



# NATIONAL ROAD SAFETY ACTION PLAN

2003 and 2004



The National Road Safety Strategy 2001-2010 and associated National Road Safety Action Plans are available electronically from the following Internet site: [www.atsb.gov.au](http://www.atsb.gov.au)

# NATIONAL ROAD SAFETY ACTION PLAN

2003 and 2004

This is the Second Action Plan developed under the National Road Safety Strategy 2001–2010 (the National Strategy).

This Action Plan has been developed jointly by all Australian jurisdictions, with advice from leading researchers from Australia's principal road safety research organisations, and input from the National Road Safety Strategy Panel, which represents a broad range of organisations with a stake in road safety issues. It has been endorsed by Ministers of the Australian Transport Council.

The Action Plan has been developed to provide a clear focus on priority action areas in road safety in calendar years 2003 and 2004.

These include areas where there is the potential to achieve a significant impact on road trauma within the next few years, and others that will lay the foundations for longer term gains. The mix of measures adopted in individual jurisdictions, and the details of specific measures, will vary to reflect local circumstances and priorities. The Action Plan cannot pre-empt the administrative or legislative processes required before implementation of many of these measures. However, all jurisdictions agree that planning and implementation should focus on these priority areas.

The Action Plan is not intended to be a list of everything that should or will be done to improve road safety. Action on a much broader range of measures will continue, in line with the strategic objectives of the National Strategy, and the strategies and action plans of individual jurisdictions and other organisations.

*The road toll should not be accepted as inevitable.*

*The priority given to road safety should reflect the high value that the community as a whole places on the preservation of human life and the prevention of serious injury.*

*- the National Strategy*

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## The National Road Safety Strategy

*Road crashes are a major cause of human trauma. There have been over 163,000 road fatalities in Australia. In addition to the burden of personal suffering, the monetary cost of crashes has been estimated to be in the order of \$15 billion per annum (in 1996).*

*Improved road safety is achievable. From 1970 until 1999 the fatality rate dropped from 30.4 to 9.3 deaths per 100,000 population. The rate is now at its lowest since record keeping commenced in 1925. This reduction has been achieved in spite of a huge increase in motor vehicle use. From 1970 to 1999, the fatality rate per 10,000 registered vehicles has dropped from 8.0 to 1.5<sup>1</sup>.*

*This improvement has come at a price in terms of money and social responsibility. The Australian people have been asked – and have agreed – to pay for safety in vehicles and for better roads, and to accept tougher regulations and enforcement measures. ...*

*Australia achieved significant reductions in the road toll in the early and mid 1990s but since 1997 the road toll has remained constant. There is much more that we can and must do. Some other developed nations are achieving fatality rates of just 60% of our rate and these nations are working towards further ambitious reductions.*

*Our target is to achieve a 40% reduction in the number of fatalities per 100,000 population by 2010. It is a difficult target, but an achievable one. Achieving this target will save about 3,600 lives over the next 10 years. It is a target that will require strenuous effort by all parties involved in road safety. In addition to our own transport agencies we therefore ask for the continuing support of road users and user groups, the media, police, health care providers, schools, local government, vehicle builders, employers and the wider community.*

*– the National Strategy*

## BACKGROUND

The National Road Safety Strategy 2001–2010 was adopted by the Australian Transport Council (ATC) in November 2000. The Council comprises Federal, State and Territory Ministers with transport responsibilities and includes an observer from local government.

The Strategy provides a framework for coordinating the road safety initiatives of the Commonwealth, State, Territory and local governments as well as other organisations capable of influencing road safety outcomes.

The target of the Strategy is to reduce the annual number of road fatalities per 100,000 population by 40%, from 9.3 in 1999 to no more than 5.6 in 2010. This target is to be achieved by individual governments, with the support of other stakeholders and the community.

*Achieving the Target of this Strategy will require the support of:*

- *the whole community as road users;*
- *specific groups of users and the associations that represent them;*
- *authorities responsible for providing and managing roads;*
- *the police and justice sector;*
- *vehicle manufacturers;*
- *employers of road users;*
- *parents and schools who need to keep young people safe and prepare them to be road users;*
- *planners and designers who influence transport systems, the road environment and the need for road travel;*
- *health care professionals who attend to injured people; and*
- *governments that allocate funding to road safety programs and health services.*

*– the National Strategy*

## Strategic objectives

*The Target of this National Road Safety Strategy is to be achieved by:*

- *continuing existing effective measures;*
- *enhancing and/or achieving wider implementation of measures with further potential; and*
- *introducing new measures;*

*through pursuit of the following strategic objectives:*

- *improve road user behaviour;*
- *improve the safety of roads;*
- *improve vehicle compatibility and occupant protection;*
- *use new technology to reduce human error;*
- *improve equity among road users;*
- *improve trauma, medical and retrieval services;*
- *improve road safety policy and programs through research of safety outcomes;*  
*and*
- *encourage alternatives to motor vehicle use.*

*– the National Strategy*

## Action Plans

The ATC agreed that a series of two-year Action Plans should be developed, setting out specific measures available to achieve the objectives of the Strategy. It was intended that governments and other parties to the Strategy would introduce measures selected from successive Action Plans that were suited to local conditions. Each Action Plan was to be reviewed toward the end of its two-year period and a further Action Plan developed and submitted for the approval of the ATC.

The first Action Plan, for 2001 and 2002, was released with the Strategy. It provided a comprehensive list of 107 'possible measures' available for implementation. These measures addressed all the strategic objectives in the Strategy. Some of these 'possible measures' are potentially much more significant than others, in terms of total road fatality reductions.

## What has been done in the first two years?

Over the last two years a large and wide-ranging action agenda was implemented under the framework of the National Road Safety Strategy. The overall effort included the continuation and expansion of many proven road safety programs, as well as the introduction of promising new initiatives. In some areas, the groundwork was laid for measures expected to bring considerable safety returns in future years.

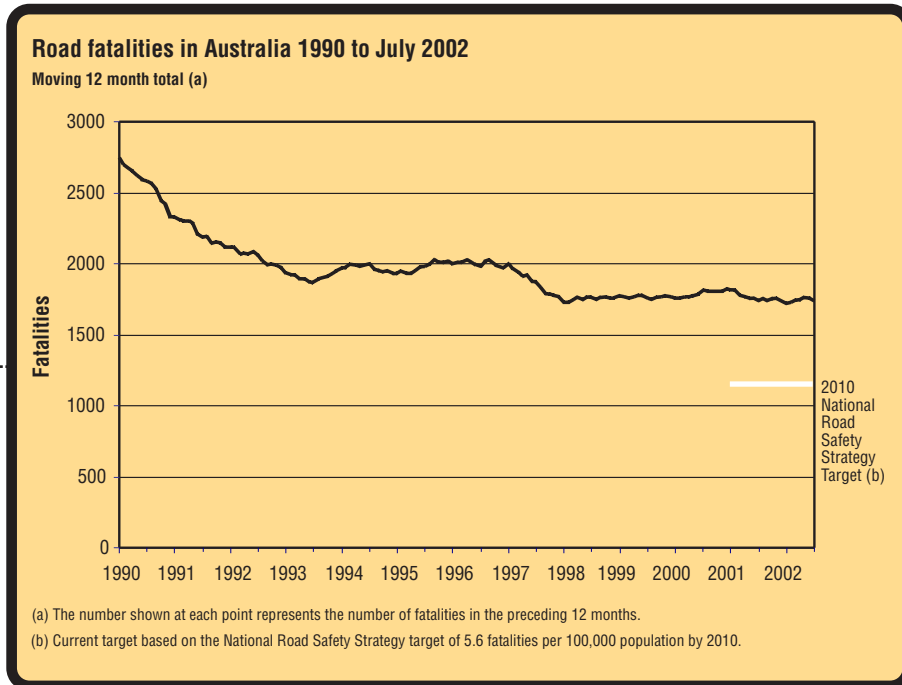
### Significant areas of achievement for 2001 and 2002

- 50 km/h speed limits on local residential streets were implemented in most urban areas of Australia. A Regulatory Impact Statement for changing the default urban speed limit to 50 km/h in the Australian Road Rules was prepared for consideration by the ATC in late 2002.
- Speed management programs placed more emphasis on the risks of 'moderate' speeding. Major public education campaigns focused on the importance of small reductions in normal driving speeds; lower enforcement thresholds were adopted in some jurisdictions.
- Investment in speed detection technologies was substantially increased, with particular emphasis on combined speed/red light cameras and other fixed site camera programs.
- Most states laid the groundwork for alcohol interlock schemes to target serious drink driving offenders. Enabling legislation was introduced in South Australia, Victoria and New South Wales.

## REVIEW

- Graduated licensing programs for novice drivers were implemented or upgraded. Several jurisdictions introduced specific measures to encourage more extensive practice among learner drivers.
- The strong commitment to black spot programs was maintained across jurisdictions, with substantial funding increases in Victoria and Western Australia and extension of the Federal Program for another four years. Aggregate black spot investment increased from \$76.1m in 1999-00 to \$182m in 2001-02.
- Local Government involvement in road safety was expanded and a range of programs put in place to engage the active support of community groups.
- Driver fatigue remained a high priority. Major public awareness and education activities were undertaken in a number of states. There was also a general expansion of road-based treatments such as audio-tactile edgelines, shoulder sealing, and rest area upgrades.
- A new regulatory framework to improve management of heavy vehicle driver fatigue was developed under the Fatigue Reform coordinated by the National Road Transport Commission (NRTC), and the related Compliance and Enforcement Reform; proposals will be submitted to Ministers toward the end of 2002.
- Work was undertaken with the automotive industry to implement a new Advertising Code for motor vehicles, aimed at curbing the depiction of unsafe driving practices.
- Intelligent transport systems with significant safety potential were introduced, notably with the advanced traffic management scheme developed for Sydney's motorway network.

## Outcomes to date



The plateau in road fatalities that was noted in the National Strategy has continued.

In 2001, there were 1,736 road fatalities in Australia: a reduction of 4.7% compared with calendar year 2000. However the 2000 figures (1,822 fatalities) were 3.3% higher than 1999 (1,763 fatalities). Thus the improvement in 2001 was in effect a return to the figures of 1999. Fatalities in the first nine months of 2002 were up by 0.5% compared with the first nine months of 2001. Outcomes differed significantly within and between jurisdictions and among sectors, but the total number of road fatalities nationally has been largely static since 1997.

The 2010 National Road Safety Strategy target is expressed in terms of fatalities per 100,000 population, relative to 1999. To make uniform progress toward the target rate of 5.6 road deaths per 100,000 population by 2010, the road fatality rate for 2001 should have been about 8.5. The actual rate for 2001 was 9.0.

## Assumptions underlying NRSS target

The National Road Safety Strategy 2001-2010 provided an indication of how a 40% reduction in the per capita fatality rate could be achieved, based on plausible estimates of the effects of known measures.

After allowing for increases in vehicle use and for the overlap when different measures are implemented in combination, the following indicative estimates were provided for the contribution of different types of measure to the overall target:

Safer roads	19%
Improved vehicle occupant protection	10%
Improved road user behaviour	9%
New technology to reduce human error	2%
<b>Total reduction in population fatality rate</b>	<b>40%</b>

### Safer roads

The estimates assumed that both black spot spending and total investment in road improvements would be maintained at then-current levels (in real terms), and that these programs would produce fatality reductions consistent with earlier evaluation studies. Although only a small part of total road expenditure, black spot programs were estimated to contribute over one-third of the reduction in fatalities from this category.

More recent evaluation studies<sup>2</sup> indicate that the returns estimated for black spot programs were probably conservative.

Aggregate national spending on black spot programs has increased (from \$76.1m in 1999-00 to \$182m in 2001-02). Comparable figures for total road spending are not yet available, but there is no indication that total spending has not been at least maintained in real terms.

## Safer vehicles

It was expected that benefits from improvements in new-vehicle occupant protection achieved during the 1990s (and earlier) would continue to accrue, as newer, safer vehicles progressively replaced existing vehicles on Australian roads.

Almost all of the predicted savings up to 2010 were from vehicle improvements already implemented or scheduled (reflecting the long lead time in realising the benefits of new vehicle measures).

## Improved road user behaviour

Earlier expert estimates had suggested that a fatality reduction of up to 20% was achievable through intensification of enforcement and education programs targeting speeding, drink driving and non-use of seat belts. The National Strategy calculations assumed a more conservative figure.

Reduced speed limits and tighter enforcement tolerances were identified as possible additional measures with a very large potential effect, but projections were based on the conservative assumption that only limited changes would be implemented.

Small additional gains from better driver training and licensing practices were assumed.

Greater enforcement of speed and alcohol limits contributed nearly two-thirds of the expected reduction in the fatality rate from behavioural changes.

## New technology to reduce human error

Long term potential benefits from technology such as intelligent speed limiting, broad application of alcohol interlocks and other options were considered to be large, but again the National Strategy estimates were conservative; the only benefits included in the calculations (with a combined effect of 2% by 2010) were:

- seat belt interlocks/warning devices (introduced on new vehicles from 2005); and
- alcohol interlocks (fitted to cars of convicted drink-drivers for two years).

## Exposure

It was assumed that growth in light vehicle usage would be only a little more than the rate of population growth. A projected 30% increase in heavy vehicle use was noted. After allowing for potential offsetting effects such as slower travel speeds due to increasing congestion, the overall effect of exposure increases on the population fatality rate by 2010 was estimated at about +3%.

## Comment

The estimates indicated that close to three quarters of the targeted 40% reduction in per capita fatality rates could be achieved from maintenance of real funding for road measures (without significant re-targeting), and the flow-through effects of vehicle safety improvements that were already implemented or scheduled.

Most of the remaining improvement was expected to be achievable through improved compliance with existing rules on drink driving, speed and restraint use (achieved by extending and refining enforcement programs, backed by public education and persuasion).

Only a very small proportion of the total projected safety improvement was associated with measures that had inherently long lead times. The accumulation of road and vehicle improvements over the decade was expected to be fairly uniform, and it was noted that changes through improved compliance with existing rules should be achievable sooner rather than later.

## Other factors that may be affecting fatality trends

The reasons for slower than expected progress toward a lower fatality rate are not clear, but researchers and officials have identified a number of factors that *may* be affecting current trends. These include:

- Less improvement than expected in overall compliance with drink driving laws and speed limits.
- Increasing diversity of the vehicle fleet.
- A substantial increase in motorcycle rider fatalities, which was not predicted in the earlier estimates.
- Changes in vehicle usage (possibly related to economic factors).
- Statistical variation (while some random variation in annual national fatality counts can be expected, usually within the range of  $\pm 2\%$ , it is unlikely that the plateau in national road fatalities since 1997 is the result of a long series of statistical variations from an underlying downward trend).

These factors are discussed in more detail at Appendix 1.

## MAJOR ACTION AREAS FOR 2003 AND 2004

While it is not possible to be precise about the reasons why progress has been slower than had been expected two years ago, the bottom line is clear: unless action is taken to achieve better results, there is a growing prospect that the target of the Strategy will not be achieved.

There is no reason to believe that the target is unachievable.

Measures to achieve a faster rate of progress are available. They are well researched, and likely to be cost-effective. They are not particularly radical: in fact, to a large extent they represent best-practice approaches already adopted in some other developed countries.

The Action Plan for 2003 and 2004 has been developed to provide a clear focus on areas where there is the potential to achieve a significant impact on road trauma within the next few years, and others that will lay the foundations for longer term gains.

There is a strong consensus among experts consulted in the preparation of this Action Plan that the number of road fatalities over the rest of this decade – and beyond – will depend critically on the action that is taken in two key areas:

- Speed management
- Application of engineering measures to improve the safety of roads
  - including both black spot programs and targeted 'mass application' of cost-effective measures to improve the safety of larger sections of the road network.

Other areas where there is a prospect of substantial gains (or worthwhile gains at relatively low cost) are:

- Driver impairment (alcohol, other drugs and fatigue)
- Vehicle measures
- Licensing and driver management
- Special groups and issues

## MAJOR ACTION AREAS FOR 2003 AND 2004

- Under the Strategic Objective 'Improve equity among road users', the National Strategy noted particular concerns about safety outcomes for a number of specific groups of road users. The most effective options for improving the safety of these groups include measures that are not specifically targeted to group members: such as improved speed management and safer road infrastructure. However, the Action Plan puts forward a small number of proven group-specific measures for gains in addition to the general measures.

Specific initiatives available within these six broad areas are listed in the following sections. Measures marked → are those likely to have the most substantial direct impact on the total number of road fatalities.

## Speed

Travel speed affects the severity of crashes, as well as the risk of involvement in a crash. There is evidence from an extensive body of research that even small reductions in vehicle speeds result in a marked reduction in the number of road fatalities and serious injuries.<sup>3</sup>

Community attitude surveys show growing public understanding of speed risks, and majority support for quite strict approaches to speed management. However, this is still well short of the profound change in public attitudes to drink driving that developed over the last two decades.

There is still a widespread belief that it is only speeds well in excess of current limits (or prevailing speeds) that are risky – though this is now a minority view. Australian research has provided direct evidence that speeds just 5 km/h above average in urban (60 km/h) areas, and 10 km/h above average in rural areas are sufficient to double the risk of a casualty crash: roughly equivalent to the increase in risk associated with a Blood Alcohol Concentration of 0.05. The evidence also indicates that although 'moderate' speeding (within 10 or 15 km/h of the posted limit) is far less risky than more extreme speeds, it makes a comparable contribution to serious road crashes because it is so common.

Speed enforcement programs backed by extensive publicity were a major factor in the substantial reduction in road fatalities (37%) that occurred between 1989 and 1997. Compliance with speed limits is still far from perfect, and better compliance would cut road deaths significantly. The National Strategy notes the need for enforcement and education initiatives to *promote the public perception that compliance 'everywhere, all the time' is the best way of avoiding penalties and improving safety.*

Further substantial road trauma reductions can be obtained by lowering speed limits. Australia has relatively high speed limits across most of our road network, compared with limits set by most other OECD countries on comparable roads. The only exception is freeway-standard inter-city roads, where our 110 km/h limits are mid-range, by international standards.

As an illustration of the scale of potential safety benefits in this area, Appendix 2 provides research-based estimates of the effects of uniform reductions of 5 km/h and 10 km/h in vehicle travel speeds across the entire network in an Australian State. Even a 5 km/h uniform reduction would reduce total serious casualty crashes by 27%. A uniform 10 km/h

## MAJOR ACTION AREAS FOR 2003 AND 2004

reduction would reduce serious casualties by 40%. Other research indicates that the effect of such a reduction on fatalities would be even larger than the effect on casualties.

This Action Plan does not propose uniform speed reductions across the road network, but significant benefits can be captured by a balanced approach including selective speed limit reductions, improved enforcement and intensive public education.

### Action:

- ➔ Extend integrated publicity and enforcement campaigns geared to maximising compliance with speed limits.
- ▮ Develop national guidelines to support best practice in speed enforcement, taking into account
  - evidence that hidden speed cameras achieve greater casualty reductions than more visible operations that allow offenders to adjust their speed before they are caught <sup>4</sup>
  - evaluations of the safety outcomes of reduced enforcement tolerances in some jurisdictions; and
  - previous extensive Austroads research and consultation on this topic.
- ▮ Continuous (automatic) speed enforcement on high volume roads, and other roads with high crash rates.
- ▮ Undertake detailed monitoring of travel speeds (independent of enforcement action): good information on outcomes is essential to further develop best practice.
- ▮ Introduce a national urban default speed limit of 50 km/h.
- ➔ Selective extension of urban speed limits less than 60km/h (for example, to local shopping precincts, school zones and other areas of high pedestrian activity).
- ➔ Zoning to lower speed limits on selected rural roads and urban arterials (with a focus on roads with above average crash risk).
- ➔ Education and information programs to support speed management initiatives.

## Road environment

*Improving the safety of roads is the single most significant achievable factor in reducing road trauma. Further investment in safer roads is highly justified on both social and economic grounds. Road investment improves road safety through general road improvements – typically, 'new' roads are safer than 'old' roads – as well as through treatment of black spots.*

*- the National Strategy*

Evaluations of black spot programs have shown them to be highly effective, with a very favourable benefit/cost ratio.<sup>2</sup>

Black spot programs address problems in particular locations. Some fixable problems in the road environment are more diffuse, but safety levels can be improved considerably by 'mass application' of remedial measures. A number of measures are available that can be cost effective when appropriately targeted. Compared with new road construction, these are generally relatively low cost measures, but highly effective in safety terms.

Treatments with a high safety benefit include

- clearance of roadside hazards, or use of barriers to reduce the hazard
- shoulder sealing, audible edge lining, night-time delineation
- replacement of intersections by roundabouts
- programs to minimise the risks posed by utility poles (installing slip based poles and frangible poles, running power lines underground where possible, relocating poles away from curves and intersections, and placing them outside 'clear zones' on straight sections of road)
- separation of road users - centre barriers, pedestrian precincts, bike tracks etc.

Many of these treatments can meet the selection criteria for black spot programs in some locations, but there is scope for substantial further safety improvements from more broadly based mass action programs.

## MAJOR ACTION AREAS FOR 2003 AND 2004

A similar approach can also be applied to area-based treatments, particularly when focusing on pedestrians or other vulnerable road user groups in urban areas. Such an approach can be particularly effective if used in the developing outer suburbs of our major cities.

### Action:

- ▶ Provide funding for mass application of proven countermeasures targeting:
  - high volume roads (and road lengths) with bad crash records or high-risk characteristics; and
    - area-based treatments that meet appropriate selection criteria.
  - Implement road safety risk assessments in road planning, construction and maintenance.
  - Eliminate unsafe roadside planting programs.
  - Maintain and extend black spot programs.

# 3

## MAJOR ACTION AREAS FOR 2003 AND 2004

### Driver impairment

Impairment related to alcohol, other drugs or fatigue is a major contributing factor to road fatalities and injuries.

There is scope for further safety gains through deterrence, education, rehabilitation, technological solutions and harm minimisation approaches.

Different approaches are needed to deal with different types of impairment. For example, there is no foreseeable prospect of an effective enforcement-based approach to fatigue using roadside tests of impairment.

#### Alcohol

All jurisdictions have had considerable success in reducing the contribution of alcohol to road trauma, but about 26% of driver and rider fatalities still have a blood alcohol concentration above the legal limit.

This figure varies considerably between jurisdictions, which suggests that there is considerable scope for further gains through identification and application of best practice approaches to deterrence.

Although there is scope for more strategic deployment of resources available for drink driving deterrence programs, this is an area where 'working smarter' is no substitute for working hard. Effective deterrence depends on convincing potential offenders that offences are very likely to be detected and punished. This perception cannot be maintained without intensive enforcement. There is concern in many jurisdictions about high drink driving rates in rural areas. This reflects both the difficulties in applying Random Breath Testing effectively in rural areas, and the lack of alternative transport options (such as trains, buses or taxis) in many rural areas. Specially adapted programs are needed to reduce drink driving in rural areas.

There is evidence that a substantial proportion of drink drivers – particularly recidivist offenders – have serious alcohol abuse problems, often paralleled by broader psychological and social problems. Alcohol interlock programs and rehabilitation programs have had

## MAJOR ACTION AREAS FOR 2003 AND 2004

some success in changing the behaviour of recidivist offenders who are resistant to mainstream deterrence and publicity programs.<sup>5</sup>

### Action:

#### → Enhance drink driving deterrence:

- maintain and increase resources for enforcement and public education
  - improve strategic focus: develop national guidelines on best practice in drink driving enforcement (for example, achieving the best combination of general deterrence and effective targeting of particular locations and times); and
  - focus on developing more effective programs to reduce drink driving in rural areas.
- ▶ Implement and monitor alcohol interlock and rehabilitation programs to change the behaviour of repeat offenders.

### Other drugs

In terms of substance impairment, alcohol is the biggest single contributor to the road toll, however recent information from the Victorian Institute of Forensic Medicine indicates that other drugs warrant further examination and action.

### Action:

- ▶ Develop and evaluate improved drug deterrence measures.

### Fatigue

The contribution of fatigue to serious road crashes is difficult to quantify, but some estimates suggest that fatigue may approach alcohol as a factor in serious crashes.

## MAJOR ACTION AREAS FOR 2003 AND 2004

Fatigue among long distance heavy vehicle drivers is a major area of concern for the community, governments and the road transport industry, but fatigue among light vehicle drivers is the cause of most serious fatigue-related road crashes.

Changes in road user behaviour in other areas – such as drink driving, seat belt use and speed – have contributed significantly to reductions in road fatalities. In these areas, change has occurred as a result of a combination of information campaigns and regulatory measures backed by enforcement.

There appears to be little prospect of addressing fatigue among non-professional drivers through regulation and enforcement.

Because of the absence of 'enforcement backup', information campaigns relating to fatigued driving face a challenge. However there is evidence from survey research that awareness of fatigue as a major risk factor is increasing, and it is important to build on that with well-targeted public information about specific risk factors, warning signs and preventive strategies.

Several reviews<sup>6</sup> have stressed the potential of cost-effective road-based measures to prevent fatigue casualties (either by alerting drivers before they drift off-path, or reducing the likelihood of a severe impact if a crash does occur).

A considerable amount of research is being conducted on fatigue warning devices, but to date the effectiveness of these devices in preventing casualties remains unproven – unlike road-based measures. Many experts believe that fatigue prevention and harm minimisation through cost-effective road engineering treatments will remain the most effective solutions.

### Action:

- ➔ Implement road-based countermeasures (Action area 2) to reduce the harm arising from fatigue-related crashes.
- ▶ Address fatigue through further public education for all drivers on risks, warning signs and preventive strategies.
- ▶ Complete and implement the Fatigue Reform coordinated by the NRTC, addressing heavy vehicle driver fatigue, and the related Compliance and Enforcement Reform.

# 4

## MAJOR ACTION AREAS FOR 2003 AND 2004

### Vehicles

Because of long lead times for vehicle safety improvements, there are limited options for new initiatives that will impact significantly before 2010. Almost all of the predicted savings up to 2010 in the National Strategy were from vehicle improvements already implemented or scheduled.

However, it is important to accelerate the uptake of vehicle safety features, and to lay the groundwork for improvements likely to have substantial benefits in the longer term.

The first Action Plan listed the following possible measure: 'Through the Australian Design Rules for vehicles (ADRs), require in-vehicle systems that encourage the use of seat belts, such as sensors which detect the non-use of seat belts and trigger responses such as an intrusive audible signal'. Research subsequently commissioned by the ATSB shows that such devices could have a substantial long term effect in reducing vehicle occupant injuries in Australia, and that very cost-effective options are available.

Consumer information about vehicle safety is available from the Australian New Car Assessment Program (ANCAP) and from crashworthiness ratings based on analysis of crashes on Australian roads (for used vehicles). Greater awareness and understanding of these ratings among both corporate and individual vehicle purchasers would enable more informed consumer decisions, and provide incentives for industry to supply more vehicles with advanced safety features. This could lower the price of features currently available as options. Decisions made by corporate vehicle purchasers flow through to the used car market, and thus affect the safety characteristics of the broader fleet.

Overseas research indicates that in-vehicle Intelligent Speed Adaptation systems (which provide feedback to the driver when local speed limits are exceeded, and can even be set to prevent speeding) have large potential safety benefits (and the potential for reductions in fuel consumption and emissions). A trial is already being conducted with fleet vehicles in Australia.

**Action:**

**LIGHT VEHICLES**

- ➔ Introduce an ADR for intrusive audible seat belt warning devices.
- ▶ Encourage corporate and individual vehicle purchasers to select safer vehicles, through campaigns to promote awareness of NCAP safety ratings and used-vehicle safety ratings.
  - Governments to lead by example in implementing safe fleet and safe driving policies.
- ▶ Mandate display of occupant protection safety ratings on new and used vehicles at point of sale (if ratings are available for the relevant model).
- ▶ Research vehicle compatibility implications of the increasing diversity of the Australian vehicle fleet, and review potential countermeasures (which could include road-based, vehicle-based and behavioural measures to reduce the frequency or severity of multi-vehicle crashes).

**HEAVY VEHICLES**

- ➔ Complete the development of the Heavy Vehicle Safety Strategy being coordinated by the National Road Transport Commission, and commence implementation – the Strategy will encompass road-based, vehicle-based and behavioural measures to address safety issues for heavy vehicles, including buses.
- ▶ Introduce an ADR for underrun protection for heavy vehicles.

**ALL VEHICLES**

- ▶ Encourage voluntary uptake of Intelligent Speed Adaptation in both light and heavy vehicle fleets, to increase understanding and awareness of potential benefits.

# 5

## MAJOR ACTION AREAS FOR 2003 AND 2004

### Licensing and driver management

Licence suspension is an important deterrent penalty but many recidivist offenders continue to drive without licences.

Among drivers and motorcycle riders involved in fatal crashes at least 5% of drivers and 19% of motorcycle riders do not have a valid licence.

A requirement to display a licence on demand is important to deterrence of unlicensed driving; it is also important to the enforcement of special licence conditions, such as alcohol interlocks and the zero alcohol limit on novice drivers, and to achieving certainty in the application of other penalties.

The Australian Road Rules prohibit the use of hand-held mobile phones when driving. Evidence is accumulating that use of hands-free units also involves a significant increase in crash risk but there is debate about the extent to which further restrictions would reduce serious crashes.

#### Action:

- ▶ Require all drivers and riders to carry their licence and produce it when requested by police.
- ▶ Resource the use of in-vehicle technology to access on-line licence databases.
- ▶ Review sanctions to ensure they maximise deterrence.
- ▶ Monitor safety impacts of mobile phones in vehicles.

## Special groups and issues

Not all road users enjoy the same level of safety. Under the Strategic Objective 'Improve equity among road users', the National Strategy noted particular concerns about safety outcomes for a number of specific groups of road users:

- youth;
- indigenous people;
- older people;
- inhabitants of rural and remote areas;
- some occupants in crashes between vehicles of different mass and features;
- pedestrians;
- cyclists;
- motorcyclists;
- people of non-English speaking background;
- people with disabilities;
- [international] tourists; and
- those facing socio-economic disadvantage.

Measures specifically targeting these groups are not always the most important means of achieving better safety outcomes for group members. For example, the biggest factor in the dramatic reduction in pedestrian fatalities that occurred between 1989 (501 fatalities) and 2000 (288 fatalities) was almost certainly a marginal reduction in urban travel speeds (largely associated with the introduction of speed camera programs and traffic calming measures), rather than any measure that targeted pedestrian safety directly.

Improvements to speed management, road infrastructure and other generic measures listed above are important to achieving further safety improvements for all these groups.

A small number of important group-specific measures have been listed below. Action to address other group-specific issues should continue, including on-going measures from the first Action Plan.

## MAJOR ACTION AREAS FOR 2003 AND 2004

### Action

- ▶ Examine, and if effective introduce, extensions to graduated licensing systems to improve the safety of novice drivers
  - for example, night time driving restrictions / same-age passenger restrictions, which have been effective in other countries.
- ▶ Implement frontal identification systems for motorcycles, so that automated speed enforcement measures apply to motorcycles on the same basis as other vehicles
  - rider safety would be improved by a reduction in overall traffic speeds, but speeding is a much more common factor in motorcycle fatalities than in fatal crashes generally.
- ▶ Complete the development of an International Visitors Road Safety Strategy, and commence implementation of key measures
  - international visitors have a higher fatality rate than Australian residents; nationally they represent about 2.5% of road fatalities, but this proportion is much higher in some regions, particularly the NT.
- ▶ Work with indigenous communities to identify and implement locally relevant initiatives that improve road safety outcomes for indigenous people. (These initiatives would complement and enhance the road safety measures listed elsewhere in this Action Plan that would improve road safety for indigenous people).
- ▶ Develop an Internet-based clearing house to share effective indigenous road safety initiatives amongst stakeholders and communities.

## MAJOR ACTION AREAS FOR 2003 AND 2004

### Railway level crossings

There are approximately 100 crashes between a road vehicle and a train in Australia each year, and about 8% of these result in deaths<sup>7</sup>. About 22 pedestrians die each year as a result of being hit by a train at a railway crossing. Fatalities at railway level crossings are only a small proportion of the deaths that occur on roads each year, but they are one of the most serious safety issues faced by the rail system in Australia. Level crossing crashes are often severe and dramatic, and are generally reported widely and emotively in the media.

Coordinated road and rail safety initiatives are required to respond effectively. In consultation with the rail industry, the Standing Committee on Transport's Rail Group is developing a strategic approach to improving safety at railway level crossings. This comprehensive strategy is expected to include public awareness and education on railway level crossing safety for road users, including pedestrians. In November 2002 ATC agreed that level crossing safety awareness and education be addressed in the National Road Safety Strategy Action Plan for 2003 and 2004.

Other broader priority areas identified in this Action Plan also have relevance to level crossing safety: for example, impaired driving or speeding are factors in a substantial proportion of level crossing crashes.

#### Action

- ▶ Develop and implement a coordinated approach to improving public awareness of level crossing safety issues, involving road safety agencies, SCOT Rail Group and the rail industry.

## Factors that may be affecting fatality trends

The reasons for slower than expected progress toward a lower fatality rate are not clear, but researchers and officials have identified a number of factors that *may* be affecting current trends.

- Less improvement than expected in overall compliance with drink driving laws and speed limits
  - enforcement programs need to be constantly re-invigorated to maintain their effectiveness;
  - there is concern that the effectiveness of deterrence programs may tend to decay, as drivers accumulate knowledge about where and when enforcement is likely to be targeted: it is important to maintain the perception that enforcement is unpredictable and difficult to avoid, but this is a challenge, particularly in rural areas;
  - maintaining resources is also critical: but resource inputs for traffic enforcement are becoming more difficult to monitor, because in most jurisdictions traffic enforcement has been integrated with other policing functions in decentralised regional structures;
  - in some parts of Australia, there is concern about lack of progress in reducing drink driving, particularly in rural areas;
  - data from speed camera programs suggests that speeds have been reduced and are now being contained, but this is based on speeds of vehicles passing speed cameras, so there is a question as to the extent that this reflects growing awareness of camera sites and/or ability to detect cameras in operation: better speed monitoring data (independent of enforcement) is needed to resolve this.

## APPENDIX 1

- Increasing diversity of the vehicle fleet
  - there is a clear trend toward increasing variation in vehicle mass, size, structure and shape (more small cars, fewer medium cars, more 4WDs, more trucks). This can lead to more fatalities and severe injuries from collisions between disparate vehicles.
- A substantial increase in motorcycle rider fatalities, which was not predicted in the earlier estimates
  - the number of motorcycle rider fatalities increased by 28% between 1999 and 2001 (from 164 to 210), adding 2.6% to total fatalities;
  - the increase is believed to reflect an increasing number of motorcycle riders (particularly in older age groups).
- Changes in vehicle usage
  - the National Strategy calculations assumed only a slight upward pressure on road fatalities from increased vehicle usage: however the annual increase in total vehicle kilometres travelled (between 1998 and 2000) was 2.1%<sup>8</sup>, which is almost double the rate of population growth; this trend may well have been sustained since 2000;
  - road casualties are correlated with economic factors, which can affect both the total amount of road travel and particular kinds of road use (for example, there can be more travel related to night-time leisure activity when unemployment is low and the economy strong): the impact of economic factors on recent trends is being analysed, but results are not yet available.
- Statistical variation
  - at a national level, most statistical variations in fatalities from year to year should be within the range of  $\pm 2\%$ , but larger variations are possible;
  - statistical variation in individual jurisdictions can be much larger, in percentage terms;
  - however, it is most unlikely that the plateau in national road fatalities since 1997 is the result of a long series of statistical fluctuations around an underlying downward trend.

## APPENDIX 1

- Aging population
  - in the longer term, an increase in numbers of elderly road users, including pedestrians, may tend to increase population fatality rates (partly because of the greater physical vulnerability of older people): however, the small demographic changes over the last few years are unlikely to have had a substantial effect on the fatality rate.

# Potential casualty reductions from reduced travel speeds

## Estimated Reductions in Serious Casualty Crashes From Reductions in Travel Speeds

Road Accident Research Unit  
The University of Adelaide

### Expected Reductions in Serious Casualty Crashes in South Australia Assuming a 5 km/h Speed Reduction Among All Vehicles

<i>Speed Limit Zone</i>	<i>% of Serious Crashes Affected</i>	<i>Estimated % Reduction in these Serious Crashes</i>	<i>% Reduction in All Serious Crashes</i>
60 km/h (local streets)	8.0	26	2.1
60 km/h (arterial roads)	45.6	26	11.9
70 km/h	2.1	26	0.5
80 km/h	7.5	30	2.3
90 km/h	0.8	30	0.2
100 km/h	13.8	30	4.1
110 km/h	19.6	30	5.9
Total	97.4		27.0

### Expected Reductions in Serious Casualty Crashes in South Australia Assuming a 10 km/h Speed Reduction Among All Vehicles

<i>Speed Limit Zone</i>	<i>% of Serious Crashes Affected</i>	<i>Estimated % Reduction in these Serious Crashes</i>	<i>% Reduction in All Serious Crashes</i>
60 km/h (local streets)	8.0	38	3.0
60 km/h (arterial roads)	45.6	38	17.3
70 km/h	2.1	38	0.8
80 km/h	7.5	46	3.5
90 km/h	0.8	46	0.4
100 km/h	13.8	46	6.3
110 km/h	19.6	46	9.0
Total	97.4		40.3

## APPENDIX 2

Notes:

- Serious casualty crashes are crashes reported to police with at least one hospital admission or fatality.
- 2.6% of crashes occurred on 'other' speed limit roads (no reductions are assumed on these roads).
- Reductions are based on RARU speed studies<sup>9</sup> (CR 204 and CR 207).
- It is estimated that 15% of 60 km/h speed zone crashes occur on local streets.
- Assumes RARU reductions (casualties in general) apply to serious casualty crashes.
- Assumes no reduction in risk for alcohol affected drivers, non-free speed vehicles and vehicles executing an illegal manoeuvre.

## REFERENCES AND SOURCES

- <sup>1</sup> Federal Office of Road Safety. *The History of Road Fatalities in Australia*, Monograph 23, FORS, Canberra, 1998.
- <sup>2</sup> Bureau of Transport Economics. *The Black-Spot Program 1996-2002: An Evaluation of the First Three Years*. BTE Report 104, Canberra 2001.
- <sup>3</sup> 'There is evidence from an extensive body of research that even small reductions in vehicle speeds result in a marked reduction in the number of road fatalities and serious injuries.' Reviews and summaries of the research literature are provided by:

DETR – Department of Environment Transport and the Regions (2000). *New Directions in Speed Management: A Review of Policy*. London.

ECMT – European Conference of Ministers of Transport (1996). *Road Safety: Speed Moderation*. Paris, France.

Fildes B and Lee S (1993). *The Speed Review: Road Environment, Behaviour, Speed Limits, Enforcement and Crashes*. Report CR 127, Federal Office of Road Safety, Canberra.

Haworth N and Symmons M (2001). *The Relationship Between Fuel Economy and Safety Outcomes*. Grant report to ATSB.

Kallberg VP and Toivanen S (1998). *Framework for Assessing the Impacts of Speed in Road Transport*. MASTER Deliverable 8 (report 1.2.4).

Taylor M, Lynam D and Baruya A (2000). *The Effects of Drivers' Speed on the Frequency of Road Accidents*. (TRL Report 421). Crowthorne: Transport Research Laboratory.

Key Australian studies that quantify the relationship between travel speeds and casualty crash risk are:

Kloeden CN, McLean AJ, Moore VM and Ponte G (1997). *Travelling Speed and the Risk of Crash Involvement*. CR172, Federal Office of Road Safety, Canberra.

Kloeden CN, Ponte G and McLean AJ (2001). *Travelling Speed and the Risk of Crash Involvement on Rural Roads*. CR204, Australian Transport Safety Bureau, Canberra.

Kloeden CN, McLean AJ and Glonek G (2002). *Reanalysis of Travelling Speed and the Risk of Crash Involvement in Adelaide South Australia*. CR207, Australian Transport Safety Bureau, Canberra.

## REFERENCES AND SOURCES

- 4 Research on hidden and visible speed cameras:
  - Keall MD, Povey LJ and Frith WJ (2002). 'Further results from a trial comparing a hidden speed camera programme with visible camera operation.' *Accident Analysis and Prevention*, 2002, V34-6.
  - Keall MD, Povey LJ and Frith WJ (2001). 'The relative effectiveness of a hidden versus a visible speed camera programme.' *Accident Analysis and Prevention*, 2001, V33.
- 5 Studies on rehabilitation programs and alcohol interlocks include:
  - Ferguson M, Sheehan M, Davey J and Watson B (2001). *The Impact of the 'Under the Limit' Drink Driving Rehabilitation Program on the Lifestyle and Behaviour of Offenders*. CR187, Australian Transport Safety Bureau, Canberra.
  - Rauch WJ, Zador PL, Ahlin EM, Beck KH and Krawchuk SA (2001). 'Effects of ignition interlock license restrictions on drivers with multiple alcohol offences.' Presented at the *Research Society on Alcoholism's 24<sup>th</sup> Annual Scientific Meeting*, June 2001, Montreal, Canada.
  - Rauch WJ, Zador PL, Beck KH, Ahlin EM and Krawchuk SA (2000). 'Effects of ignition interlock license restrictions on drivers with multiple alcohol offences: third year follow-up of a randomised trial in Maryland.' Presented at the *National Crime Prevention Council's Alcohol Policy XII Conference*, June 2000, Washington DC.
  - Tippetts AS and Voas RB (1998). 'The effectiveness of the West Virginia interlock program.' *Journal of Traffic Medicine*, V26, No 1-2.
  - Dussault C and Gendreau M (2000). 'Alcohol ignition interlock: one year's experience in Québec.' *International Conference on Alcohol Drugs and Traffic Safety (ICADTS 2000)*, [http://www.vv.se/traf\\_sak/t2000/index2.htm](http://www.vv.se/traf_sak/t2000/index2.htm).

## REFERENCES AND SOURCES

- <sup>6</sup> 'Several reviews have stressed the potential of cost-effective road-based measures to prevent fatigue casualties' :
- Evans J (1998). 'Road based fatigue countermeasures.' Proceedings of *Road safety Research, Policing and Education Conference*, Land Transport Safety Authority, NZ.
- NHTSA (1996). *Drowsy Driving and Automobile Crashes*. Report by NCSDR/NHTSA expert panel on driver fatigue and sleepiness, National Highway Traffic Safety Administration, 1996.
- Hartley LR, Penna F, Corry A and Feyer A-M (1998). *Comprehensive Review of Fatigue Research*. Institute for Research in Safety & Transport Report, Murdoch University (Number 116).
- <sup>7</sup> Railway level crossing fatalities
- Ford G and Mathews A (2002). 'Analysis of Australian grade crossing accident statistics.' Proceedings of *7<sup>th</sup> International Symposium on Railroad Highway Grade Crossing Research and Safety*, Monash University, February 2002.
- <sup>8</sup> Australian Bureau of Statistics. *Survey of Motor Vehicle Usage*.
- <sup>9</sup> 'RARU speed studies' cited in Appendix 2:
- Kloeden CN, Ponte G, and McLean AJ (2001). *Travelling Speed and the Risk of Crash Involvement on Rural Roads*. CR204, Australian Transport Safety Bureau, Canberra.
- Kloeden CN, McLean AJ and Glonek G (2002). *Reanalysis of Travelling Speed and the Risk of Crash Involvement in Adelaide South Australia*. CR207, Australian Transport Safety Bureau, Canberra.





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