalities - 12 month moving totals (metro / country)
- Fatalities - Pedestrian, Motorcycle and cyclist - 12 month moving total
- Day time fatalities as a % - 12 month moving total
- Casualty / Serious Casualty and total crashes - 12 month moving total
- Casualty crashes - crash type - 12 month moving total
- Day / Night casualty crashes - 12 month moving total
- Speed detection hours - 12 month moving total
- Speed detection reports (TINs issued) - 12 month moving total
- Speed detection Reports (Camera and Other) - 12 month moving total
- Speed detection hours (Camera and other) - 12 month moving total
- Speed Camera detection rate - 12 month moving total

(RBT and other drink-drive activities are also reported in a similar way)

The present indicator of changes in speeding behaviour and detection rate at camera locations, while providing indications of compliance, need to be considered in line with operational practice. A rise was noted in SA measures (where the speed camera detection rate rose from 1% to 1.4% between May 1996 and May 1997) which was more indicative of a change in practice regarding the positioning of speed cameras (overt to covert) than changes in speeding behaviour.

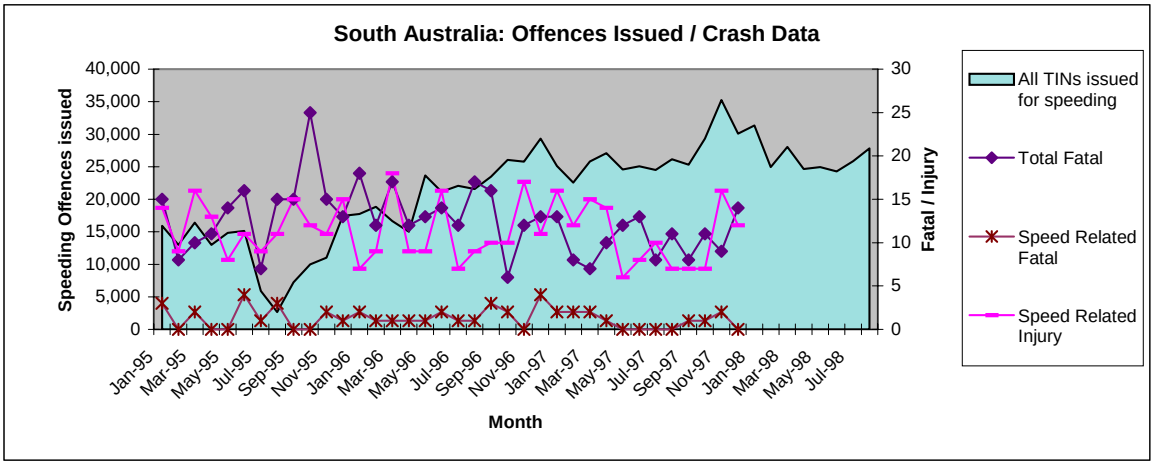


Figure 7.16 — South Australian Speeding Offences, all fatal and speed related casualties

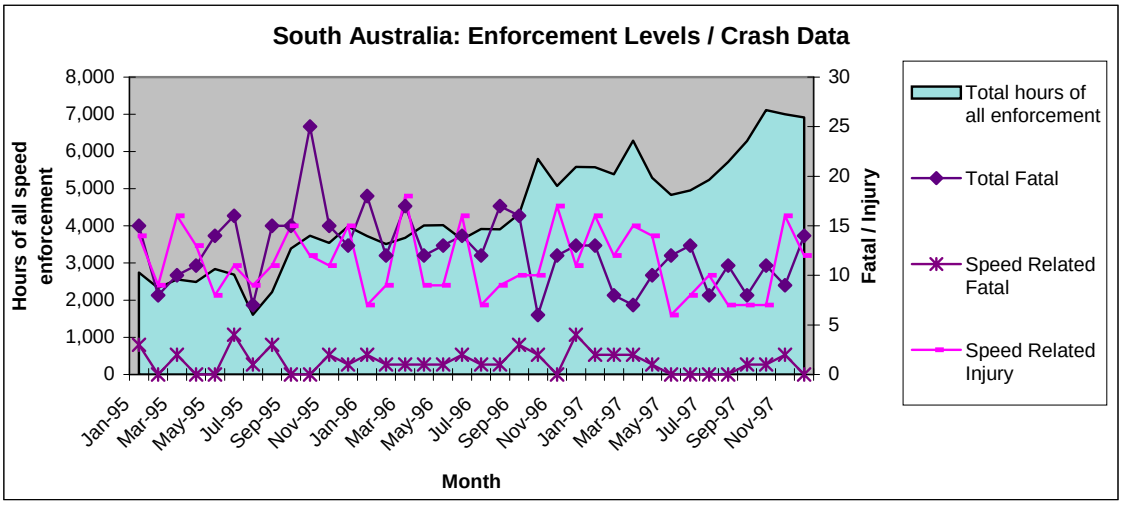


Figure 7.17 — South Australian levels of enforcement, all fatal and speed related casualties

### 7.6.2 Non-enforcement speed data

Speed surveys were (and still are) undertaken for other purposes, although are generally based on an as needed basis, and do not form a reliable basis for evaluation.

Alternative sources for collecting speed data were investigated, with Culway (a heavy vehicle weigh in motion system) recording speeds of heavy vehicles (available in most states). The site locations are not all suitable for analysis of free speeds, and the relatively small sample (heavy vehicles only) also devalues this data as a performance measure of speed management techniques (example of output shown below in Table 7.3). Memory, processing capacity and collection of information from these units appear to be the major reasons against extending their use and actively monitoring these sites from a speed perspective.

Current work on monitoring speeds in the metropolitan area as part of the media evaluation project (refer Appendix 3 Section 3.5.2.3), will provide extensive information on urban speeds.

Table 7.3 Example of information available from Culway data

Eyre Highway Iron Knob

| | Speed Range | Jan-Jun 95 | Jul-Dec 95 | Jan-Jun 96 | Jul-Dec 96 |
|---|---|---|---|---|---|
| East | <106 | 77 | 86 | 85 | 88 |
| | 106-115 | 17 | 11 | 12 | 9 |
| | >115 | 6 | 3 | 3 | 2 |
| | Mean | 99.4 | 96.6 | 97 | 94.7 |
| | Std dev | 10 | 10.2 | 10.3 | 11.6 |
| | 85%ile | 107.1 | 104.2 | 104.3 | 102.8 |
| West | <106 | 79 | 82 | 83 | 86 |
| | 106-115 | 16 | 14 | 13 | 11 |
| | >115 | 5 | 4 | 4 | 3 |
| | Mean | 99.2 | 98.1 | 97.1 | 95.4 |
| | Std dev | 9.7 | 9.4 | 11.1 | 11.9 |
| | 85%ile | 106.4 | 104.8 | 104.8 | 103.7 |
| Notes | Slightly higher proportion of vehicles travelling >106km/h travel on Saturday afternoons/evenings westbound. | | | | |

## 7.7 Tasmania

### 7.7.1 Crash and enforcement data

In addition to measures discussed earlier under Intelligence issues (Appendix 1 Section 1.7.5) the main performance measure in Tasmania relates to the ratio of speeding vehicles to non-speeding vehicles. From an outcome perspective speed related and total crashes are also considered. (a speed related crash is deemed as having involved excessive speed in the circumstances).

For targeted operations the 85$^{th}$ percentile speed is also of interest, with no knowledge of pace speed or perceived need for it as a measure. The ratio of speeding at covert locations would appear to be a reasonable measure however no formal speed monitoring is undertaken at this stage.

Internal performance measures are to include camera usage targets per week.

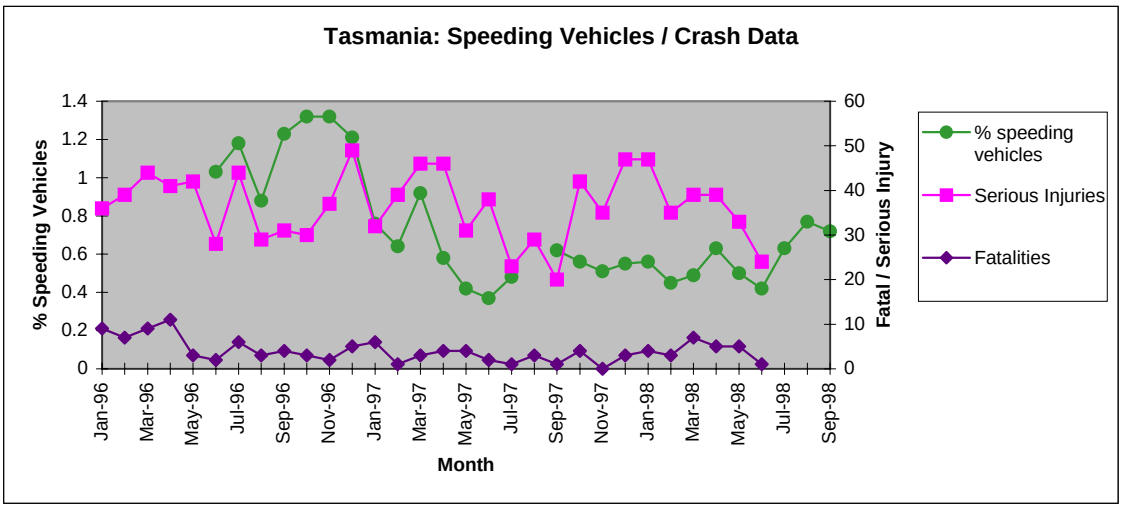


Figure 7.18 — Tasmanian proportion of speeding vehicles, and fatal and serious injuries by month

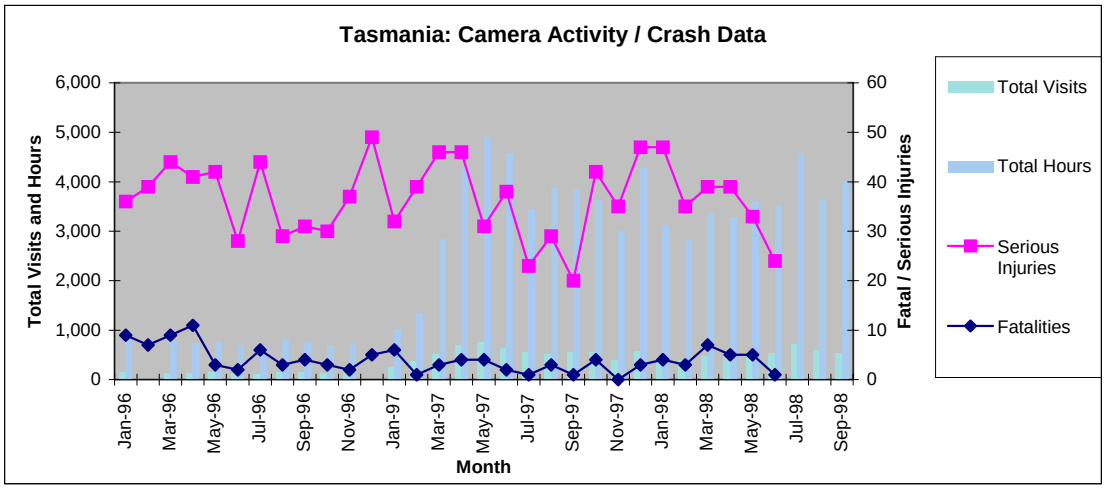


Figure 7.19 — Tasmanian speed camera hours and visits, fatal and serious injuries by month

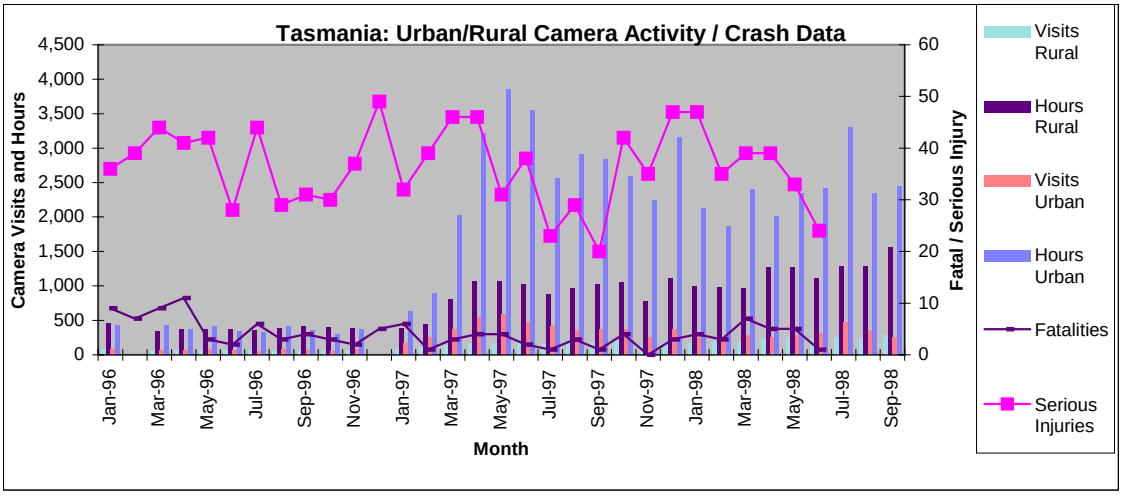


Figure 7.20 — Tasmanian urban and rural camera activity, fatal and serious injuries by month

### 7.7.2 Non-enforcement speed data

The Division of Transport undertakes speed-monitoring activities on an ad hoc basis. A continuous monitoring program is not in place, and speed data is generally only used to assess a local problem site.

## 7.8 Victoria

Potential performance measures used in Victoria revolve around crash reduction and independent speed surveys.

Matching technologies to circumstances was highlighted as a particular need. Methods of evaluating performance change as new technologies become available. Different methods are appropriate in different circumstances. Effectiveness comes from the proper application of different techniques, targeted in response to the nature of local road safety problems.

### 7.8.1 Crash and enforcement data

MUARC are currently undertaking a project to profile characteristics of speeding drivers by linking interview data with observed speeding behaviour. A project is also being initiated to determine the feasibility of detecting speed-related crashes from mass crash data (a variant on the NSW model).

The percent (%) of vehicles exceeding limit or some threshold above limit would seem to be the most useful measure. Accuracy of speedometer is a limiting factor - note this also limits the tolerance that can be enforced.

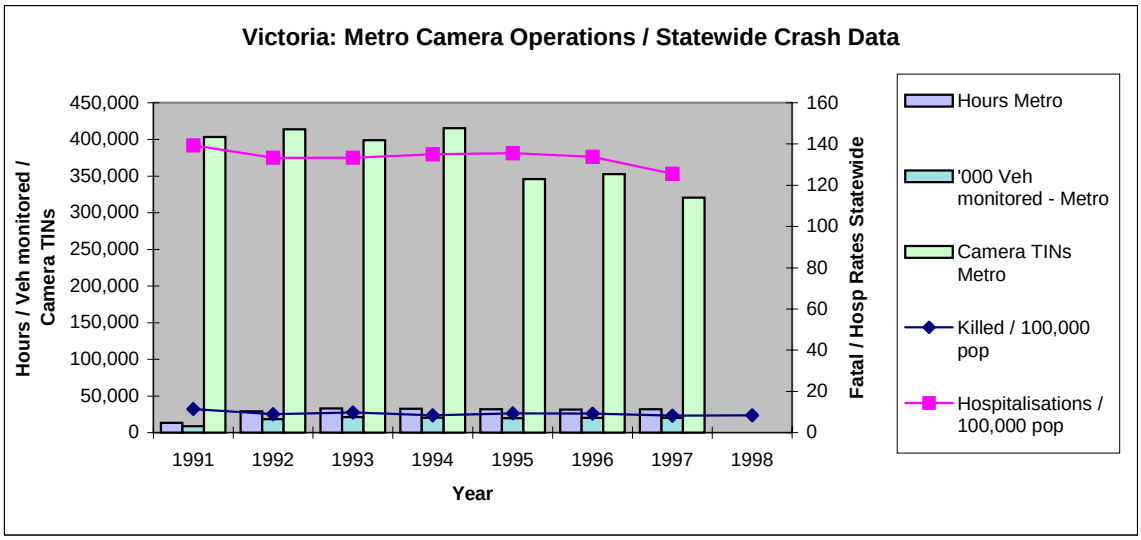


Figure 7.21 — Victorian metropolitan camera operations relative to statewide fatality and hospitalisation rates.

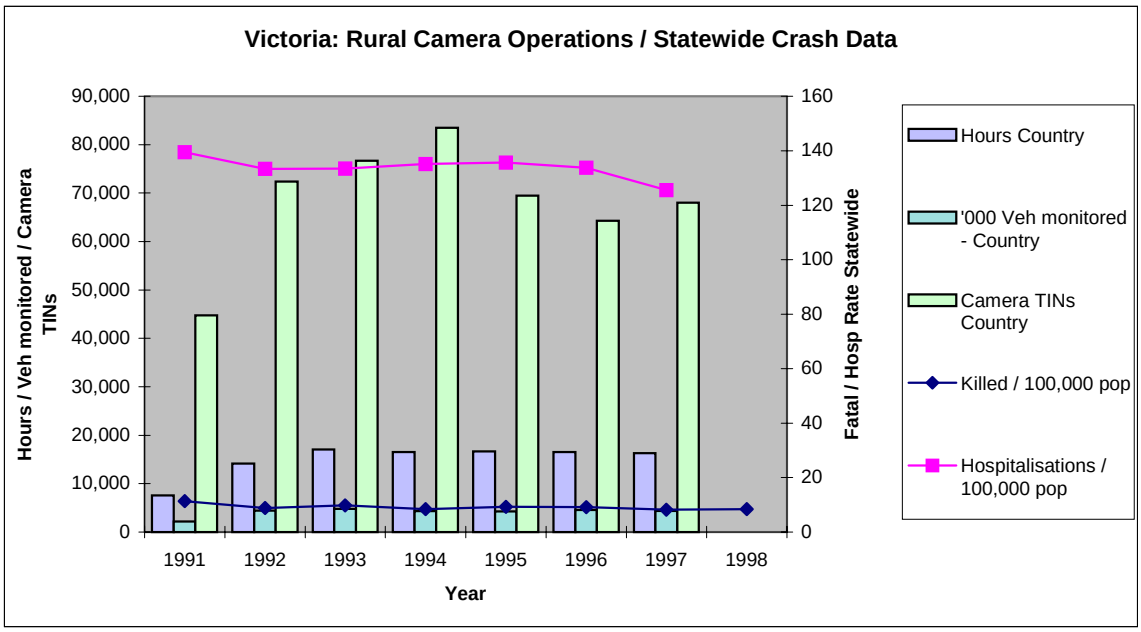


Figure 7.22 — Victorian rural camera operations relative to statewide fatality and hospitalisation rates.

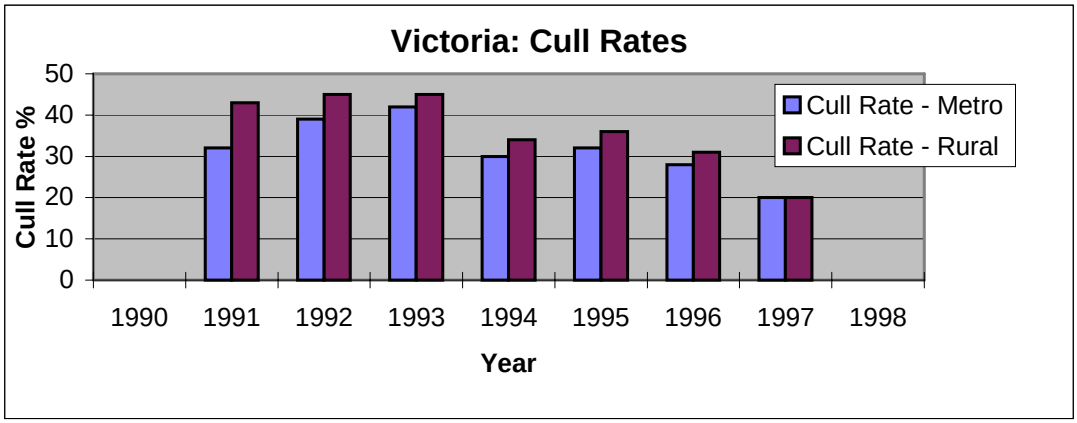


Figure 7.23 — Victorian metropolitan and rural cull rates from camera operations.

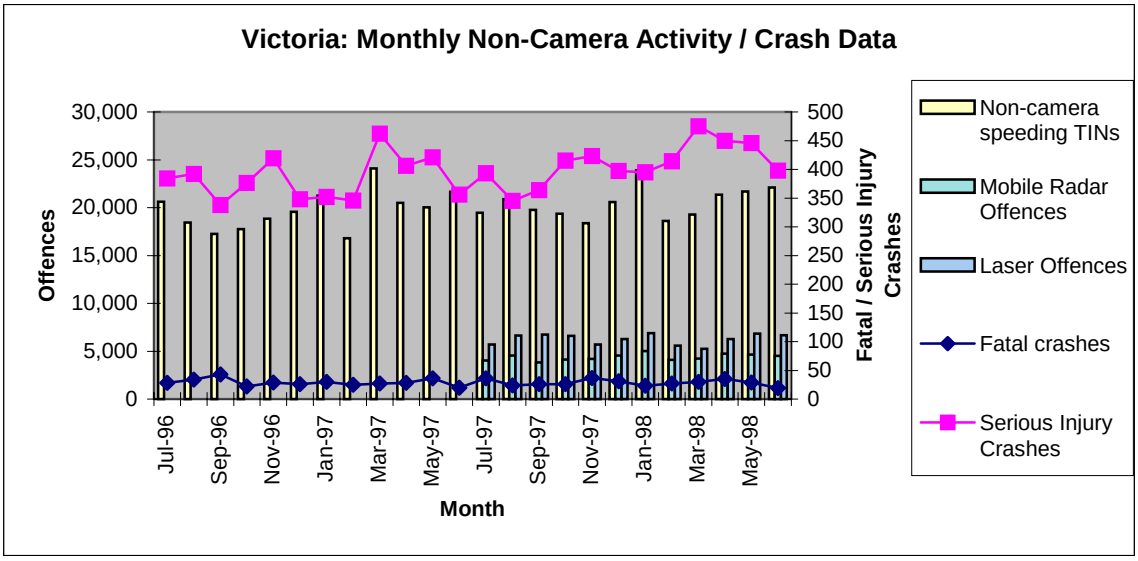


Figure 7.24 — Victorian non-camera activity relative to statewide fatal and serious injury crashes.

### 7.8.2 Non-enforcement speed data

VicRoads have undertaken extensive speed monitoring on a regular basis for some years. Access to this data is limited, and has not been utilised in speed enforcement evaluations. The potential to use this information, from either raw data sets or standard reports has extensive potential and should be investigated further. The availability of resources within the area is limited which effects the ability to process requests for data of this type. As a commercial entity, appropriate arrangements should be researched to allow the potential of this information to be realised.

Speeds are measured on midweek days, with standard speed statistics of median, 85th percentile and percent exceeding the speed limit computed for each day selected. A significant number of sites are included in the surveys, with results available for various speed zones. The freeway speed monitoring survey conducted in December 1998 revealed the following information:

100 km/h zone:

- 5 sites experienced a reduction in the % vehicles exceeding the limit (between 1% and 29% reduction),
- 9 sites recorded increases in the percentage of vehicles exceeding the limit (between 4% and 24%) and the 85th percentile speed (between 0.8 km/h and 4.2 km/h)

110 km/h zone

- 19 sites experienced a reduction in the % vehicles exceeding the limit (between 0% and 75.5% reduction), with the 85th percentile speed falling between 0 and 20.3 km/h.
- 10 sites recorded increases in the percentage of vehicles exceeding the limit (between 1% and 23%) and the 85th percentile speed (between 0.2 km/h and 8.5 km/h)

VicRoads also carry out selected speed surveys on an ad hoc basis. Recently a concentrated effort was made to measure vehicle speeds at approximately 60 sites within the Victorian metropolitan area. Other speed data is held by VicRoads however its use for speed enforcement and media activities is limited.

## 7.9 Western Australia

ETEP is aimed at reducing fatalities and serious injuries in WA by 33% by the year 2001. This is equivalent to saving 271 lives and 3740 serious injuries.

There is also the aim to 'reduce the proportion of drivers who admit to exceeding speed limits by 10 km/h or more at least half of the time, to the national average (18% in 1996/97) by maintaining the number of vehicles speed checked at least at 1996/97 levels.' (11 million speed camera checks per year, and increasing)

### 7.9.1 Crash and enforcement data

Performance measures used for speed enforcement, by the WAPS are:

- number and percentage change of fatal and serious injury road crashes,
- number of deaths per 100 000 population,
- number and percentage change in the proportion of motorists speeding in identified blackspot areas, and
- community attitudes toward safer driving behaviour.

The current measures to be monitored for the ETEP (refer Appendix 1 Section 1.9) are:

- A 25% increase in monthly infringement detection from the baseline (July - Dec 97),
- The 5 central optimised speed cameras will achieve the identified benchmark of 56 operational hours per camera per week and 6 (metropolitan) district cameras reach a combined target of 696 hrs per week (or 116 hours per camera per week),
- A 5% increase in the number of prosecuteable images,
- Improved infringement processing and notification from a possible eight weeks to seven working days or less, and
- Decrease the number of drivers exceeding the speed limit and the enforcement limit.

In the camera section of the WAPS quality control measures have been introduced. Random audits and checks are now conducted. The section now has two full time quality control officers. Monthly statistics are produced for quality control.

Camera Operators are also checked once or twice a week. An operator sheet incorporating quality checks must be completed every half or quarter hour.

The quality system introduced by WAPS is expected to result in a higher rate of prosecuteable images, more camera hours and ultimately a means of achieving the best return on investment in camera technology.

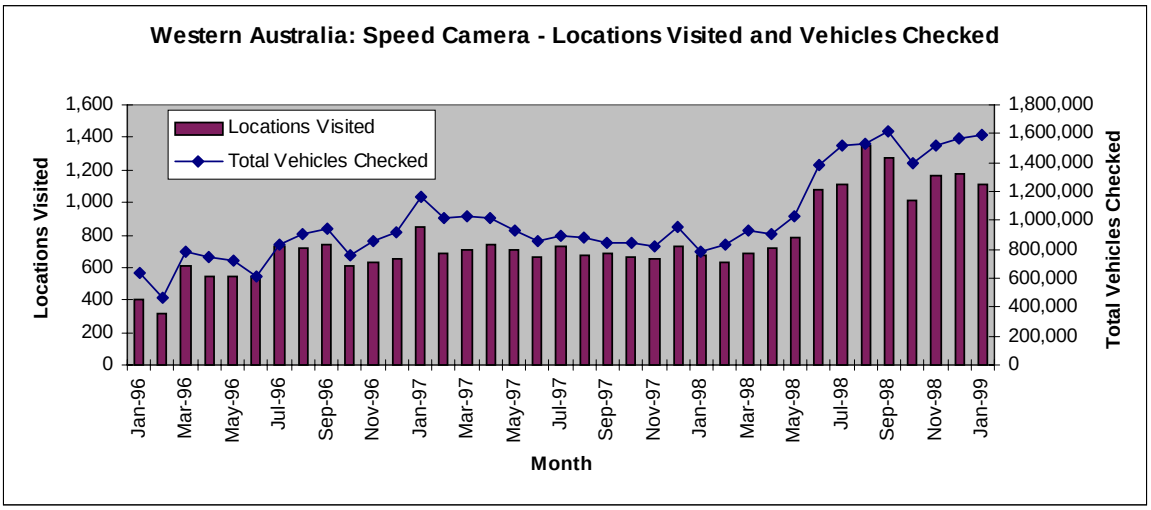


Figure 7.25 — Western Australian speed camera visits and number of vehicles checked.

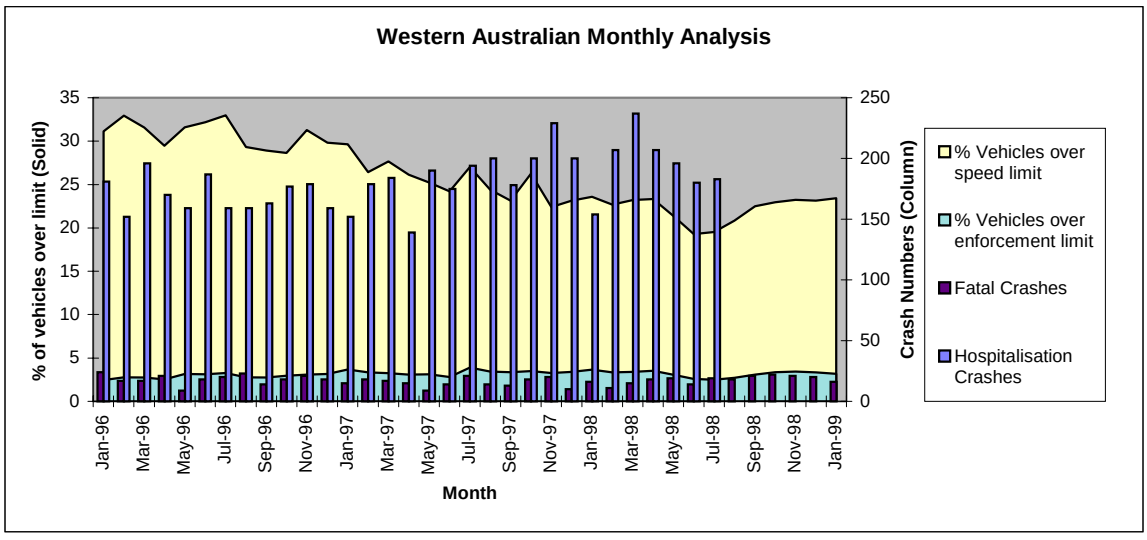


Figure 7.26 — Western Australian proportion of speeding vehicles, fatal and hospitalisation crashes by month.

### 7.9.2 Non-enforcement speed data

Main Roads WA acquires data related to speed monitoring. The use of this data for evaluation of speed management practices is not carried out at present. The format and style of recording is also unlikely to be suitable for trend monitoring. Culway data is available for heavy vehicles.

# 8 APPENDIX 8: COMPARISON OF SPEED ENFORCEMENT EQUIPMENT

The focus of each jurisdiction varies in terms of preferred methods and means of enforcement as discussed in Appendix 1. With the geographic and demographic nature of each jurisdiction also variable enforcement parameters were considered relative to jurisdiction area, road length, vehicle kilometres travelled and population.

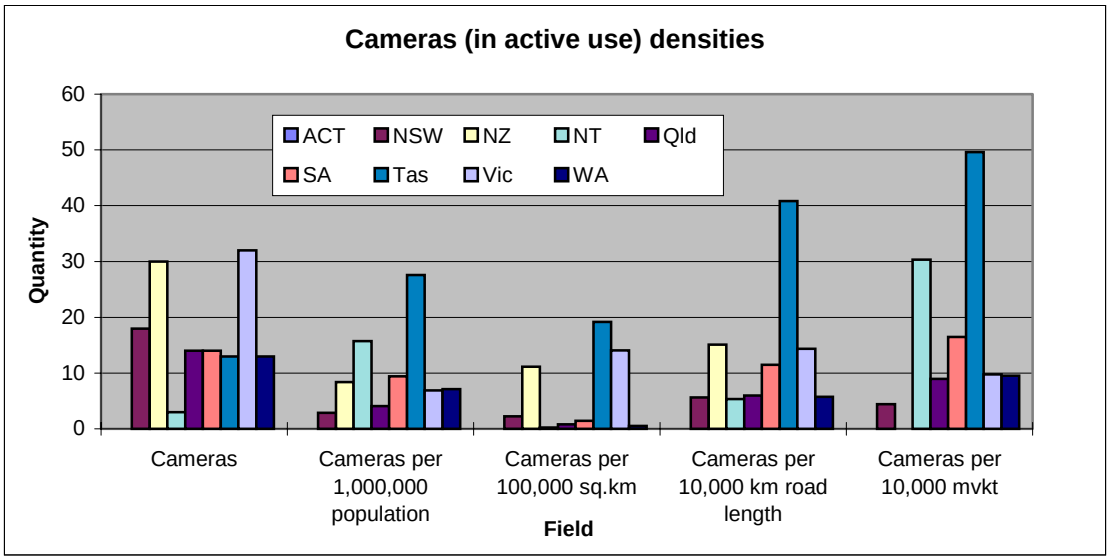


Figure 8.1 — Jurisdiction analysis of cameras in active use relative to jurisdiction properties

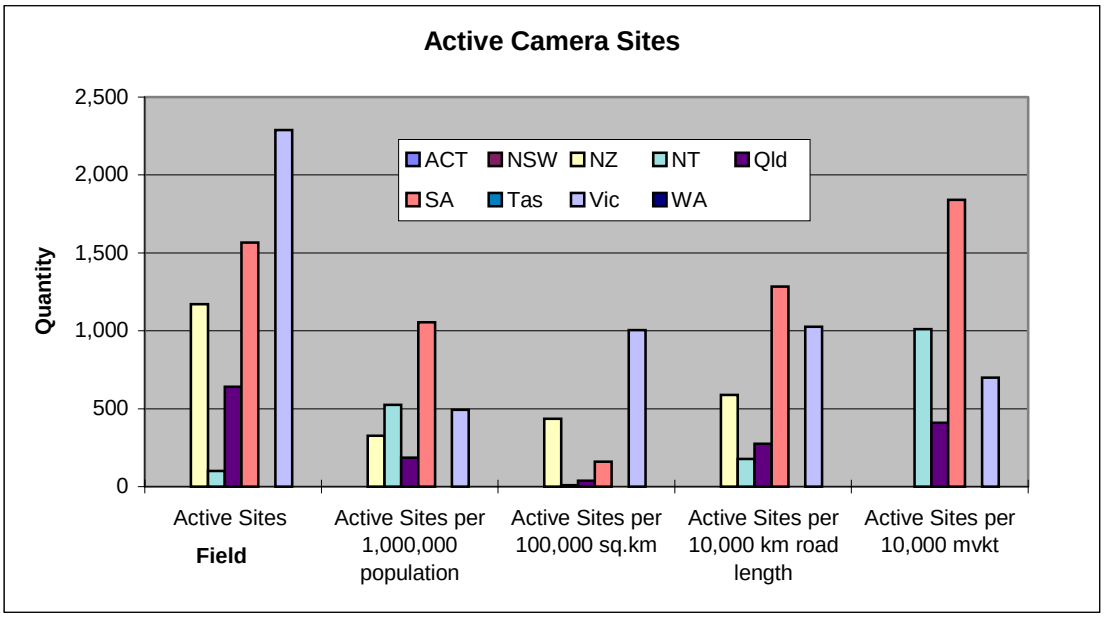


Figure 8.2 — Jurisdiction analysis of active cameras sites relative to jurisdiction properties

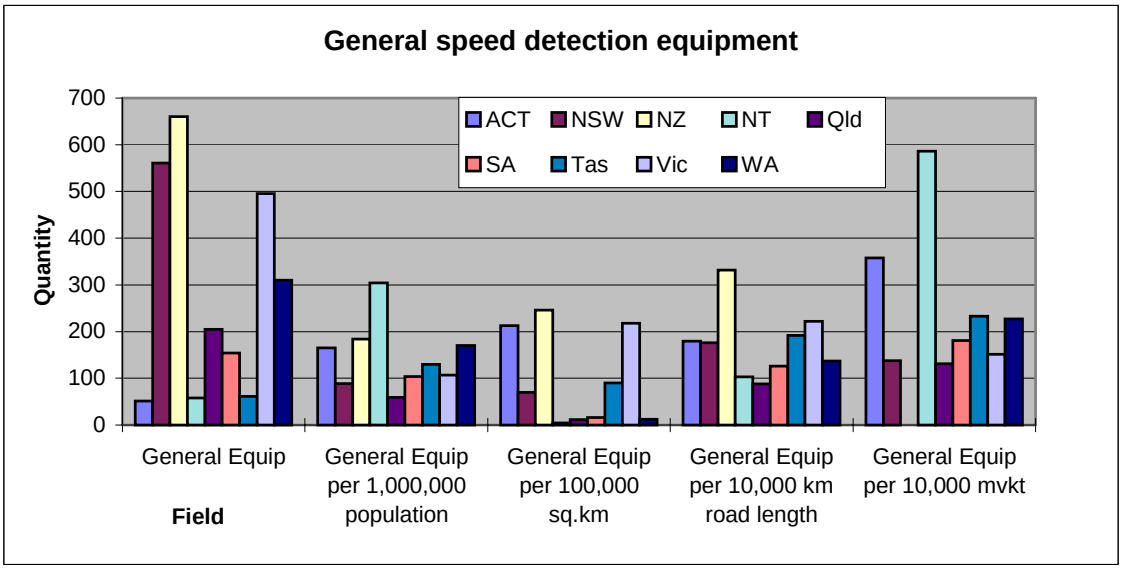


Figure 8.3 — Jurisdiction analysis of speed detection equipment (non-camera) available for use relative to jurisdiction properties

# 9 APPENDIX 9: UNPAID SPEEDING FINES

Data on unpaid speeding fines was requested from each jurisdiction. Availability of this data varied, with a summary of the information provided below.

Table 9.1 — Details of unpaid speeding fines

| Location | # Unpaid Speeding Fines | Value Unpaid Speeding Fines | # Paid Speeding Fines | Value Paid Speeding Fines | % Unpaid (#) |
|---|---|---|---|---|---|
| ACT* | 637 | 114,710 | 12,169 | 1,950,633 | 5.2% |
| NSW | NA | NA | 139,000 | 14286000 | NA |
| NT | NA | NA | NA | NA | NA |
| NZ | NA | NA | NA | NA | NA |
| SA | 64,754 | 9,480,037 | 223,320 | 30,194,219 | 22.5% |
| TAS | | | | | App 20% |
| VIC | 55,199 | 6,800,000 | 348,278 | 45,000,000 | 13.7% |

* Table 9.2 — ACT actual figures

| TIN Status | Number of TINs | Value of TINs in $'s |
|---|---|---|
| *current (unpaid)* | *38* | *7,391* |
| *court hold* | *73* | *14,295* |
| **paid** | 12,169 | 1,950,633 |
| *sanctioned (unpaid)* | *526* | *93,024* |
| withdrawn | 132 | 23,278 |
| withdrawn (caution) | 283 | 43,256 |
| cancelled | 35 | 7,234 |
| Total | 13,256 | 2,139,111 |

for purpose of comparison **bold = paid fines**; *italics = unpaid fines* (others omitted)

# 10 APPENDIX 10: CRASHES AT ACTIVE CAMERA SITES

Information on the number of crashes (before and after) at active camera sites was requested from each jurisdiction. Results are presented in the table below. Generally information on the number of crashes at sites, while available within databases, was not easily accessible. The frequent changing of active sites, or the nature of the databases made the request an arduous one - with information generally not supplied. New Zealand details were accessible however, with the data representing the crashes (as a sum over all sites) for the 12 months prior to a site becoming operational, and the 12 months following camera operation. This data was available for all 1170 sites operational in New Zealand.

Table 10.1 — Active Camera sites and Crash Data

| | | | | Crashes at Active Sites | | |
|---|---|---|---|---|---|---|
| Location | Sites identified | Sites Suitable | Active Sites | Annual Fatal | Annual Serious Injury | Annual Total |
| | | | | | | |
| NT | 356 | 340 | 100 | NA | NA | NA |
| NZ - prior | 1170 | 1170 | 1170 | 141 | 578 | 2520 |
| after | | | | 106 | 466 | 2120 |
| % change | | | | - 25% | - 19% | -16% |
| Qld | 2000 | 650 | | NA | NA | NA |
| SA[1] | 3632 | 3632 | 1566 (in 1998) | NA | NA | NA |
| Vic | 4404 | NA | 2287 | NA[2] | | |

ACT: Not applicable
SA[1]: Extensive computer work would be required, and systems are currently being overhauled and resources committed to redeveloping the system.
Vic[2] Active sites are constantly changing. Data at time of initial selection difficult to extract.
TAS: Site selection more open - (complaint based).
NSW and WA data not available.

# 11 APPENDIX 11: MANAGEMENT OF CAMERA OPERATIONS

Internal management practice in regard to the resourcing of camera operations varies between jurisdictions. The following table indicates the method employed, and where available the numbers of relevant staff involved in the activity.

Table 11.1 — Camera Operations Resource Type

NT SA Vic Qld NSW NZ Tas

| | Sworn Members | Non-sworn members | Public Servants | Contract | "Out-sourced" or other. |
|---|---|---|---|---|---|
| Camera Operation | Qld<br>NSW<br>NZ (40%)<br>Tas: 4 | NT: 4<br><br>NZ (60%) | SA: 36<br>Tas: 23 | Vic: 49 | Tas: part/full time civilian operators |
| Film Processing | | NT: Napp<br>Qld | SA: 2<br>Tas: 1 | Vic: 2 | NSW<br>NZ |
| Verification and Processing of TINs | SA: 1 | Qld<br>NSW<br>NZ | NT: (2)<br>SA: 10<br>Tas: 5 | Vic: 21 | |
| Data Management | Qld<br>Tas: 2 | Qld<br>NSW<br>NZ<br>Tas: 4 | NT: (2)<br>SA: 0.2 | Vic: 5 | |
| Other Operations | Qld | | | | |

ACT: Not applicable

# 12 APPENDIX 12: COMMUNITY ATTITUDES

## 12.1 Australia

The Federal Office of Road safety has commissioned a series of surveys of community attitudes to road safety. They are particularly useful in the context of understanding community views of speed as a problem and speed enforcement as a response to it. The last 4 surveys (Wave 10, 1997; Wave 9, 1996: Wave 8, 1995; Wave 7, 1994, fieldwork carried out in 1993) contain the same questions regarding speeding and speed enforcement, enabling changes in attitudes to be tracked over the years in all States and Territories.

The answers to the following questions are particularly relevant, with data expressed graphically where it assists in identifying trends.

Table 12.1 — Percentages of respondents mentioning speed as a contributing factor in crashes:

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT | Total |
|---|---|---|---|---|---|---|---|---|---|
| 1998 | 54 | 60 | 59 | 54 | 56 | 60 | 54 | 57 | |
| 1997 | 71 | 50 | 72 | 52 | 57 | 67 | 52 | 69 | 63 |
| 1996 | 51 | 58 | 60 | 56 | 51 | 62 | 42 | 45 | 57 |
| 1995 | 56 | 50 | 54 | 66 | 65 | 74 | 47 | 51 | 56 |
| 1993 | 66 | 50 | 47 | 49 | 48 | 67 | 50 | 56 | |

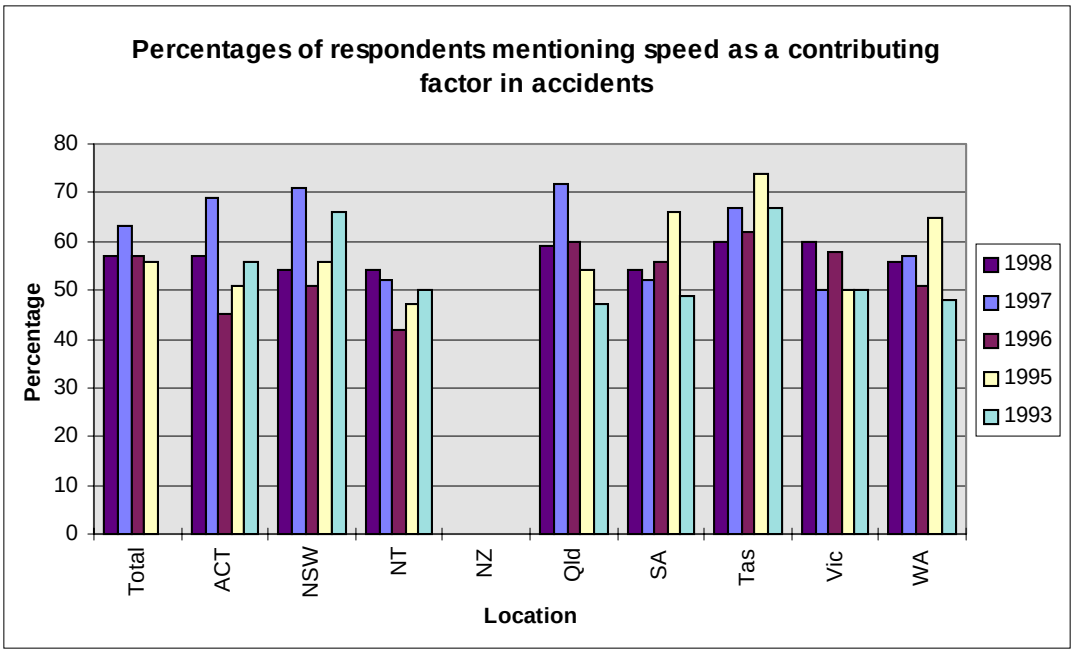


Figure 12.1 — Percentages of respondents mentioning speed as a contributing factor in accidents

Table 12.2 — Perceived changes in speed enforcement in the last two years:

| | 1998 | 1997 | 1996 | 1995 | 1993 |
|---|---|---|---|---|---|
| Increased | 62 | 66 | 57 | 60 | 58 |
| Stayed same | 26 | 22 | 26 | 26 | 24 |
| Decreased | 6 | 6 | 6 | 4 | 8 |
| Don't know | 6 | 6 | 11 | 9 | 9 |

Table 12.3 — Percentage who believe police speed enforcement has increased over the last two years

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT |
|---|---|---|---|---|---|---|---|---|
| 1998 | 59 | 53 | 70 | 68 | 73 | 71 | 48 | 56 |
| 1997 | 64 | 71 | 57 | 81 | 71 | 80 | 47 | 55 |
| 1996 | 55 | 63 | 45 | 67 | 64 | 67 | 55 | 54 |
| 1995 | 59 | 65 | 49 | 73 | 62 | 72 | 46 | 59 |
| 1993 | 59 | 65 | 36 | 65 | 56 | 67 | 44 | 48 |

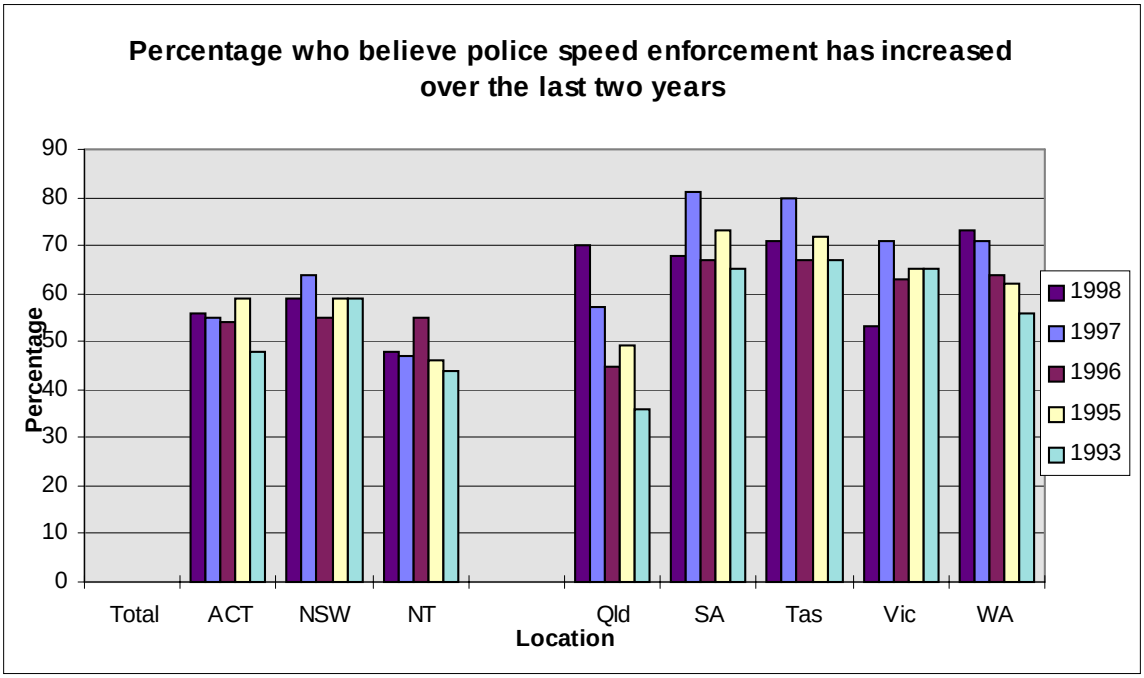


Figure 12.2 — Percentage who believe police speed enforcement has increased over the last two years

Table 12.4 — Drivers who believe there have been general decreases in the driving speed:

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT |
|---|---|---|---|---|---|---|---|---|
| 1997 | 27 | 25 | 28 | 29 | 28 | 38 | 23 | 32 |
| 1996 | 31 | 29 | 24 | 32 | 30 | 31 | 22 | 41 |
| 1995 | 26 | 29 | 18 | 34 | 20 | 32 | 22 | 26 |
| 1993 | 16 | 25 | 17 | 24 | 26 | 32 | 19 | 25 |

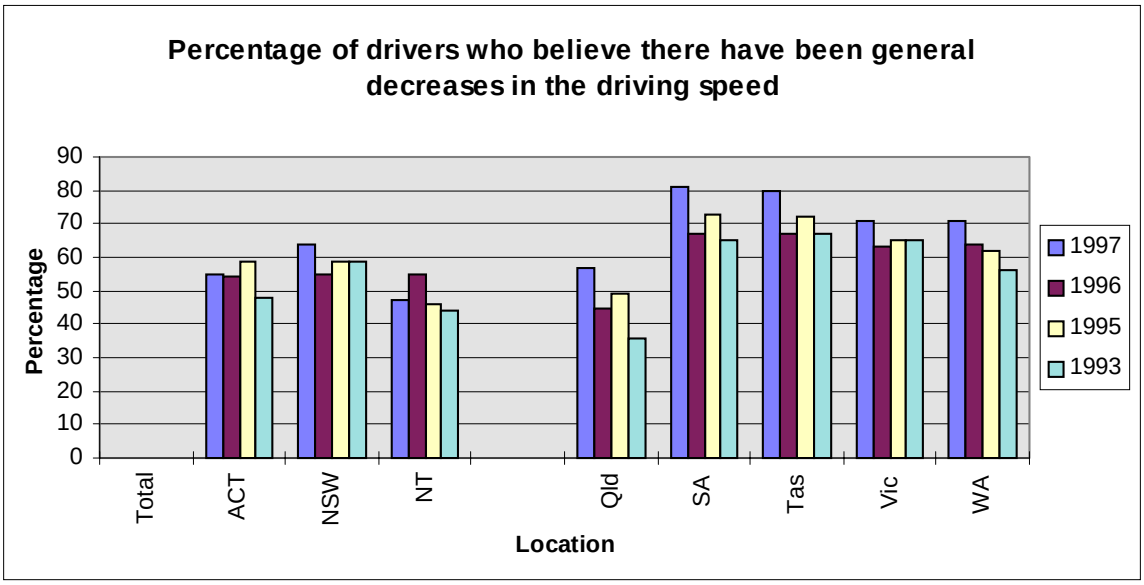


Figure 12.3 — Percentage of drivers who believe there have been general decreases in the driving speed

Table 12.5 — Drivers who say they drive 10 km/h or more over the limit:

| | 1998 | 1997 | 1996 | 1995 | 1993 |
|---|---|---|---|---|---|
| Always/most occasions | 8 | 12 | 15 | 17 | 15 |
| Sometimes | 24 | 21 | 21 | 24 | 20 |
| Just occasionally | 45 | 43 | 42 | 37 | 45 |
| Never | 23 | 23 | 22 | 22 | 20 |

Table 12.6 — Drivers booked for speeding in the last 2 years:

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT |
|---|---|---|---|---|---|---|---|---|
| 1998 | 17 | 20 | 14 | 30 | 27 | 23 | 18 | 13 |
| 1997 | 10 | 26 | 15 | 19 | 27 | 19 | 14 | 25 |
| 1996 | 11 | 20 | 12 | 21 | 25 | 25 | 15 | 20 |

(Not asked in earlier surveys)

Table 12.7 — Drivers booked for speeding in the last 6 months:

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT |
|---|---|---|---|---|---|---|---|---|
| 1998 | 6 | 5 | 4 | 14 | 9 | 11 | 8 | 5 |
| 1997 | 5 | 11 | 4 | 11 | 14 | 7 | 1 | 11 |
| 1996 | 3 | 6 | 2 | 8 | 14 | 5 | 3 | 10 |
| 1995 | 2 | 8 | 2 | 9 | 8 | 3 | 2 | 9 |
| 1993 | 4 | 7 | 1 | 7 | 8 | 4 | 6 | 6 |

Table 12.8 — Percentage of drivers who believe the speed tolerated in a 60 km/h zone should be 70 km/h or more

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT | Total |
|---|---|---|---|---|---|---|---|---|---|
| 1998 | 18 | 14 | 18 | 18 | 23 | 22 | 26 | 18 | 17 |
| 1997 | 16 | 21 | 18 | 20 | 36 | 18 | 15 | 16 | 20 |
| 1996 | 25 | 17 | 14 | 32 | 29 | 23 | 24 | 19 | 22 |
| 1995 | 32 | 24 | 19 | 17 | 38 | 23 | 21 | 21 | 26 |

Table 12.9 — Percentage of drivers who believe the speed tolerated in 100 km/h zone is over 110 km/h.

| | NSW | Vic | Qld | SA | WA | Tas | NT | ACT | Total |
|---|---|---|---|---|---|---|---|---|---|
| 1998 | 7 | 8 | 13 | 11 | 16 | 9 | 21 | 16 | 10 |
| 1997 | 9 | 12 | 11 | 10 | 19 | 5 | 21 | 12 | 11 |
| 1996 | 19 | 13 | 13 | 13 | 17 | 13 | 26 | 14 | 15 |

(Not asked in earlier surveys)

## 12.2 New Zealand

The LTSA undertakes a survey of public attitudes to road safety issues, including speeding, annually. The survey in 1998 indicated that:

41% thought the risk of being caught speeding is small (–4% change since 1995),

34% thought there was not as much speed enforcement as in previous years (+3%),

80% thought enforcing the speed limit helps to lower the road toll (+6%),

68% thought using speed cameras helps lower the road toll (+7%).

11% thought speed limits on their usual roads are too low (–6% change since 1995),

22% thought the 100 km/h open road limit should be raised (–5%),

19% thought the 50 km/h urban limit should be raised (–3%), and

58% thought there should be additional 60 and 80 km/h limits for some areas (–8%).

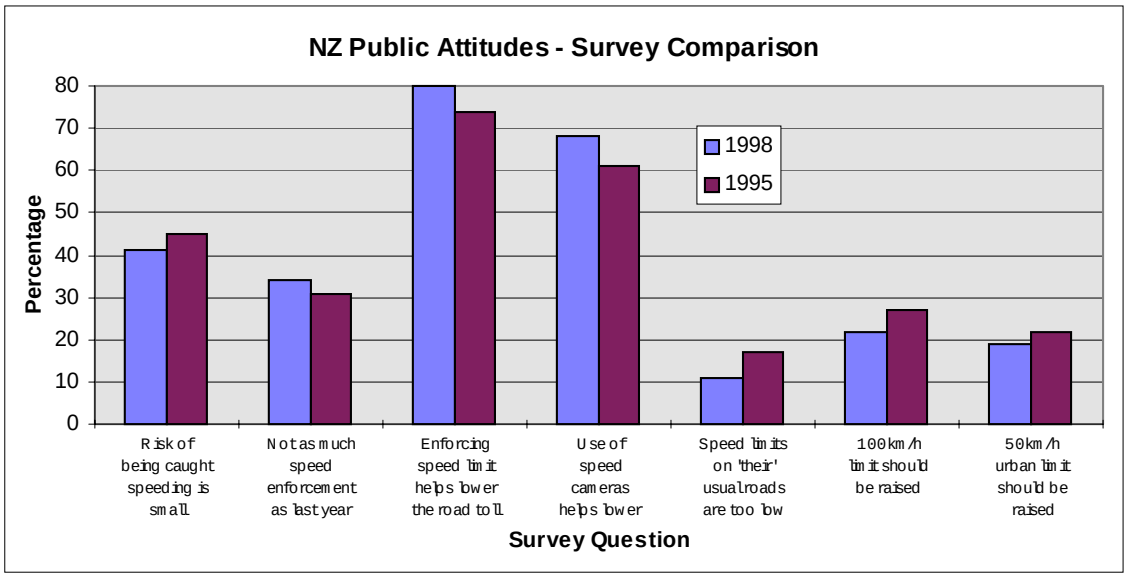


Figure 12.4 — New Zealand Public Attitudes – survey comparison

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# 13 APPENDIX 13: ORGANISATIONS AND MAIN CONTACTS

## 13.1 ACT

| | |
|---|---|
| Australian Federal Police | A/Supt. Alf Turketo |
| Department of Urban Services | Mr Robin Anderson |

## 13.2 New South Wales

| | |
|---|---|
| New South Wales Police | Supt. Ron Sorrensen |
| RTA NSW | Ms Patricia Grunert, Mr Andrew Graham |

## 13.3 New Zealand

| | |
|---|---|
| New Zealand Police | Supt. Neil Gyde, Mr. Phil Wright |
| Land Transport Safety Authority | Mr. John Edgar, Mr. Bill Frith |

## 13.4 Northern Territory

| | |
|---|---|
| Northern Territory Police | Supt. Terry Ey |
| Department of Transport and Works | Mr. Andris Bergs |

## 13.5 Queensland

| | |
|---|---|
| Queensland Police | Supt. Michael Hannigan, Mr. Peter Kolesnik |
| Queensland Transport | Ms. Michelle Smith |

## 13.6 South Australia

| | |
|---|---|
| South Australia Police | Supt. Graham Barrett, Mr. Ross McColl |
| Transport SA | Mr. John Walker |

## 13.7 Tasmania

| | |
|---|---|
| Tasmania Police | Inspector Barry Stephens |
| Division of Transport | Ms Wynde Gibson, Mr Jim Langford |

## 13.8 Victoria

| | |
|---|---|
| Victoria Police | Supt. Bob Wylie |
| Transport Accident Commission | Mr. David Healy |

## 13.9 Western Australia

| | |
|---|---|
| Western Australia Police Service | Insp. Bob Moormann, Mr. Gavin Maisey |
| Department of Transport | Mr. Rod Evans |

# INFORMATION RETRIEVAL

Austroads (2001), **Speed Enforcement in Australasia: Volume 1 — Practice — Performance Measures — Outcome Measures; Volume 2 — Appendices**, Sydney, A4, 178pp, AP-R189/01

**KEYWORDS**:

Speed enforcement, speed management, road safety, road trauma, performance measures, outcome measures, best practice, technology, intelligence, tolerances, penalties, public education, community involvement, literature review

**ABSTRACT**:

The main purpose of this project was to provide Australasian road safety and enforcement agencies with guidance on appropriate strategies and practices for enforcement programs aimed at speeding in both urban and rural areas, including enforcement intensities and the forms and levels of associated public education programs. An important secondary task of the project was the development of consistent performance and outcome measures of speed enforcement activities in Australia and New Zealand.

Volume 1 provides the main outputs from the project. It sets out the background to the project and the details of a literature review on speed enforcement. In the context of the situation in mid-1998 when most of the data was gathered, it provides summaries of enforcement resources and practices within each jurisdiction in Australasia, and a 'synthesis of current practice', which attempts to draw together the key elements of speed enforcement as practiced throughout Australia and New Zealand. Also included are recommended performance measures and outcome measures related to speed enforcement, and a brief discussion of research in progress at the time of data collection and future research needs related to speed enforcement.

The synthesis of current practice discusses core beliefs relating to speed enforcement, makes a reasoned assessment of current best practice, and explores actually or potentially contentious issues. Topic headings are:

- Technology
- Methods of enforcement
- Intensity of enforcement
- Performance and outcome measures
- Intelligence-driven operations
- Tolerances
- Penalties
- Public education

Volume 2 details, in a series of 13 appendices, the speed-enforcement-related data that was collected from each of the jurisdictions as part of the project. Also summarised are the outputs from a workshop on speed enforcement practices. The organisations and individuals contacted within each jurisdiction are listed.

# AUSTROADS PUBLICATIONS

*Austroads publishes a large number of guides and reports. Some of its publications are:*

| | |
|---|---|
| AP-1/89 | Rural Road Design |
| AP-8/87 | Visual Assessment of Pavement Condition |

Guide to Traffic Engineering Practice

| | | | |
|---|---|---|---|
| AP-11.1/88 | Traffic Flow | AP-11.9/88 | Arterial Road Traffic Management |
| AP-11.2/88 | Roadway Capacity | AP-11.10/88 | Local Area Traffic Management |
| AP-11.3/88 | Traffic Studies | AP-11.11/88 | Parking |
| AP-11.4/88 | Road Crashes | AP-11.12/88 | Roadway Lighting |
| AP-11.5/88 | Intersections at Grade | AP-11.13/95 | Pedestrians |
| AP-11.6/93 | Roundabouts | AP-11.14/99 | Bicycles |
| AP-11.7/88 | Traffic Signals | AP-11.15/99 | Motorcycle Safety |
| AP-11.8/88 | Traffic Control Devices | | |

| | |
|---|---|
| AP-12/91 | Road Maintenance Practice |
| AP-13/91 | Bridge Management Practice |
| AP-14/91 | Guide to Bridge Construction Practice |
| AP-15/96 | Australian Bridge Design Code |
| AP-17/92 | Pavement Design |
| AP-18/00 | RoadFacts 2000 |
| AP-22/95 | Strategy for Pavement Research and Development |
| AP-23/94 | Waterway Design, A Guide to the Hydraulic Design of Bridges, Culverts & Floodways |
| AP-26/94 | Strategy for Structures Research and Development |
| AP-29/98 | Austroads Strategic Plan 1998–2001 |
| AP-30/94 | Road Safety Audit |
| AP-34/95 | Design Vehicles and Turning Path Templates |
| AP-36/95 | Adaptions and Innovations in Road & Pavement Engineering |
| AP-38/95 | Guide to Field Surveillance of Quality Assurance Contracts |
| AP-40/95 | Strategy for Ecological Sustainable Development |
| AP-41/96 | Bitumen Sealing Safety Guide |
| AP-42/96 | Benefit Cost Analysis Manual |
| AP-43/00 | National Performance Indicators |
| AP-44/97 | Asphalt Recycling Guide |
| AP-45/96 | Strategy for Productivity Improvements for the Road Transport Industry |
| AP-46/97 | Strategy for Concrete Research and Development |
| AP-47/97 | Strategy for Road User Cost |
| AP-48/97 | Australia at the Crossroads, Roads in the Community — A Summary |
| AP-49/97 | Roads in the Community — Part 1: Are they doing their job? |
| AP-50/97 | Roads in the Community — Part 2: Towards better practice |
| AP-51/98 | Electronic Toll Collection Standards Study |
| AP-52/97 | Strategy for Traffic Management Research and Development |
| AP-53/97 | Strategy for Improving Asset Management Practice |
| AP-54/97 | Austroads 1997 Bridge Conference Proceedings — Bridging the Millennia |
| AP-55/98 | Principles for Strategic Planning |
| AP-56/98 | Assessing Fitness to Drive |
| AP-57 & 58/98 | Cities for Tomorrow — Better Practice Guide & Resource Document |
| AP-59/98 | Cities for Tomorrow — CD |
| AP-60/98 | Guide to Stabilisation in Roadworks |
| AP-61/99 | Australia Cycling 1999-2004 — The National Strategy |
| AP-62/99 | *e*-transport — The National Strategy for Intelligent Transport Systems |
| AP-63/00 | Guide to the Selection of Road Surfacings |
| AP-64/00 | Austroads 4th Bridge Conference Proceedings — Bridges for the New Millenium |

*These and other Austroads publications may be obtained from:*


| | | |
|---|---|---|
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| 500 Burwood Highway | Fax: | +61 3 9887 8144 |
| VERMONT SOUTH VIC 3131 | Email: | donm@arrb.org.au |
| Australia | Website: | www.arrb.org.au |


*or from road authorities, or their agent in all States and Territories; Standards New Zealand; Standards Australia & Bicycle New South Wales.*