

National Road Safety Action Plan 2009 and 2010



Australian Transport Council



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This is the final two-year Action Plan presented under the *National Road Safety Strategy 2001-2010*. It identifies the main issues expected to affect road trauma levels in the foreseeable future and sets out the priority areas for action in 2009 and 2010.

This Action Plan was developed jointly by all Australian jurisdictions, with input from the National Road Safety Strategy Panel, which represents a broad range of organisations involved in road safety. It was approved by Ministers of the Australian Transport Council (ATC) in November 2008.

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 outcome of community consultation, administrative or legislative processes required before implementation of many of these measures. However, all jurisdictions agree that an evidence-based approach supports a focus on these priority areas.

Summary of key actions

Australia's approach to road safety improvement is guided by the Safe System framework, which involves two fundamental objectives:

- » making the road transport system more forgiving of human error
- » minimising the level of unsafe road user behaviour.

Consistent with these objectives, the *National Road Safety Action Plan: 2009 and 2010* highlights measures with potential to significantly reduce road trauma over the next few years and to lay the foundation for longer term gains.

Action items are grouped into four broad areas:

1. Safer speeds
2. Safer roads and roadsides
3. Safer vehicles
4. Safer road users and safer behaviour.

A list of priority actions in each of these areas is presented in the following pages of this summary document.

The full Action Plan report contains a more detailed discussion of action priorities and supporting measures (see Chapter 5). The report also provides: an overview of the National Road Safety Strategy and the Safe System framework; a review of road safety progress and impediments; and a discussion of the institutional challenges that need to be addressed in improving the nation's road safety culture.

The Action Plan highlights measures with potential to deliver substantial safety gains. It is not intended to be a list of everything that should or will be done to reduce road trauma. Action on a much broader range of measures will continue in line with the strategic objectives and detailed action plans of individual jurisdictions.

This Action Plan is complemented by national strategies and activities addressing specific areas of road safety, including:

- » National Heavy Vehicle Safety Strategy
- » National Railway Level Crossing Safety Strategy
- » Indigenous Road Safety Working Group
- » Safety and Security Working Group (SSWG) work program.

Most importantly, the Action Plan links to, and is supported by, road safety strategies and action plans at the state and territory level.



1 Safer Speeds

Moderation of speeds chosen by drivers and riders is critical in establishing a safer road system. At lower speeds:

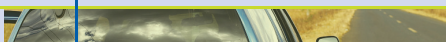
- » there are fewer crashes because road users (including pedestrians) have more time for decision making, motorists are less likely to lose control, and vehicles have much shorter stopping distances
- » crashes that do occur result in less severe injuries because of the lower impact energies involved.

Highest-impact actions

- ▶ Develop a national best practice speed management strategy.
- ▶ Implement national best practice speed enforcement measures, including:
 - point-to-point automatic speed detection
 - other targeted, automated speed enforcement technologies, where appropriate
 - unmarked speed enforcement methods combined with high-visibility approaches and tight enforcement tolerances.
- ▶ Identify high-risk roads or road sections for speed limit reductions where road improvements are not feasible in the short term.
- ▶ Implement high profile mass public education campaigns about safer speeds and campaigns that support the concept of unpredictability in speed enforcement.
- ▶ Work towards introducing advisory intelligent speed adaptation technology.
- ▶ Improve heavy vehicle speed management by implementation of the national Chain of Responsibility reform for speed compliance.
- ▶ Improve enforcement of heavy vehicle speed limiter compliance.

Supporting actions

- ▶ Establish a best practice model for rehabilitating repeat speeding offenders.
- ▶ Work with the community to introduce lower speed limits where appropriate.
- ▶ Conduct further research and promote the links between the safety benefits of lower speeds and reductions in fuel consumption, greenhouse impact and vehicle/fleet operating costs.
- ▶ Further develop and trial criteria for setting speed limits that take account of the Safe System perspective.
- ▶ Monitor industry response to the Federal Chamber of Automotive



Industries (FCAI) *Voluntary Code of Practice for Motor Vehicle Advertising* and encourage further effort, as appropriate, to reduce the depiction of speeding (and other unsafe practices) in advertisements.

- ▶ Work towards the implementation of vehicle and speed monitoring technology to improve heavy vehicle speed compliance.

Complementary action under the Safe System framework

- » Work towards introducing automatic number plate recognition systems to facilitate enforcement operations. This action is relevant not only to speed enforcement but a range of enforcement operations under Section 4, *Safer road users and safer behaviour*.

2 Safer roads and roadsides

Safety gains from road infrastructure improvements arise from two areas of activity: general investment and targeted safety works.

General investment in the construction and maintenance of the road network is primarily associated with mobility and economic performance benefits, but produces an ancillary safety benefit. This activity is important to road safety because it accounts for over 95 per cent of aggregate road funding.

More targeted expenditure on safety-related road works makes up a small proportion of overall road investment, but provides the community with relatively high safety returns. This activity includes black spot remedial treatments, as well as more broadly based safety-focused activities such as: route risk assessment and treatment; road safety audits; and 'mass action' safety improvements applied to large sections of the road network.

Highest-impact actions

- ▶ Establish a consistent risk-based approach to investment in the road network (AusLink, state-controlled and local government) and develop programs and trials for targeted safety upgrades of higher-risk sections.
- ▶ Maintain or increase the current level of investment in black spot and other safety-targeted road programs.
- ▶ Implement route risk assessment and treatment programs for major routes (including hazard removal, speed limit changes, shoulder sealing, audible edge lining and protective barriers) to address the problem of run-off-road crashes.



- ▶ Develop road-to-vehicle technology solutions to address single vehicle run-off-road crashes and other rural crash problems.
- ▶ Adopt the Safe System approach as a priority from conception to completion of new road works and maintenance works.

Supporting actions

- ▶ Governments (federal, state and territory) to review the balance between general road investment and funding for safety-focused works, seeking to make road safety a mainstream priority for all road investment decisions.
- ▶ Develop and agree on a standard methodology for road risk assessment to support the development of well targeted programs and outcome-based performance measures.
- ▶ Review black spot criteria, taking into account Safe System principles.
- ▶ Develop and adopt best practice approaches to improving safety at intersections, including the use of cost-effective measures such as signage, delineation, red-light/speed cameras, skid resistance treatment and other measures to reduce speeds.
- ▶ Implement audible centre line markings on major undivided rural transport routes.
- ▶ Implement a program of road and roadside improvements specifically to address motorcycle crashes at high-risk locations and routes.
- ▶ Implement a program to improve the rest area network across Australia.
- ▶ Include and apply Safe System principles in infrastructure documents, safety audit processes and professional development programs for designers, engineers, traffic managers and allied professionals.
- ▶ Establish both formal and informal networks to share experience with Safe System transformation projects.

Complementary action under the Safe System framework

- » Speed management actions listed in Section 1. In particular, introducing lower speed limits on high-risk roads or road sections, especially where road improvement is not feasible in the short term.



3 Safer vehicles

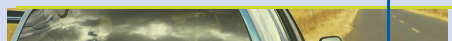
The benefits of vehicle safety improvements tend to accrue over many years, as new vehicles gradually replace existing vehicles in the total fleet.

Vehicle safety innovations have traditionally been classed as either *primary* (crash prevention) or *secondary* (occupant protection) safety measures. However, new technologies are blurring this distinction by enabling a range of integrated safety systems performing driver support, crash avoidance, crash mitigation, crash protection and post-crash assistance functions.

To accelerate the market penetration of advanced vehicle safety features, we need to supplement regulatory processes with other approaches, including partnerships with industry, consumer awareness programs, and safety-oriented fleet purchasing policies.

Highest-impact actions

- ▶ Complete and act on a regulatory assessment of the development of an Australian Design Rule (ADR) that would require all new passenger vehicles to be equipped with Electronic Stability Control (ESC) technology.
- ▶ Governments to undertake actions to encourage uptake of ESC, side impact head protection, seatbelt reminder systems, intelligent speed adaptation, emergency crash notification and other safety technologies, and to encourage consumers to purchase vehicles with such technologies.
- ▶ Further investigate emerging collision avoidance and related technologies, as well as in-vehicle technologies to address single-vehicle run-off-road crashes.
- ▶ Governments to implement vehicle fleet purchasing policies that have regard to high vehicle safety standards, for both occupants and pedestrians, including fitment of advanced safety features such as ESC, side curtain airbags and seatbelt reminder systems.
 - Encourage private sector organisations to adopt similar policies.
- ▶ Governments to explore partnership opportunities with the Australian vehicle industry to promote steps to improve vehicle safety.
- ▶ Australia to be an active partner in international standard-setting forums to expedite the introduction of new safety features in vehicles.
- ▶ Continue support for the Australasian New Car Assessment Program (ANCAP) and Used Car Safety Ratings, and develop more effective ways to promote public awareness and understanding of results.
- ▶ Investigate implementation of a national 'Stars on Cars' program to provide consumers with ANCAP, or equivalent, safety ratings on new light vehicles.



- ▶ Investigate use of web-based information to improve consumer awareness of available safety features.
- ▶ Develop a program of in-vehicle technologies to promote road safety, including:
 - digital tachographs and GPS-enabled solutions for heavy vehicles, to support the implementation of speed and fatigue management reforms
 - development of a policy framework to enable the adoption of intelligent speed adaptation technology.

Supporting actions

- ▶ The Australian Government to engage with stakeholders (e.g. the insurance industry) to participate in joint or complementary programs to stimulate consumer demand for vehicles with state of the art safety features.
- ▶ Continue research programs as part of internationally coordinated efforts to improve our understanding of vehicle occupant and pedestrian protection and to upgrade standards.
- ▶ Publish and distribute vehicle safety information designed for specific driver groups, particularly young people purchasing their first car, elderly people, vehicle fleet managers and truck drivers.
- ▶ Liaise with motoring journalists to engender a more positive response to safety features and driving behaviour in the specialist motoring press.
- ▶ Undertake actions developed through the National Heavy Vehicle braking strategy to harmonise Heavy Vehicle braking standards with United Nations Economic Commission for Europe (UNECE) regulations and develop a Code of Practice for prime mover/trailer brake compatibility with industry. Pursue heavy vehicle safety actions.
- ▶ Governments to undertake actions to encourage the take-up of electronic stability control in heavy vehicles in rural and remote areas.

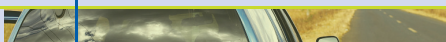
Complementary action under the Safe System framework

- » Actions in next Section addressing safe use of fleet vehicles.

4 Safer road users and safer behaviour

Road user behaviour is elemental to the safety of our road transport system. Safety authorities must therefore continue to adopt measures to reduce the frequency of ‘unsafe’ behaviours – that is, behaviours that involve an unacceptable increase in casualty crash risk.

Road users can be motivated to change their behaviour over short time periods by effective deterrent measures such as integrated enforcement and



publicity campaigns. However, measures to inform and educate motorists about risk factors, and encourage longer-lasting behaviour modification, are also required.

Drink and drug driving

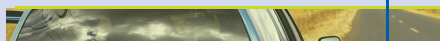
Substance impairment is a major factor in road trauma, with alcohol continuing to be the single biggest contributor in serious crashes. About a quarter of fatal crashes on Australia's roads involve drivers or riders with blood alcohol levels above the legal limit. This figure varies among jurisdictions and regions, suggesting some scope for further gains through identification and application of best practice approaches to deterrence. However, it is clear that other measures are needed to change the behaviour of the substantial proportion of drink drivers with serious alcohol abuse problems. Evidence linking elevated crash risk to illegal drugs also supports efforts to address this aspect of impaired driving.

Highest-impact actions

- ▶ National focus on the effectiveness of enforcement and public education, particularly in rural areas
 - for example, improve rural RBT effectiveness through innovative combinations of general deterrence and targeted operations.

Supporting actions

- ▶ Implement community education initiatives and extend responsible serving of alcohol programs.
- ▶ Undertake a review of best practice community programs that aim to minimise road trauma impacts resulting from alcohol use.
- ▶ Develop integrated programs for recidivist drink drivers, including:
 - a best practice alcohol rehabilitation program
 - increased use of alcohol ignition interlocks
 - assessment of alcohol-dependence problems, prior to re-issue of licence.
- ▶ Undertake further research on the size of the drug driving problem incorporating scope for expanded detection, access to coronial records, and routine drug and alcohol testing of all drivers and riders involved in fatal crashes.
- ▶ Extend the implementation of random drug testing.
- ▶ Work towards blood sampling for drugs and alcohol for all drivers involved in fatal and serious injury crashes.
- ▶ Pursue actions on heavy vehicle driver impairment, including



implementation of fitness for duty requirements of fatigue management accreditation and investigation of chain of responsibility options.

Restraint use

Despite vehicle safety technology advances, the conventional seatbelt continues to be one of the most effective forms of occupant protection in the event of a crash. Yet the fact remains that more than a quarter of vehicle occupants killed in Australian road crashes were not wearing a seatbelt. The failure to use a seatbelt is a particular problem in rural and remote parts of the country.

Highest-impact actions

- ▶ Increase seatbelt wearing enforcement, particularly targeting rural areas and heavy vehicles.
- ▶ The Australian Government to continue high-level liaison with the vehicle industry to encourage inclusion of effective seatbelt reminder systems in Australian vehicles and achieve cooperative agreement on improved performance beyond existing ADR requirements.
- ▶ Continue support for the ANCAP program and review specifications for seatbelt warning devices to earn points in the program.
- ▶ Include effective seatbelt warning systems in selection criteria for new vehicles purchased by government fleets.
- ▶ Jurisdictions to implement and promote recent agreed changes to the Australian Road Rules making drivers responsible for passengers' use of restraints, and requiring child restraints up to age seven.
- ▶ Increase education and training on the importance of using appropriate and correctly fitted child restraints that comply with the Australian Standard, as well as correct fitting and use of child restraints.
- ▶ Pursue improved restraint use by heavy vehicle drivers by working with operators to implement management practices that promote seatbelt wearing.

Supporting actions

- ▶ Monitor and report on research on improving restraint use.
- ▶ Communicate results of evaluations of performance and ease-of-use of child restraints.

Complementary action under the Safe System framework

- » Promote seatbelt reminder systems in all new cars (Section 3).



Fatigue and distracted driving

Fatigue is a known contributing factor to road crashes but the number of crashes in which fatigue plays a part is difficult to accurately determine. Fatigue is more likely to be a contributing factor in crashes which have involved long trips, extensive periods of continuous driving and trips during normal sleeping times when the driver has been previously deprived of sleep.

Sources of driver distraction, both within the vehicle and in the general road environment, have increased substantially in recent years. Mobile phone usage is a well established risk factor; however, there are growing concerns about the array of modern in-vehicle systems that can compete for driver attention.

Highest-impact actions

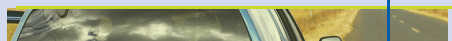
- ▶ Liaise with business, unions and industry to raise awareness of driver fatigue and distraction and facilitate arrangements for preventing fatigued workers driving from workplaces, or in the course of their work.
- ▶ Enforce the prohibition on use of hand-held mobile phones while driving, and discourage use of mobile phones of any type while driving, particularly for novice drivers.
- ▶ Promote the installation of engineering treatments known to address loss of control crashes.

Supporting actions

- ▶ Implement public education programs targeting better understanding of circadian rhythms and other influences on fatigue.
- ▶ Reinforce current telecommunications industry policies promoting the responsible use of mobile phones.
- ▶ Investigate, and if appropriate, trial the use of electronic enforcement of mobile phone usage laws.
- ▶ Monitor findings of research on driver fatigue and driver distraction.
- ▶ Monitor development of fatigue monitoring and warning devices.
- ▶ Implement and monitor the impact of National Heavy Vehicle Driver Fatigue Management reforms.

Complementary action under the Safe System framework

- » Relevant road engineering measures, including rest area improvements, are identified in Section 2.



Safe use of fleet vehicles

Crashes involving fleet vehicles account for about one-quarter of total road deaths and about two-fifths of all work-related deaths. Employers have an obligation to provide a working environment that is safe and to minimise as far as practicable the risk to health and safety of their employees. They are in a position to promote higher standards than are required by road traffic law. Effective fleet safety programs can also provide significant business benefits.

Highest-impact actions

- ▶ Implement fleet safety programs in government fleets and encourage private sector organisations to run similar programs.
- ▶ Develop and provide fleet safety guidelines for use by government and private sector fleets which identify duty of care issues under occupational health and safety (OH&S) guidelines for employees whose work involves driving vehicles. The guidelines should emphasise: safe driving behaviour; required use of seatbelts; discouraging any mobile phone use while the vehicle is in motion; and a zero BAC requirement.
- ▶ In conjunction with key industry partners, develop and implement a fleet safety best practice model based on the work currently being developed by Austroads, VicRoads, NSW RTA and other bodies.

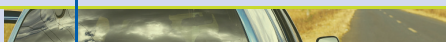
Complementary action under the Safe System framework

- » Fleet safety measures relating to safer vehicles are addressed in Section 3.

Novice drivers

Young and novice drivers face high levels of risk when making the transition from supervised to solo driving. Lack of experience, propensity for risk-taking, and a number of potential sources of distraction all contribute to elevated crash rates for novice drivers. Young drivers also tend to be on the roads during periods of relatively high risk.

This Section lists actions specific to novice drivers. However, measures targeting the general driver population can be particularly relevant to the safety of novice drivers. For example, general speed management measures are very important because excessive speed is a major risk factor for many novice drivers and because novices – particularly young males – are unlikely to comply with speed limits if they observe that older and more experienced drivers do not do so. Road measures that reduce deaths and injuries from run-off-road crashes are also particularly relevant to young drivers, because they have a high incidence of such crashes.



Highest-impact actions

- ▶ Implement and evaluate best practice education programs and graduated licensing systems for novice drivers.
- ▶ Encourage community and industry participation in key graduated licensing initiatives.
- ▶ Increase public awareness of the safety benefits for novice drivers of:
 - extensive supervised experience before solo driving is permitted, and
 - limiting access to higher risk driving, such as late night/early morning driving, driving with peer passengers, and drinking and driving.

Supporting actions

- ▶ Develop better methods for engaging young people in road safety issues.
- ▶ Monitor and report on research into novice driver development, risk factors, and the effectiveness of different interventions.

Motorcyclists

This decade has seen a substantial growth in the sales and usage of motorcycles, and a large increase in the number of riders killed and seriously injured.

Many of the general measures identified in this Action Plan will have a direct effect on improving the safety of motorcyclists, particularly in the areas of speed reduction and safer roads. Nevertheless, the case for additional action focused specifically on motorcycle safety is compelling.

Specific motorcycle safety actions

- ▶ Implement public education programs focused on the greater risk faced by motorcyclists and measures to mitigate this risk.
- ▶ Ensure that motorcycle-specific issues are taken into account in the design and construction of new roads and improvements to existing roads, including maintenance and selection of safety treatments, particularly on popular motorcycle routes.
- ▶ Promote to riders the safety advantages of ABS, linked braking systems and traction control in motorcycles, and encourage the motorcycle industry to increase the availability of motorcycles with these features.
- ▶ Consider options for a best practice graduated licensing system for novice riders.



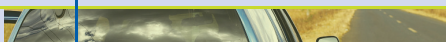
- ▶ Examine feasibility of introducing minimum standards and a national rating system for protective clothing for motorcyclists.

Pedestrians and bicyclists

Improvements in both pedestrian and cyclist safety are important elements in achieving reductions in road deaths. A number of key initiatives in this Action Plan are expected to have major impacts on trauma levels of pedestrians and cyclists.

Specific actions for pedestrians and bicyclists

- ▶ Develop infrastructure which reduces the risk of collisions between motor vehicles and cyclists and pedestrians.
- ▶ Install lower speed limits in areas and at times of higher pedestrian activity.
- ▶ Raise awareness of risks associated with pedestrian intoxication and implement targeted countermeasures, including extension of responsible serving of alcohol programs.
- ▶ Undertake community education to increase the rate of bicycle helmet use, particularly among adolescents.
- ▶ Undertake community education related to cyclist conspicuity, including lighting issues.
- ▶ Develop a national standard of specifications for power-assisted pedal cycles and provide information about safer use.



Relevance of action areas to road user groups

The following table provides a summary of how the broad action areas proposed in this plan are expected to benefit different road user groups. It illustrates the fact that general measures are often very important for specific groups and issues.

	Safer speeds	Safer roads and roadsides	Safer vehicles	Safer road user behaviour		
				Drink and drug driving	Restraint use	Fatigue and distracted driving
Motorcyclists	■■■■	■■■■	■	■■■■		■■
Cyclists	■■■■	■■	■	■		■■
Pedestrians	■■■■	■■	■	■		■■
Young drivers	■■■■	■■■■	■■	■■■■	■■■■	■■■■
Older drivers	■■■■	■■	■■■■	■	■■	■■
Indigenous road users	■■■■	■■■■	■■	■■■■	■■■■	■■
International visitors	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Rural road users	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■

(The number of 'boxes' reflects the relative benefits expected to accrue to each group)

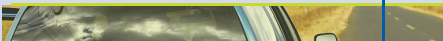
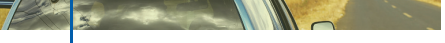


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1 Introduction

Although we have seen some improvement in Australia in 2007 and 2008, road trauma continues to impose a huge burden on the community. The annual economic cost of road crashes is enormous – conservatively estimated at \$18 billion per annum¹ – and the social impacts are devastating. Besides lives cut tragically short, debilitating injuries often result in pain, grief and suffering that have lifelong impacts on victims, families and communities.

Road safety is a shared responsibility. Every person who uses the roads has an obligation to act safely. Governments are required to contribute leadership and resources to improving road safety, including developing and enforcing laws, providing safer roads, informing the public about road safety issues and fostering improvements in vehicle safety. Employers have considerable power to ensure that their corporate policy and practice work to support a safety culture on the roads. The vehicle industry is expected to produce safer vehicles and to display social responsibility in the way vehicles are promoted for sale. Road user, employee and insurance groups also have an important role in encouraging safety among their members and policy holders.

The *National Road Safety Strategy 2001–2010* was established with the aim of dramatically reducing death and serious injury on Australian roads. It had the specific numeric target of decreasing the annual number of road deaths per 100,000 population by 40 per cent over the decade, to no more than 5.6 by December 2010.

As we assess our progress since the commencement of the Strategy, we face the prospect of not achieving the 2010 target. While we have seen periods of significant road safety improvement over the last eight years, the *average* rate of reduction in national road deaths is below the rate required to meet the target. In the final two years of the decade, we must remain focused on the primary objective of the National Road Safety Strategy: striving to bring about continuing reductions in the number of people killed and injured on the nation's roads.

This is the final two-year Action Plan under the current Strategy. It outlines measures with clear potential to reduce road trauma in the shorter term, as well as to provide the foundation for longer term improvements. Many of the listed actions are not new, but they are still important. The task for all parties to the Action Plan is to make a concerted collaborative effort to increase the rate of implementation of these priority measures.



2 Background

2.1 Road safety and other social objectives

Approaches to improving road safety should not exist in isolation. It is important to consider the potential for achieving wider community objectives such as those associated with transport efficiency and sustainability.

Road safety initiatives are generally valued solely on the basis of the level of trauma reduced. However, it is important to improve our understanding of the effects of safety policies and assess their wider social benefits. For example, speed reduction can result in reduced fuel consumption, emissions and noise. Low-speed shared road environments are conducive to walking and cycling – improving community cohesion, supporting community health objectives and reducing trauma, particularly for pedestrians. In this context a recent European Transport Safety Council report, *Managing speed: Towards safe and sustainable road transport*, notes that ‘integrating road safety to environmental and health concerns should be at the forefront of modern transport policies.’

2.2 Safe System principles

Safe System principles outlined in previous Action Plans continue to underpin Australia’s approach to road safety improvement.

A safe road system requires responsible road user behaviour, but human error is an inevitable factor in any transport system. A safe transport system makes allowance for human error and minimises the consequences: in particular, the risk of death or debilitating injury.

Roads, vehicles and travel speeds should be designed and managed to reduce the risk of crashes, and to prevent serious injury or death to people if a crash does happen.

There are limits to the forces humans can withstand in a crash, and limits to the physical energy that can be absorbed by protective systems (such as vehicles and safe road infrastructure). Speed management is a critical factor in limiting the impact energy of crashes.

In managing road safety, the Safe System approach requires:

- » designing, constructing and maintaining a road system (roads, vehicles and operating requirements) so that forces on the human body generated in crashes are generally less than those resulting in fatal or debilitating injury
- » improving roads and roadsides to reduce the risk of crashes and minimise harm: measures for higher speed roads include dividing traffic, designing ‘forgiving’ roadsides, and providing clear driver guidance. In areas with large numbers of vulnerable road users or substantial collision risk, speed management supplemented by road and roadside treatments are key strategies for limiting crash forces

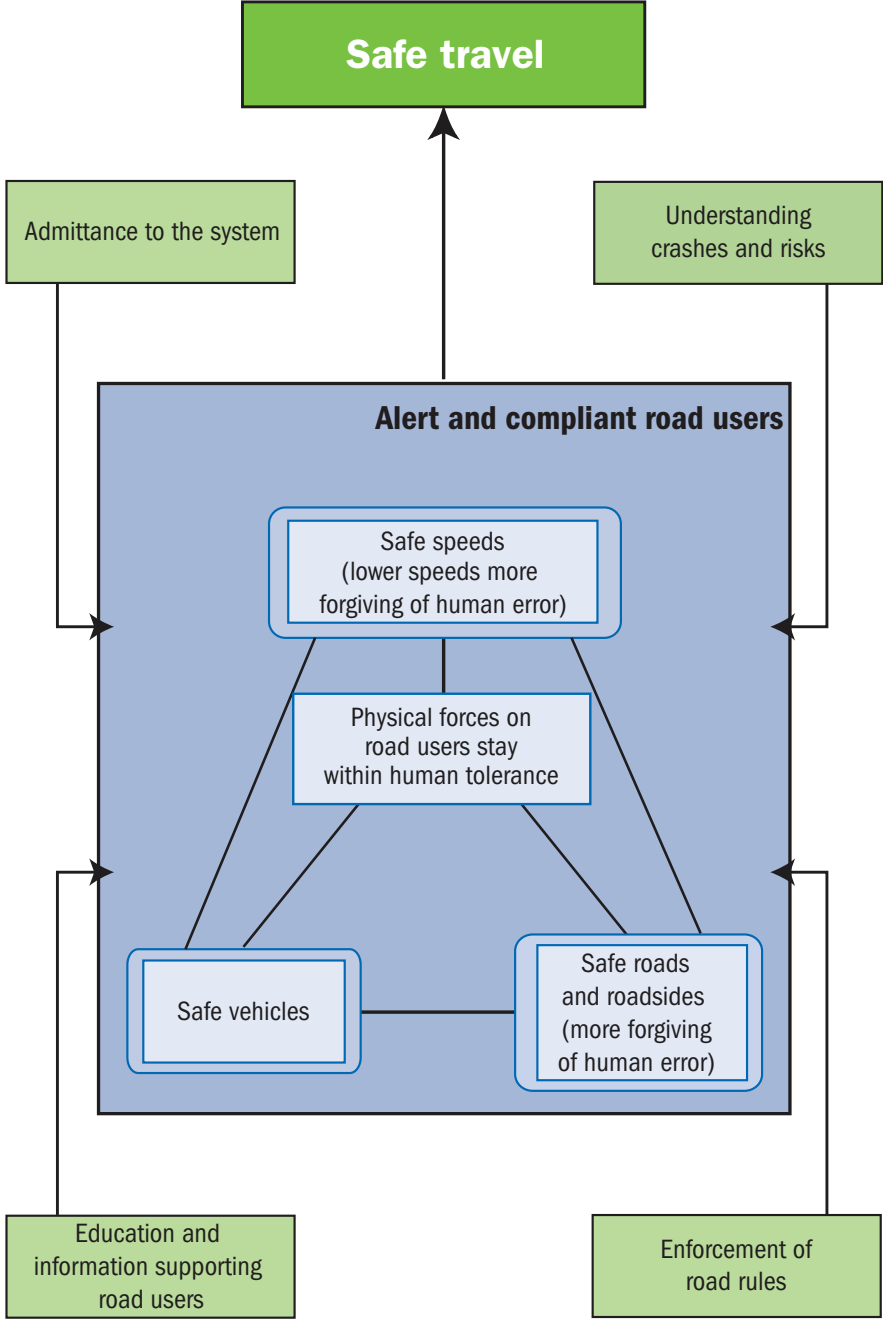


- » regulating or encouraging high quality active and passive safety systems in vehicles, including enhanced pedestrian safety features, to reduce impact forces on occupants and on struck pedestrians and cyclists; and in the case of active safety systems, reducing the risk of a crash occurring
- » managing speeds, taking into account the risks on different parts of the road system
- » advising, educating and encouraging road users to obey road rules and to be unimpaired, alert and responsive to potentially high-risk situations
- » using enforcement and penalties to deter road users from breaking the rules, including removing the privilege of road use from those who do not comply
- » programming research to identify the most cost-effective interventions for particular situations
- » promoting public understanding and endorsement of the Safe System approach, and public participation in achieving a safer road system.

The Safe System framework is shown in Figure 1.



Figure 1: The Safe System framework



Safe System principles have been firmly established in Australia through the last two National Road Safety Action Plans and through the recent road safety strategies framed by individual states and territories. A continuing strong focus on the Safe System in Australia is consistent with the approaches adopted by the safest countries in the world. The Safe System framework is a central theme of the landmark OECD report *Towards Zero: Ambitious Road Safety Targets and the safe system approach* published in October 2008.

There is still much work to do to embed the Safe System framework in practice, not just within transport agencies but among all parties that can influence the road transport system, such as urban planners, environmental agencies, industry and regional development bodies. There is a particular need to move from a focus on specific individual interventions to a more holistic approach to improving the safety of the road system.

2.3 Differences in perspective

There is a fundamental difference in perspective between the ‘top down’ view of road safety professionals, and the ‘bottom up’ view of individual road users.²

Crash data, analysis and research clearly identify road crashes as a significant public health risk and allow road safety professionals to identify measures that could reduce the aggregate risk. Individual road users tend to under-estimate or ignore many of the risks. Although serious crashes happen every day on our roads, they are rare in the experience of individual road users. Based on personal experience, most road users conclude that whatever they have been doing is ‘safe’, and that their own risk is negligible when they use the road.

For road safety professionals, communicating an understanding of this issue to road users presents a major challenge.

2.4 The high cost of road crashes

The annual economic cost of road crashes in Australia has been conservatively estimated to be at least \$18 billion in 2005 (Australian Transport Safety Bureau estimate based on a study by the Bureau of Transport Economics of the cost of crashes in 1996³). For most people this figure has little meaning or impact mainly because the costs are distributed across the community: among crash victims and their families, the health system, and many others including vehicle owners through payment of insurance premiums. Resources are consumed in vehicle repair and replacement and in the provision of insurance.

While the aggregate economic cost and its major components are enormous, and generally not well understood, the social, physical and emotional impacts of road crashes are devastating for many individuals.

Perception issues relating to road trauma are highlighted when public and political responses to other destructive events are considered. Appropriately,



natural disasters and acts of terrorism activate immediate relief efforts, government support and high levels of emotional empathy. Likewise, the response to airline disasters, rail catastrophes and sinking ships is typically swift and highly publicised. Yet the casualty numbers from all of these events combined is small compared with the 32,000 deaths and serious injuries arising from road crashes in Australia each year.

2.5 The National Road Safety Strategy (NRSS)

The National Road Safety Strategy 2001–2010, endorsed by the Australian Transport Council (ATC) of Ministers in November 2000, provides the vision and guiding principles to drive improved road safety performance in Australia.⁴ It provides the framework within which all governments implement road safety initiatives and sets the broad objectives which form the basis of individual state and territory road safety strategies.

2.5.1 The NRSS target

The NRSS set a target of bringing the annual number of road deaths per 100,000 population below 5.6 by the end of 2010, representing a 40 per cent reduction relative to the benchmark 1999 rate. The strategy also aimed to achieve comparable reductions in serious injuries, but did not adopt a specific numeric target for injuries because of data limitations.

The 2010 target was established through a process of expert analysis and research which took account of evidence of prior performance and assessment of potential gains from ongoing measures and expected new initiatives. Indicative estimates were provided of the contribution of different types of measures to the overall 40 per cent reduction target: improvements in roads (19 per cent); improved road user behaviour (9 per cent); improved vehicle occupant protection (10 per cent); and new technology to reduce human error and its consequences (2 per cent).

Many OECD countries have similar targets. The European Union has a target of a 50 per cent reduction in the number of road deaths in the decade to 2010⁵ – a substantially larger percentage reduction in deaths than the Australian target. This reflects the confidence of governments in other countries that a substantial reduction in road deaths is achievable over a ten-year period.

Research suggests that countries which have road safety targets tend to perform better than countries without targets and that countries with ambitious targets generally have better outcomes than those which have less ambitious targets, even if the targets are not achieved. The Australian target was research-based. It was challenging but also realistic.



2.5.2 Responsibility

The responsibility for reducing road trauma is shared among governments, communities, industry, business and individuals. Collaborative action among jurisdictions and among agencies within jurisdictions is a feature of Australian road safety management.

Formal collaborative actions also embrace the understanding that success requires businesses, community groups and individuals to commit to safety actions to complement government initiatives. This sense of shared responsibility is a fundamental tenet incorporated in the NRSS.

2.5.3 Action Plans

This is the fifth in a series of biennial action plans – a key driver for achieving the NRSS target. The Action Plans are developed by all Australian jurisdictions in a collaborative process that includes input from the National Road Safety Strategy Panel. All Action Plans in the series have been approved by the Australian Transport Council.

The Action Plans are intended to focus on priority issues, rather than list every action that might be taken to improve road safety.

This Action Plan addresses areas where improved performance is needed to accelerate progress towards the 2010 target and to apply downward pressure on road trauma for the years to follow. It also highlights the need for stronger commitment to some key supporting objectives:

- » accepting Safe System principles as a basis for action and embedding them in policy, standards and practice
- » enhancing the scale of key safety initiatives and doing more of what saves lives and reduces injuries
- » increasing the level of collaboration and shared responsibility for action among all stakeholders
- » raising the public and political profile of death and injury on the roads and understanding of the inherent levels of risk in road transport and what more can be done to accommodate human error and physical vulnerability.
- » improving community understanding of the factors affecting road trauma
- » treating death and injury on our roads as a wider public health problem, not just as a transport issue
- » monitoring and reporting progress of all planned actions and evaluating results.



2.5.4 Related strategies and coordinating mechanisms

This Action Plan is complemented by national strategies and activities addressing specific areas of road safety, including:

- » National Heavy Vehicle Safety Strategy
- » National Railway Level Crossing Safety Strategy
- » Indigenous Road Safety Working Group
- » Safety and Security Working Group (SSWG) work program [see box below]

Most importantly, the Action Plan links to, and is supported by, road safety strategies and action plans at the state and territory level.

National Transport Policy – safety and security

On 2 May 2008 the Australian Transport Council (ATC) agreed to a program of national transport improvement under the banner of the National Transport Policy (NTP). The NTP will establish a blueprint for multi-modal transport reform addressing challenges in passenger and freight movement, including the need for improved safety. Specific 'high priority' reforms initiated under this policy framework include:

- » reforms to the regulation of heavy vehicles (comprising a national regulator, a national registration system, and a national system for heavy vehicle licensing)
- » the establishment of a National Road Safety Council.

National Road Safety Council (NRSC)

The role of the NRSC will be to act as an advisory body to ATC, facilitating the implementation of priority road safety measures. Specifically, the NRSC will contribute to the development of National Road Safety Strategies, Action Plans and other national road safety initiatives; raise the profile of road safety across government, industry and business sectors and the broader community; and mobilise relevant areas of industry, community and government that have a role to play (within their areas of responsibility and influence) in improving road safety outcomes.



Safety and Security Working Group (SSWG)

A new national governance body led by Queensland was also formed to oversee a program of work within the areas of road safety, rail safety and transport security. The objectives of the SSWG are to develop:

- » innovative and consistent safety and security regulation and system management across jurisdictions
- » demonstrable and sustainable improvements in safety and security across all transport modes.

Road safety projects on the initial SSWG work program include:

- » the development of a National Speed Management Strategy
- » consistent, national, application of the Safe System approach to road safety
- » development of risk-based approaches to road construction and targeted safety upgrade works for high-risk sites
- » a framework for the adoption of new in-vehicle and at-roadside technologies
- » examination of the scope to reform the Australian Design Rules, including how changes to UNECE standards can be best adopted for the Australian vehicle fleet
- » investigation of a national 'Stars on Cars' program to provide consumers with safety ratings on new light vehicles (in consultation with industry)
- » development of a package of railway level crossing safety initiatives.

Under these new governance arrangements the SSWG also has responsibility for progressing the National Road Safety Strategy and associated Action Plans to ATC.





3 Review

3.1 Progress

Australia has achieved a substantial reduction in road deaths since the commencement of the NRSS, but the overall pace of improvement has not been sufficient to meet the 2010 target of 5.6 deaths per 100,000 population. At the end of September 2008, the national fatality rate stood at 7.0 deaths per 100,000 people, an overall reduction of 24.4 per cent relative to the 1999 benchmark rate of 9.3. If uniform progress had been made towards the 2010 target, the September 2008 rate would have been 6.3, and the cumulative reduction 32.6 per cent.

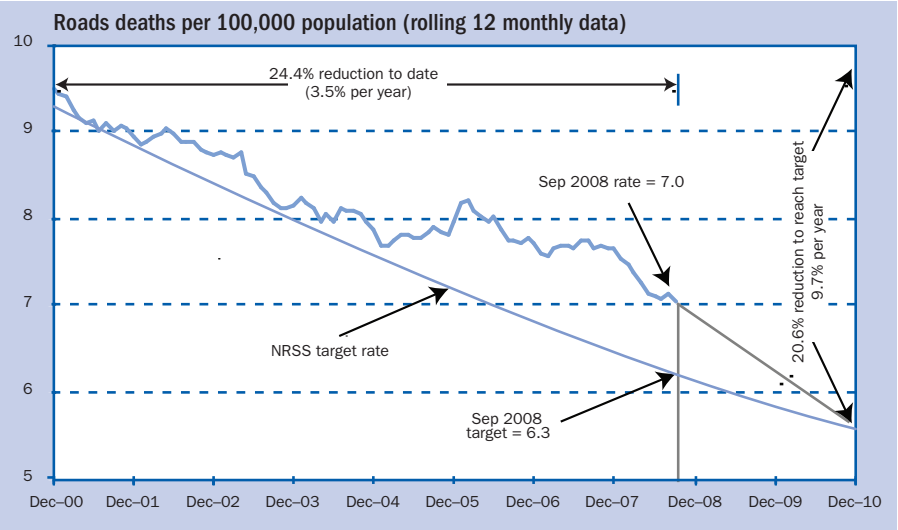
Figure 2 shows the actual death rate per 100,000 population, relative to a uniformly decreasing trend line. Up to the end of 2004, the death rate was essentially on track to reach the 2010 target, although the trend line has been above the line of uniform progress for most of the period since the NRSS commenced. However, since the end of 2004 a substantial gap has developed between actual outcomes and targeted progress.

Random or inexplicable fluctuations in road death data over short periods are common. Despite the apparent plateau in the national death rate between 2004 and 2007, there may still be an underlying long-term downward trend. There has, in fact, been a marked reduction in road deaths during the first nine months of 2008. The 12-monthly total up to the end of September 2008 was 6 per cent lower than the corresponding figure one year earlier.

Even so, achieving the 2010 target would require a national death rate reduction of 20.6 per cent over the final 2¼ years of the NRSS: equivalent to 9.7 per cent per year. The average reduction achieved since the commencement of the NRSS has been 3.5 per cent per year. These figures suggest that reaching the target now presents a formidable challenge.



Figure 2: Australian annual road deaths per 100,000 population



Source: Department of Infrastructure, Transport, Regional Development and Local Government: Monthly Road Death Series

While the national trend line has lagged the targeted rate of improvement over the last few years, the trends have varied considerably among states and territories. Some jurisdictions have achieved fatality rates close to, or below, the pro-rata national target rate, while others have much higher rates; some jurisdictions have made rapid statistical progress in recent years, while others have changed little or even gone backwards.

Table 1 shows average state and territory death rates for the 24 months to September 2008 compared with the average for 1999 and 2000. All states and territories, with the exception of the Northern Territory, have shown an overall improvement in the rate between the two periods.

Table 1: Average jurisdictional road crash death rates per 100,000 population

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Aust
1999 + 2000	9.2	8.4	9.4	10.5	11.5	10.2	25.7	5.9	9.4
24 months to Sept 2008	6.0	6.3	8.3	6.9	10.3	9.3	28.6	4.8	7.4
% change	-35%	-25%	-12%	-35%	-10%	-9%	11%	-19%	-22%

Source: Department of Infrastructure, Transport, Regional Development and Local Government: Monthly Road Death Series



3.1.1 Road deaths by road user groups and crash types

Comparing the last two calendar years (2006 and 2007) with the two years before the commencement of the NRSS (1999 and 2000), the largest percentage reductions in deaths have been for:

- » pedestrians (27 per cent)
- » vehicle occupants in multiple-vehicle crashes (27 per cent)
- » crashes involving articulated trucks (14 per cent).

There has been a small increase in deaths for vehicle occupants in single-vehicle crashes, and motorcycle deaths have increased for both single-vehicle crashes (47 per cent) and multiple-vehicle crashes (18 per cent).

Table 2: Road deaths by road user group and crash type

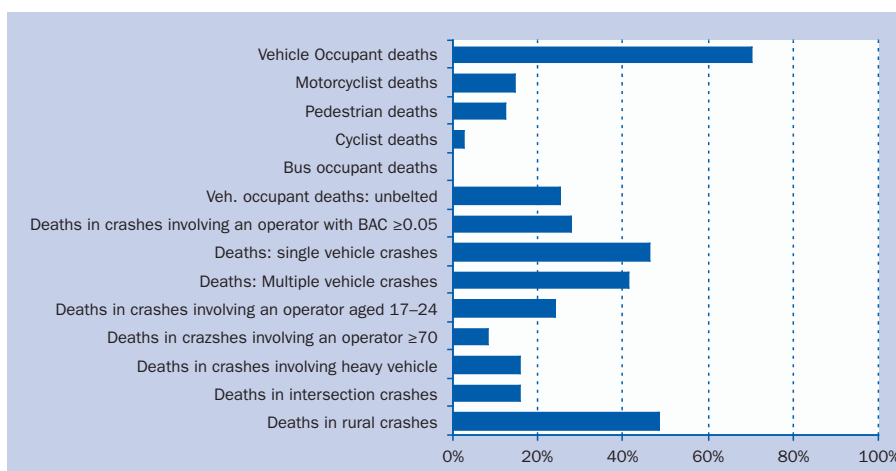
	1999	2000	2003	2004	2005	2006	2007	Change: last two years relative to first two
Vehicle Occupant: single-vehicle crash	577	648	634	598	594	619	638	3%
Vehicle Occupant: multi-vehicle crash	670	654	532	524	527	473	491	-27%
Pedestrian	299	287	232	220	225	227	202	-27%
Motorcyclist: single-vehicle crash	66	80	61	80	94	112	103	47%
Motorcyclist: multi-vehicle crash	110	111	127	115	139	126	135	18%
Bicyclist single-vehicle crash	2	3	4	10	11	4	4	not calculated (small numbers)
Bicyclist multi-vehicle crash	38	28	22	33	30	35	37	9%
Deaths involving an articulated truck	191	208	171	150	155	168	177	-14%
All road users	1,764	1,817	1,621	1,583	1,627	1,598	1,610	-10%

Source: Department of Infrastructure, Transport, Regional Development and Local Government: Monthly Road Death Series



Figure 3 shows the different road user groups and crash types as a percentage of total Australian road deaths.

Figure 3: Deaths in different road user groups and crash types as a percentage of total Australian road deaths



Note: Based on data for year ending June 2008 where available; older data used for some categories.

Source: Department of Infrastructure, Transport, Regional Development and Local Government.

Tables 3 to 5 below provide further information about the involvement of specific risk factors in fatal crashes over the years 2000 to 2006.

Table 3: Seatbelt and helmet usage among killed vehicle occupants and motorcyclists

	2000	2001	2002	2003	2004	2005	2006
Vehicle occupant deaths: % not wearing a seatbelt	29%	28%	28%	29%	27%	29%	26%
Motorcycle rider deaths: % not wearing a helmet	10%	9%	6%	9%	8%	8%	5%

Note: Percentages based on cases with known seatbelt and helmet usage status.

Source: Department of Infrastructure, Transport, Regional Development and Local Government: compiled from data supplied by state and territory transport authorities.



Table 4: Blood alcohol concentration (BAC) among killed vehicle operators

% of all fatal crashes with a vehicle operator BAC \geq 0.05	2000	2001	2002	2003	2004	2005	2006
Australia	25%	27%	28%	27%	26%	26%	29%

Note: (1) Percentages based on cases with known BAC status.
(2) Percentages for 2005 and 2006 exclude Victorian data.

Source: Department of Infrastructure, Transport, Regional Development and Local Government: compiled from data supplied by state and territory transport authorities.

Table 5: Blood alcohol concentration (BAC) among killed pedestrians

% of all killed pedestrians with BAC \geq 0.05	2000	2001	2002	2003	2004	2005	2006
Australia	34%	38%	33%	36%	35%	34%	38%

Note: Percentages based on cases with known BAC status.

Source: Department of Infrastructure, Transport, Regional Development and Local Government: compiled from data supplied by state and territory transport authorities.



3.1.2 Serious injuries from road crashes

Table 6 provides annual counts of serious injuries sustained in Australian road crashes. Serious injuries are defined as those involving admission to a hospital. Estimates of recent average annual growth are shown in the last row.

Table 6: Serious injuries by road user type

Year ending June	Vehicle occupant	Pedestrian	Motor-cyclist	Pedal cyclist	Other	Total
2000	15,599	2,930	4,514	3,424	231	26,698
2001	15,899	2,916	4,642	3,056	181	26,694
2002	16,988	2,901	5,096	3,292	163	28,440
2003	16,056	2,670	5,040	3,591	169	27,526
2004	16,813	2,578	5,385	3,676	330	28,782
2005	16,976	2,594	5,861	4,038	381	29,850
2006	17,233	2,644	6,479	4,370	478	31,204
Average annual change – last six years	1.5 %	-2.3 %	5.9 %	5.1 %	16.9 %	2.5 %
Road user group as per cent of total	58.0 %	9.7 %	18.6 %	12.8 %	1.0 %	100 %

Note: Average annual change calculated by fitting an exponential trend line to the annual data

Source: Australian Institute of Health and Welfare: National Hospital Morbidity Database

3.1.3 Road safety activities in 2007 and 2008

In the last two years a wide range of road safety activities have occurred in Australia, many linked to the priority actions contained in the last National Road Safety Action Plan. Appendix 1 contains a summary of significant actions and achievements, which include:

- » developments in strategic planning and community engagement
- » initiatives to make roads safer
- » activities to moderate speeds of drivers and riders
- » initiatives to address road user behaviour, including impaired driving (alcohol and drugs)
- » action on enabling legislation and piloting of random roadside drug testing
- » action to improve graduated licensing for novice drivers



- » vehicle safety initiatives
- » enhanced enforcement activity
- » legislative reforms
- » national heavy vehicle reform projects.

3.2 What factors are influencing outcomes?

3.2.1 Exposure factors

Growth in total travel in recent years has been somewhat greater than expected when the NRSS was developed. Between June 2000 and June 2007, there was an increase of 12 per cent in total vehicle-kilometres travelled (VKT). The minerals booms in Western Australia and Queensland are likely to have increased road transport activity, though rising fuel prices may have had a recent moderating effect.

The growth in motorcycle usage over this period stands out and is thought to be a major factor in the increase in rider casualties: motorcycle VKT grew by 37 per cent, while rider fatalities increased by 32 per cent and serious injuries (to June 2006) by 44 per cent.

This decade has also seen a rapid growth in the Australian road freight task, reflected in the VKT figures for trucks and light commercial vehicles. Over the seven year period to June 2007, the estimated number of kilometres travelled by these vehicle types increased by: 23 per cent for rigid trucks; 19 per cent for articulated trucks; and 17 per cent for light commercial vehicles. Additional exposure information is provided in Appendix 2.

3.2.2 Scale of key activities

There was consensus among experts consulted in the preparation of the Action Plan for 2007 and 2008 that two action areas critical to achieving required reductions in the death rate were speed management and road engineering measures. While much activity has been undertaken in these areas in accordance with the Action Plan, outcomes suggest that the scale has varied significantly between jurisdictions and has not been sufficient across Australia.

Speed management

Improvements in speed management have generally been incremental since 2000, but large-scale initiatives have been linked to dramatic reductions in road deaths in two states (see Figure 4 below):

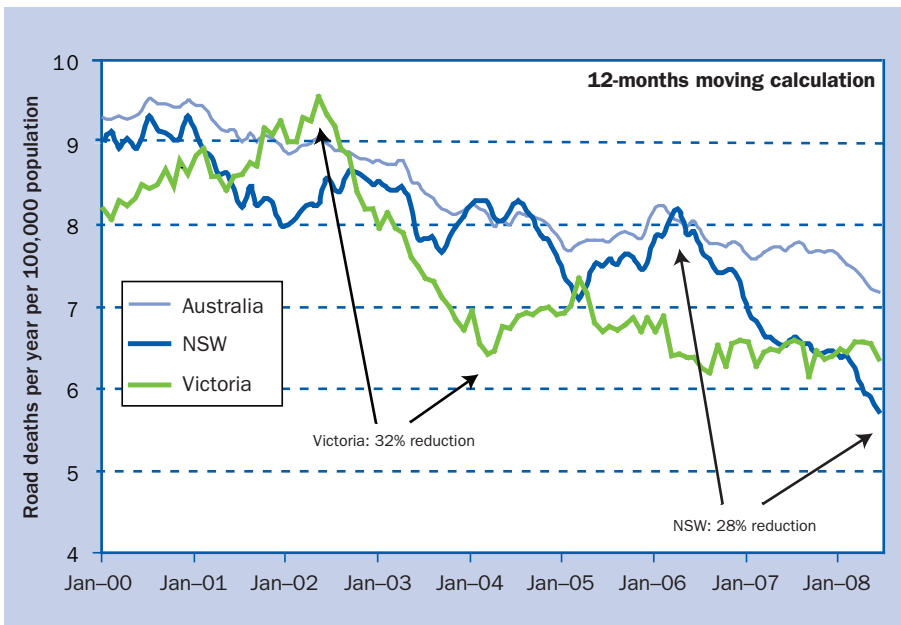
- » From early 2002, Victoria implemented a raft of tightened speed compliance measures – including expanded use of mobile covert speed cameras, lowered enforcement thresholds and an integrated publicity campaign – that saw measured travel speeds decline on many parts of the road network. These changes were followed



by a large and sustained reduction in road deaths, particularly among vulnerable road users and in urban areas, where the effect of travel speeds was greatest. There is evidence that improved speed management has made a major contribution to the overall improvement in road safety outcomes in Victoria.⁶

- » More recently, NSW has implemented a concerted and integrated speed management program involving: an extensive rollout of fixed speed cameras, zero speeding tolerance for P1 drivers, focused enhanced enforcement, a prominent mass media campaign dealing with youth self-image and driver behaviour ('Pinkie' campaign), and a focus on reviewing and adjusting speed limits. Speed surveys conducted between 2004 and 2007 found that 85th percentile speeds in 70 km/h and 60 km/h speed limit zones reduced by 6 km/h and 3 km/h respectively. The number of speed-related fatalities declined from 205 in 2005–06 to 135 in 2007–08 (a decrease of 34 per cent).

Figure 4: Road death rates in Victoria, NSW and Australia

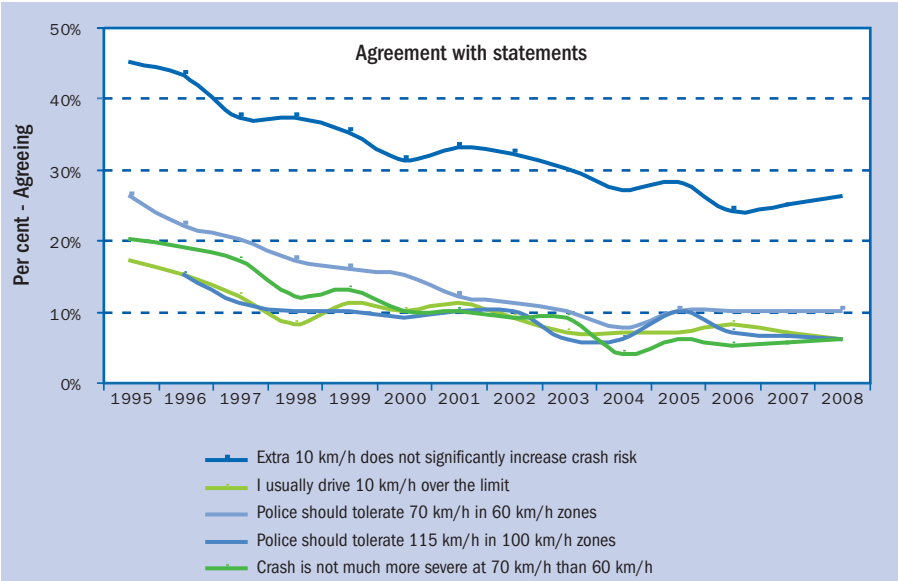


Source: Department of Infrastructure, Transport, Regional Development and Local Government: Monthly Road Death Series

The effectiveness of speed reduction measures depends in part on community views about the role of speed in road safety. National opinion surveys show that public understanding of the need to reduce vehicle speeds grew substantially over the decade to 2004, but has changed little in recent years (see Figure 5 below). The views of those opposed to stricter speed management continue to have considerable influence in Australia.



Figure 5: Community attitudes to speed: 1995-2008



Note: Survey not conducted in 2007.

Source: Department of Infrastructure, Transport, Regional Development and Local Government: Annual Survey of Community Attitudes to Road Safety.

Safer roads

General investment in road infrastructure maintenance and improvement, and targeted investment in road safety improvements (such as black spot remediation and application of low-cost, high-effectiveness treatments to lengths of road) are both important for safety outcomes.

The economic benefit of such expenditure is estimated to average around \$5 per dollar spent,⁷ with an accumulating safety benefit of about 24 deaths prevented per year from a \$287 million program. Sustained expenditure of \$287 million per year over four years would reduce annual deaths by almost 100. Greater investment in these programs would produce commensurately larger benefits.

3.2.3 Other factors

There are several other factors which may have contributed to slower progress in improving safety outcomes. As data relating to these factors are limited or unavailable, it is not possible to assess the degree, if any, of their contribution.

Learning effects

It is possible that ‘learning effects’ have to some extent eroded the impact of established enforcement programs. Over time, motorists tend to learn when and where enforcement is likely or unlikely. Offending without detection can be a significant behaviour-reinforcing experience leading to repeated



or habitual behaviour. If enforcement information is publicly available (for example, the locations of speed cameras) it can strengthen these adverse learning effects.

The limited resources for enforcement across the vast Australian road network can compound these problems. Over half of all fatal crashes occur in rural or remote areas of Australia.

An ideal enforcement strategy, particularly a speed enforcement strategy, should include a mix of covert and overt programs supported by media campaigns. This approach is likely to increase the perception that offences are detected and acted upon.

Distraction

A number of research studies have shown that using a mobile phone while driving – either hand-held or hands-free – significantly increases the risk of a casualty crash. The 2008 Community Attitudes Survey conducted on behalf of the Department of Infrastructure, Transport, Regional Development and Local Government found that 91 per cent of active drivers had a mobile phone and 61 per cent reported having used it while driving. According to the survey, around 28 per cent of drivers read text messages while driving and about 14 per cent sent messages while driving.

Concerns have been raised about the potentially adverse safety effects of other sources of driver distraction, both in-vehicle (such as eating, smoking, conversation, passenger behaviour, navigation systems and audio and video equipment) and external (including the proliferation of advertising billboards and traffic signs). However, the actual safety impacts of such distractions remain unclear.

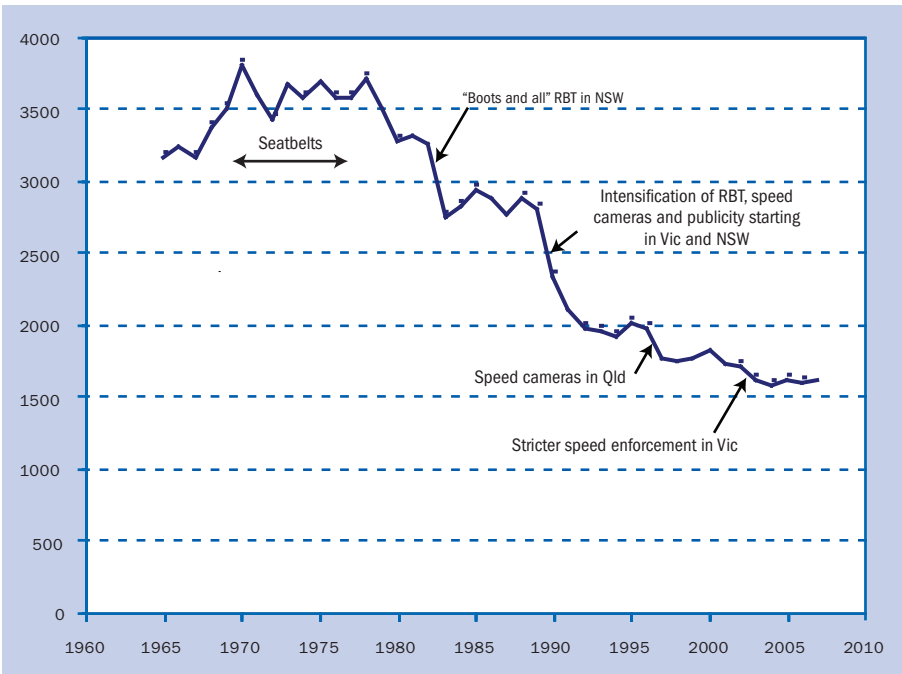


4 The challenge to continue improving road safety

Experience indicates that progress in road safety has been characterised by short periods of major casualty reductions (large downward steps) followed by longer periods of consolidation of these benefits with smaller incremental gains. Figure 6 shows periods associated with major road safety initiatives. In several cases, major initiatives in just one or two large jurisdictions produced effects large enough to show up in the aggregate national data. Concerted action is required to achieve another big decrement in deaths to bring the 2010 target back within reach.

The greatest changes in total road casualty figures have usually been the result of programs that target high-risk road user behaviour. The benefits of vehicle and road infrastructure measures accrue more gradually, but are critically important to the end result over a period of years.

Figure 6: Road deaths in Australia: 1965 to 2007



Source: Department of Infrastructure, Transport, Regional Development and Local Government

Jurisdictions are of the view that there are still significant gains to be made from vigorous effort to implement the actions presented in Chapter 5.

Expansion of road-based safety treatments and improved speed management are the highest priority elements of the package. In both areas, outcomes will depend on the scale of the measures implemented. The overall package will continue to reduce road trauma beyond the two-year horizon of this Action Plan.



4.1 Performance monitoring

There is a pressing need for more effective performance monitoring and progress measurement in Australia. While successive Action Plans have gone some way to identifying relevant performance information, further work is required to develop specific performance indicators, and to implement an effective monitoring and reporting regime. Key performance indicators should include: measures to assess the scale of programs (inputs); measures to assess shifts in behaviours or attitudes as a result of programs (outputs); and measures to monitor safety improvements across each of the key areas of safer speeds, safer roads, safer road users and safer vehicles (outcomes). Outcome measures should include effects on numbers of deaths, serious injuries and, where possible, total social costs.

Features of an effective performance monitoring regime should include:

- » a revised system of reporting on priority actions designed to distinguish key initiatives from research and other investigations
- » agreement across jurisdictions about definitions of road deaths and injuries to enable consistent reporting at the national level
- » performance indicators addressing relevant aspects of community behaviour, knowledge, values and attitudes
- » specific enforcement activity measures to apply across all jurisdictions
- » measures of performance on the overall development and delivery of road safety policy.

4.2 Public health

Building partnerships with health professionals is a means of achieving linkages across professional disciplines and facilitating effective collaboration.

For example, fostering increased use of emergency crash notification systems (Section 5.3) provides the opportunity for jurisdictional road safety agencies to help the health sector improve the delivery of medical assistance.

At a broader level, activities to enable road safety to be perceived as a major public health issue are a key feature of the Action Plan. Road trauma is a major contributor to diminished public health. It is the leading cause of death among young Australians and needs to be addressed with similar priorities and approaches as major diseases such as heart disease, cerebrovascular disease, major depression, HIV/AIDS and cancer. In this context, road safety needs to be identified as a national priority for health and medical research funding.

Reductions in road trauma have immediate and significant benefits in public health with lower numbers of people requiring treatment and rehabilitation which is often of a long-term nature. The medical, rehabilitation, ambulance and long-term care costs comprise about 28 per cent of the human costs



and 16 per cent of the total costs of road crashes in Australia. On average, the economic cost of a road crash death is \$1.9 million, a serious injury, \$407,000 and a minor injury, \$15,000 (2005 dollar values). Substantial proportions of these costs are sustained by the health system; allocating these resources to road crash casualties means that correspondingly less resources are available to address other public health priorities. Improving road safety would mean releasing hospital bed-days and medical resources for treating other patients. Additional benefits to the health sector could accrue by way of a lower incidence of lifestyle-related diseases due to safer cycling and pedestrian activity.

There is scope for greater involvement of health authorities and agencies in the cooperative arrangements for managing road safety, researching trauma care and fitness to drive issues and raising the level of road safety advocacy. There is also potential for closer collaboration with health and hospital authorities, and injury surveillance organisations, to gather better data on serious injuries due to road crashes; this should include data on long-term rehabilitation.

4.3 Collaboration

Implementation of this Action Plan will feature even greater levels of collaborative action among jurisdictions and agencies to achieve positive outcomes. Effective partnerships, multi-departmental management arrangements and multi-disciplinary interventions are a feature of Australian implementation of road safety policy that has been recognised and lauded internationally.⁸

Building on this success, jurisdictions have identified the need for more comprehensive collaboration including:

- » collaboration in engaging the community in road safety
- » combining activities across jurisdictions to expedite the introduction of vehicle safety innovations as standard inclusions in vehicles sold in Australia
- » forging closer links among road safety agencies, police and other agencies involved in implementing electronic enforcement methods such as red-light/speed cameras and point-to-point speed enforcement
- » engaging with the vehicle industry on access to research and data
- » developing means for disseminating knowledge of effective road and roadside treatments arising from recent initiatives
- » cooperating to avoid overlap or duplication of activities addressing innovative technologies and their application
- » continuing national collaboration on the development of an International Standards Organisation (ISO) standard for road traffic safety management systems
- » coordinated participation in international forums to share knowledge



on successful initiatives and to learn from the experiences of other countries

- » more extensive collaboration in global road safety programs through provision of Australian expertise and knowledge, particularly in the Asia-Pacific region: Australia has much to give in this context, and increasingly much to learn, as all countries address the enormous global challenge of road crash injury.

OLAF – Mobilising partners with a shared responsibility to implement road safety actions

Through the Swedish National Road Authority, the Swedish Government has adopted a simple, four step approach they have labelled 'OLAF' (an acronym that is also a Swedish boy's name). The aim is to engage and mobilise all partners in government, business and the community to implement road safety actions under a no-blame, shared responsibility approach.

'OLAF' operates at the national and local levels and brings together system designers and people with influence and ability to implement changes. The OLAF teams focus on identified problems at a local level such as a significant crash where lessons can be learned for the future and at national level on problems such as scooter safety and road safety in winter.

A small group of these high level system designers go through the following meeting process over several months:

1. **O (objective data)** – present and examine relevant data and trends
2. **L (lists of possible solutions)** – discuss the range of possible evidence-based solutions
3. **A (actions)** – discuss what each person may be able to do and commit to an agreed list of actions which is then publicised
4. **F (follow up)** – a public report is produced after 12 months to monitor what has occurred. This public process provides a significant opportunity for publicity and recognition for all as it involves good corporate citizens working together to improve road safety.

The Swedish describe OLAF as a very pragmatic, cooperative, action-focused approach. It can be used to focus on areas where implementation can be enhanced to achieve improvements in a short time frame.



4.4 Engaging the community

Road safety is a community health and welfare issue and road safety interventions need to be supported and accepted by the public. A number of key principles have been outlined which underpin both the National Road Safety Strategy and this Action Plan. Generating public support for the interventions in this Action Plan requires measures to engage the community and to extend community understanding of these principles.

The general public needs to be constantly provided with information about the influence of speed on deaths and injuries and the substantial benefits resulting from even small reductions in speed. Bi-partisan support and leadership are required to maximise community acceptance of speed-reduction initiatives.

Similarly, improved public understanding of the road trauma impacts on livelihood and lifestyle, the research basis for growing problems such as driver distraction, and the benefits of expenditure on safer roads is critical for continuing support of the range of actions proposed in this Action Plan.

Additionally, segments of the wider community that have substantial influence must be engaged to ensure understanding and cooperation. The importance of community networks and capacity to deal with road safety and other transport issues is being increasingly recognised, and aligns with changes in the way governments seek to engage with and empower communities at a broader level. Links with the health and environment sectors need to be established or strengthened. The benefits of reduced road trauma to the health system, by way of reduced demand for hospital bed-days and emergency and intensive care resources, need to be highlighted to generate greater support of the health sector.

There has been a tendency in some areas of motoring journalism to attempt to undermine speed management and other safety interventions. It is important to establish stronger links with this sector to promote sound understanding of the scientific and research basis for road safety interventions.

Support for the key principles underlying this Action Plan from those involved in the broad political process will be essential. These principles include the Safe System philosophy, the fact that major reductions in road trauma are possible, and the benefits of the interventions outlined in this Action Plan.

This Action Plan provides both the rationale and the information base to undertake effective community engagement. Jurisdictions will work individually and collaboratively to achieve such engagement.



South Australia's South East Road Safety Strategy

The South East Road Safety Strategy (SERSS) is the first road safety strategy to be developed for a regional area of South Australia. The south east region extends from near Bordertown in the north to Mount Gambier in the south of the state and has a total population of around 65,000. The SERSS was developed by the Department of Transport, Energy and Infrastructure (DTEI) in conjunction with the South East Local Government Association (SELGA) which represents all seven Councils in the region.

A key part of the development of the SERSS was the extensive involvement and consultation with local communities, organisations and businesses during the first half of 2007. Five public forums were held and local residents, organisations and businesses had the opportunity to make written submissions on road safety issues. This process led to the formulation of an aspirational goal, road safety target, and actions – all framed around the Safe System framework in the *National Road Safety Action Plan 2007 and 2008*.

The goal for the region is to 'achieve a fatality free year in the south east by the end of 2010' and the specific road safety target to 'reduce the number of serious casualties (fatalities and serious injuries) in the south east to less than 76 by the end of 2010'. There were 119 serious casualties in the south east in 2005 and 85 in 2006. As a means of reaching the targets, seven priority actions were identified for implementing the strategy.

1. Stronger road safety coordination mechanisms will be established between SELGA, local councils and community road safety groups.
2. Whole of region projects will be developed, through better coordination.
3. DTEI will concentrate infrastructure safety investment that is available on key corridors, such as the Dukes, Riddoch and Princes Highways.
4. The SA police will, in collaboration with communities, toughen policing of restraints and drink and drug driving, and ensure that a newly-introduced speed enforcement tolerance is rigorously enforced.
5. Local councils will, in consultation with residents and businesses, and with DTEI, consider the speed limits they want to apply through townships.
6. DTEI will work with local councils and schools to investigate the extent to which Safe Routes to School can be extended within the region.
7. SELGA, in consultation with the partner organisations involved in preparing this strategy, will prepare a progress report after a period of one year.



4.5 Development of the next National Road Safety Strategy

The development of a new Strategy is an opportunity to show renewed leadership and direction on ways to achieve better road safety outcomes and to more explicitly address the degree of long term ambition. It is also an opportunity to advocate a shared responsibility for road safety among all Australians – including governments, businesses and the public – and overall, for an Australian culture more supportive of road safety. Changing road use culture takes time, and some changes are not possible without the active cooperation of multiple sectors.

There is still much work to do to embed the Safe System framework in practice, especially beyond transport agencies to all the other parties that can influence the road network, such as urban planners, environmental agencies, industry and regional development bodies. In particular, there is a need to move from a focus on specific individual interventions to a more holistic approach to improving the safety of the road system by looking at the overall management of the system.

Jurisdictions value a collaborative National Strategy as a framework for progressing issues that are best addressed collectively at a national level. The NRSS promotes an evidence-based set of broad priorities for action. It also provides important opportunities for performance benchmarking. Analytically-derived targets can demonstrate the level of improvement that is possible and provide a basis for more detailed, ongoing benchmarking and performance monitoring.

Work is in progress to develop a new National Road Safety Strategy to come into effect in 2011. This includes the development of a more comprehensive set of input and outcome measures that will improve future performance monitoring.



5 Action areas for 2009 and 2010

This chapter sets out the major areas in which action is required in 2009 and 2010. Research-based findings for each action area are set out together with key actions and key performance indicators.

The Action Plan builds on previous work, with changes made to reflect new information and recent developments. It is recognised that many of the measures contained in the Action Plan for 2007 and 2008 were well-researched, cost-effective and continue to be highly relevant to the objectives of the National Road Safety Strategy.

5.1 Safer speeds

Moderation of speeds chosen by drivers and riders is critical in establishing a safer road system. Speed reduction has a dual impact on road trauma because travel speeds influence the number of crashes that occur as well as the severity of crashes. The number of crashes that occur reduces at lower speeds because road users have more time for decision making, are less likely to lose control, are more able to take evasive action, and can stop in a shorter distance. Additionally, lower speeds result in reduced injury severity in crashes which do occur because of the lower levels of crash impact energy involved.

The unpredictable nature of human behaviour in the complex traffic environment means it is unrealistic to expect that all crashes can be prevented. In this regard, speed management initiatives work to both reduce the likelihood of crashes occurring and reduce the severity of those crashes that do occur. This is achieved by setting clear and appropriate speed limits, and by employing a range of measures to influence the speed behaviour of motorists.

Best practice speed management is a key component of the Safe System approach. Achieving expected safety gains from vehicle safety and road infrastructure improvements is dependent on the setting and enforcement of appropriate speed limits.

What is known

- » Speeds just 5 km/h above average in urban areas and 10 km/h above average in rural areas are sufficient to double the risk of a casualty crash. This is roughly equivalent to the increase in risk associated with a blood alcohol concentration of 0.05.⁹
- » Small reductions in average speeds (even 1 or 2 per cent) result in substantially greater percentage reductions in deaths and injuries.¹⁰
- » The chances of surviving a crash decrease rapidly above certain impact speeds, depending on the nature of the collision¹¹:
 - car/pedestrian: 20-30 km/h



- car/motorcyclist 20-30 km/h
 - car/tree or pole: 30-40 km/h
 - car/car (side-impact): 50 km/h
 - car/car (head-on): 70 km/h.
- » Past improvements to speed enforcement have resulted in substantial reductions in deaths and injuries.¹²
 - » Reducing speed limits can reduce deaths and injuries and reduce the severity of injuries.
 - » Advisory intelligent speed adaptation (ISA) systems are currently being trialed in Victoria, Western Australia and NSW. These in-vehicle systems are able to detect when a vehicle is exceeding the speed limit on a particular road and warn the driver. There is evidence that systems with good user acceptability can provide significant safety benefits.¹³

Highest-impact actions

- ▶ Develop a national best practice speed management strategy.
- ▶ Implement national best practice speed enforcement measures, including:
 - point-to-point automatic speed detection
 - other targeted, automated speed enforcement technologies, where appropriate
 - unmarked speed enforcement methods combined with high-visibility approaches and tight enforcement tolerances.
- ▶ Identify high-risk roads or road sections for speed limit reductions where road improvements are not feasible in the short term.
- ▶ Implement high profile mass public education campaigns about safer speeds and campaigns that support the concept of unpredictability in speed enforcement.
- ▶ Work towards introducing advisory intelligent speed adaptation technology.
- ▶ Improve heavy vehicle speed management by implementation of the national Chain of Responsibility reform for speed compliance.
- ▶ Improve enforcement of heavy vehicle speed limiter compliance.



Supporting actions

- ▶ Establish a best practice model for rehabilitating repeat speeding offenders.
- ▶ Work with the community to introduce lower speed limits where appropriate.
- ▶ Conduct further research and promote the links between the safety benefits of lower speeds and reductions in fuel consumption, greenhouse impact and vehicle/fleet operating costs.
- ▶ Further develop and trial criteria for setting speed limits that take account of the Safe System perspective.
- ▶ Monitor industry response to the Federal Chamber of Automotive Industries (FCAI) Voluntary Code of Practice for Motor Vehicle Advertising and encourage further effort, as appropriate, to reduce the depiction of speeding (and other unsafe practices) in advertisements.
- ▶ Work towards the implementation of vehicle and speed monitoring technology to improve heavy vehicle speed compliance.

Complementary action under the Safe System framework

- » Work towards introducing automatic number plate recognition systems to facilitate enforcement operations. This action is relevant not only to speed enforcement but to a range of enforcement operations under Section 5.4, Safer road users and safer behaviour.

Safer speeds performance indicators

- » Publicise community perspectives on speeding resulting from community attitudes surveys.
- » Monitor and publicise information on mean travel speeds on different road types in the network.
- » Monitor average vehicle speeds and 85th percentile vehicle speeds in travel speed studies.
- » Monitor pedestrian injury levels as an indicator of changes in speed behaviour in urban environments.
- » Collect and monitor information on speeding offences per hour of enforcement and the total number of vehicles checked for speed, with separate figures for different types of enforcement (such as fixed cameras, mobile cameras, hand-held speed measuring devices, etc).
- » Monitor the content of motor vehicle advertising.

5.2 Safer roads and roadsides

Improvement in the safety of different road types is another area with major potential to reduce road trauma. Improvement in the safety of roads results from two areas of activity. One area is the safety improvement generated



by continuing investment in road infrastructure. This includes new high standard roads, duplication of roads and rehabilitation of deteriorated roads. Such major road works are primarily associated with mobility and economic performance benefits, with safety being an important ancillary benefit. Together with ongoing maintenance expenditure, this category accounts for over 95 per cent of aggregate road funding.

The other area is expenditure on safety-focused road works. This includes expenditure on black spot remedial treatments, as well as more broadly based safety-focused activities such as route risk assessment and treatment, road safety audits and treatments applied over large sections of road networks ('mass action'). This expenditure provides relatively high levels of improved safety to the community. For example, the 2001 evaluation of the Federal Black Spot Programme for the period 1996–97 to 1998–99 found that it generated a social benefit of \$14 per dollar of expenditure.

While there has been a substantial increase in spending, a review of the mix of general and safety-focused road funding would help to determine if a reallocation of resources could improve safety while achieving other transport objectives. Increased funding for safety-focused road works would be an important contributor to improved safety outcomes. There is currently substantial variation in per capita spending among jurisdictions.

What is known

- » Australian black spot programs have been assessed as having benefit–cost ratios between about 4 and 14.¹⁴
- » The road and roadside environment is very important to road safety. Even when a crash occurs, the consequences can be heavily influenced by the physical characteristics of the road and surrounding areas.
- » Low-cost safety-focused road treatments such as tactile edge lining, sealed shoulders¹⁵ and erecting roadside safety barriers are associated with substantial crash and injury reductions. Reduced speed limits can be combined with engineering measures to reduced crash risk.
- » General road construction projects (freeways, divided roads, additional lanes, overpasses, etc.) are implemented primarily for their mobility benefits, but can also have significant safety benefits. Because these projects account for large amounts of road spending, their aggregate effect on safety outcomes is substantial, but per unit of investment their safety benefits are much lower than for safety-focused treatments.¹⁶



Highest-impact actions

- ▶ Establish a consistent risk-based approach to investment in the road network (AusLink, state-controlled and local government) and develop programs and trials for targeted safety upgrades of higher-risk sections.
- ▶ Maintain or increase the current level of investment in black spot and other safety-targeted road programs.
- ▶ Implement route risk assessment and treatment programs for major routes (including hazard removal, speed limit changes, shoulder sealing, audible edge lining and protective barriers) to address the problem of run-off-road crashes.
- ▶ Develop road-to-vehicle technology solutions to address single vehicle run-off-road crashes and other rural crash problems.
- ▶ Adopt the Safe System approach as a priority from conception to completion of new road works and maintenance works.

Supporting actions

- ▶ Governments (federal, state and territory) to review the balance between general road investment and funding for safety-focused works, seeking to make road safety a mainstream priority for all road investment decisions.
- ▶ Develop and agree on a standard methodology for road risk assessment to support the development of well targeted programs and outcome-based performance measures.
- ▶ Review black spot criteria, taking into account Safe System principles.
- ▶ Develop and adopt best practice approaches to improving safety at intersections, including the use of cost-effective measures such as signage, delineation, red-light/speed cameras, skid resistance treatment and other measures to reduce speeds.
- ▶ Implement audible centre line markings on major undivided rural transport routes.
- ▶ Implement a program of road and roadside improvements specifically to address motorcycle crashes at high-risk locations and routes.
- ▶ Implement a program to improve the rest area network across Australia.
- ▶ Include and apply Safe System principles in infrastructure documents, safety audit processes and professional development programs for designers, engineers, traffic managers and allied professionals.
- ▶ Establish both formal and informal networks to share experience with Safe System transformation projects.



Complementary action under the Safe System framework

- » Speed management actions listed in Section 5.1. In particular, introducing lower speed limits on high-risk roads or road sections, especially where road improvement is not feasible in the short term.

Safer roads performance indicators

- » Monitor and report the number of kilometres of roads where longitudinal treatments such as sealed shoulders, edge lining and barrier treatments are applied, and the number of intersections treated.
- » Monitor and report on changes in single-vehicle crashes and injuries as surrogate measures of effectiveness of road treatment programs and the increased number of vehicles with electronic stability control in the vehicle fleet.
- » Determine crash rates for different road types and report on changes as road treatments are undertaken.
- » Monitor and report on crash and injury changes at treated black spot locations.
- » Report on black spot and other safety-targeted expenditure per head of population.



NSW Highway Road Safety Reviews

The Roads & Traffic Authority of NSW undertook safety reviews of the Pacific Highway and the Princes Highway in May 2004 and December 2004 respectively and has recently completed a review of the Newell Highway.

Highway road safety reviews are comprehensive, multi-disciplinary reviews of safety issues on key transport routes. These reviews involve extensive investigation and consultation including in-depth analyses of the highway's crash history, route inspections, workshops and consultative meetings and reporting. The reviews also place emphasis on further improving the coordination and integration of road improvement projects and ensuring the best safety outcome through the integrated program. The road safety highway programs are innovative holistic approaches aimed at reducing the road toll by providing low-cost, effective safety engineering works and behavioural/technology-based programs.

Road safety reviews were carried out for the Pacific Highway (in 2003–04) and Princes Highway (in 2004–05). These resulted in the implementation of a three-year, \$35 million road safety program for the Pacific Highway and a three-year, \$30 million program of safety improvements for the Princes Highway.

Substantial reductions were observed in both fatal and injury crashes. On the Pacific Highway, 55 people were killed and 617 injured in 2003 (the year the review began) compared with 25 deaths and 483 injuries in 2006. On the Princes Highway, 24 people were killed and 324 injured in 2004 (the year the review began) compared with four deaths and 294 injuries in 2006. This represents a first year post-implementation saving of 50 lives and 164 injuries on both routes (provisional figures).

This strategic approach to delivering road safety supplements traditional black spot treatments and allows a mix of treatments along a 'high risk route'. The treatments include not only road safety engineering works but also behavioural programs, technology projects (such as speed cameras at target locations) and enforcement strategies. The program of works is developed to supplement any planned maintenance treatments and precedes any longer term and more costly road upgrades.

The approach is strategically important because it focuses road safety effort on high risk locations in a short time frame, rather than treating isolated sites in a sequential manner. The methodology has become the blueprint for subsequent reviews.

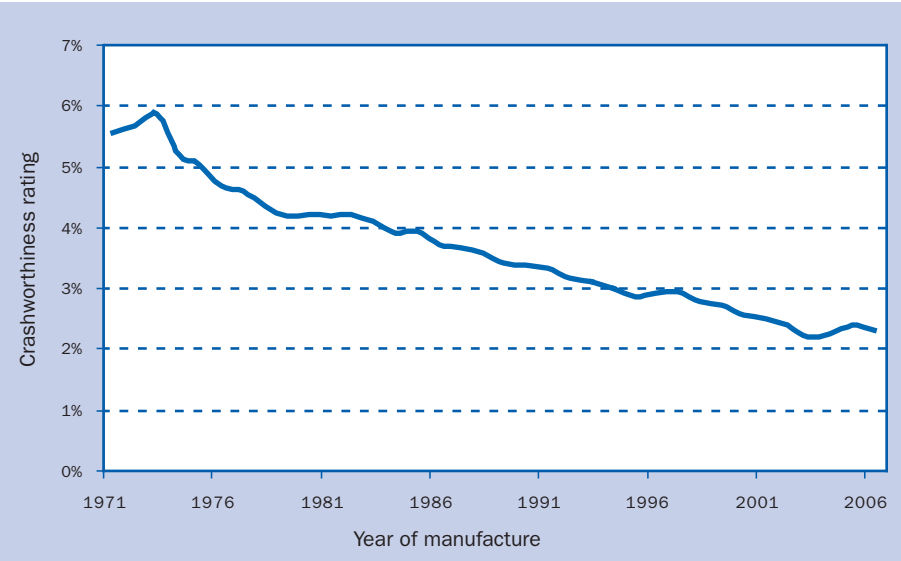


5.3 Safer vehicles

Improving vehicle safety has long-term benefits rather than immediate effects on crash and injury levels. Benefits of improvements in the safety of new vehicles accrue over many years, as vehicles with the new features gradually replace existing vehicles in the total fleet. In Australia, new vehicle sales represent about 7 per cent of the total vehicle fleet in a typical year, and the median age of vehicles involved in casualty crashes in Australia is about 9 years.

Figure 7 illustrates the extent to which the average occupant protection performance of recent model vehicles has improved, relative to vehicles that were manufactured in previous decades. In cars sold over the last few years, the risk of death or serious injury for drivers involved in a tow-away crash is less than half the figure for cars built in the early 1970s.

Figure 7: Risk of death or serious injury by year of vehicle manufacture



Note: Scores represent risk of death or serious injury for drivers involved in a tow-away crash

Source: Monash University Accident Research Centre (MUARC) Used Car Safety Ratings Project

Vehicle safety innovations have traditionally been classed as two main types. *Primary safety* features aim to reduce the chance of a crash occurring; examples are advanced suspension systems, low centre of gravity design, and improved braking and stability systems. *Secondary safety* measures are generally designed to protect vehicle occupants and other road users if a crash occurs; examples are seatbelts, airbags and side impact protection, crumple zones, and pedestrian-friendly bonnet designs.

The distinction between primary and secondary technologies is blurring, particularly with the rapid development of intelligent transport systems (ITS). New technologies have enabled a range of integrated safety systems performing driver support, crash avoidance, crash mitigation, crash protection and post-crash assistance functions. Such systems include visibility aids, lane guidance and collision warning, intelligent speed



adaptation (ISA) and automatic crash notification.

It is difficult to quantify the road safety benefits of many of the advanced systems being employed and implemented. Governments are monitoring international developments to ensure that the take-up of new technologies is not impeded by existing regulation, but also to avoid any potential safety downsides. The challenge for governments is to capture the societal benefits of innovative vehicle technologies while recognising the commercial issues flowing from investments undertaken by manufacturers and the need for high quality technical standards if regulation or standard setting is seen as desirable.

Australia's mandated safety standards are developed collaboratively with other governments as international regulations under international agreement provisions. Regulatory processes are important, but can be slow to respond to the rapid pace of technological change.

To accelerate the market penetration of advanced vehicle safety features, governments are seeking to supplement regulation with other approaches, including partnerships with industry, web based information, consumer awareness programs such as the Australasian New Car Assessment Program (ANCAP) and Used Car Safety Ratings, and using fleet purchasing power to apply market pressure for enhanced safety features to be included in fleet vehicles.

What is known

- » The Monash University Accident Research Centre has estimated that if everyone bought the safest car in each class (small, medium, large) road trauma involving light passenger vehicles could be reduced by 26 per cent. If each vehicle incorporated the safest design elements for vehicles in its class, then such trauma could be reduced by 40 per cent.¹⁷
- » Use of seatbelts has been assessed as reducing the risk of death by a minimum of 40 per cent.
- » Airbags have been associated with a further reduction in injury for belted occupants by around 10 per cent.¹⁸
- » Recent Australian research on cars equipped with ESC has shown fatal crash reductions of around one-third for single-vehicle crashes¹⁹, in line with previous overseas studies.²⁰ Since 1 January 2008, ANCAP has required vehicles to be fitted with ESC to be eligible for its highest rating.
- » About half of all new vehicles sold in Australia are purchased by businesses or government agencies. These vehicles are usually sold into the wider Australian vehicle pool two to three years after purchase.

Highest-impact actions

- Complete and act on a regulatory assessment of the development of



an Australian Design Rule (ADR) that would require all new passenger vehicles to be equipped with ESC technology.

- ▶ Governments to undertake actions to encourage uptake of ESC, side impact head protection, seatbelt reminder systems, intelligent speed adaptation, emergency crash notification and other safety technologies, and to encourage consumers to purchase vehicles with such technologies.
- ▶ Further investigate emerging collision avoidance and related technologies, as well as in-vehicle technologies to address single-vehicle run-off-road crashes.
- ▶ Governments to implement vehicle fleet purchasing policies that have regard to high vehicle safety standards, for both occupants and pedestrians, including fitment of advanced safety features such as ESC, side curtain airbags and seatbelt reminder systems.
 - Encourage private sector organisations to adopt similar policies.
- ▶ Governments to explore partnership opportunities with the Australian vehicle industry to promote steps to improve vehicle safety.
- ▶ Australia to be an active partner in international standard-setting forums to expedite the introduction of new safety features in vehicles.
- ▶ Continue support for ANCAP and Used Car Safety Ratings, and develop more effective ways to promote public awareness and understanding of results.
- ▶ Investigate implementation of a national 'Stars on Cars' program to provide consumers with ANCAP, or equivalent, safety ratings on new light vehicles.
- ▶ Investigate use of web-based information to improve consumer awareness of available safety features.
- ▶ Develop a program of in-vehicle technologies to promote road safety, including:
 - digital tachographs and GPS-enabled solutions for heavy vehicles, to support the implementation of speed and fatigue management reforms
 - development of a policy framework to enable the adoption of intelligent speed adaptation technology.



Supporting actions

- ▶ The Australian Government to engage with stakeholders (e.g. the insurance industry) to participate in joint or complementary programs to stimulate consumer demand for vehicles with state of the art safety features.
- ▶ Continue research programs as part of internationally coordinated efforts to improve our understanding of vehicle occupant and pedestrian protection and to upgrade standards.
- ▶ Publish and distribute vehicle safety information designed for specific driver groups, particularly young people purchasing their first car, elderly people, vehicle fleet managers and truck drivers.
- ▶ Liaise with motoring journalists to engender a more positive response to safety features and driving behaviour in the specialist motoring press.
- ▶ Undertake actions developed through the National Heavy Vehicle braking strategy to harmonise Heavy Vehicle braking standards with United Nations Economic Commission for Europe (UNECE) regulations and develop a Code of Practice for prime mover/trailer brake compatibility with industry. Pursue heavy vehicle safety actions.
- ▶ Governments to undertake actions to encourage the take-up of electronic stability control in heavy vehicles in rural and remote areas.

Complementary action under the Safe System framework

- » Actions in Section 5.4.4, Safe use of fleet vehicles.

Safer vehicles performance indicators

- » Percentage of new vehicles sold that have a minimum of four star ANCAP occupant protection rating.
- » Monitor percentage of new vehicles sold with identified safety features.
- » Improved performance of newer vehicles as evidenced in real-world crash performance data compiled for the Used Car Safety Ratings; in particular, number of single vehicle crashes.
- » Surveys among consumers and fleet managers on the importance of safety items in new car purchasing decisions.

5.4 Safer road users and safer behaviour

A key means for improving the safety of road users is to encourage continual improvement in road user behaviour so that unsafe behaviours are exhibited less frequently. Unsafe behaviours are those where research has identified a close relationship with crashes. These behaviours include speeding, drink and drug impaired driving, driving while fatigued, being distracted or aggressive while driving, and not using, or incorrectly using, safety devices



(seatbelts, child restraints, motorcycle and bicycle helmets). In this Action Plan speed management is highlighted as a key action area, so the focus here is on other behaviours.

Road users may be motivated to change their behaviour over short time periods by effective deterrent and publicity measures such as a combination of police enforcement and public education campaigns. This approach is dependent on road users being concerned with being 'caught' and having to deal with the consequences. Because many drivers believe their risk of crashing is very low, fear of penalties is often stronger than the fear of being involved in a crash. However, measures to inform and educate motorists about risk factors and to motivate longer-lasting behaviour modification are also required. Measures to limit the level of risk faced by novice drivers are a means of achieving improved safety for this high-risk group.

5.4.1 Drink and drug driving

What is known

- » Over 1 in 5 drivers and riders killed have a blood alcohol level exceeding the legal limit.
- » Random breath testing results typically show that about 1 in 150 drivers tested exceed the legal limit.
- » Casualty crash risk doubles when driving with an alcohol level just in excess of .05 BAC,²¹ and risk of involvement in a fatal crash rises even more sharply.²²
- » A high proportion of recidivist drink drivers have clinical alcohol-dependence problems.
- » There is evidence linking certain illegal drugs to elevated crash risk: though alcohol still makes a bigger overall contribution to the number of road deaths and injuries.²³

Highest-impact actions

- ▶ National focus on the effectiveness of enforcement and public education, particularly in rural areas
 - for example, improve rural RBT effectiveness through innovative combinations of general deterrence and targeted operations.

Supporting actions

- ▶ Implement community education initiatives and extend responsible serving of alcohol programs.
- ▶ Undertake a review of best practice community programs that aim to minimise road trauma impacts resulting from alcohol use.
- ▶ Develop integrated programs for recidivist drink drivers, including:
 - a best practice alcohol rehabilitation program



- increased use of alcohol ignition interlocks
- assessment of alcohol-dependence problems, prior to re-issue of licence.
- ▶ Undertake further research on the size of the drug driving problem incorporating scope for expanded detection, access to coronial records, and routine drug and alcohol testing of all drivers and riders involved in fatal crashes.
- ▶ Extend the implementation of random drug testing.
- ▶ Work towards blood sampling for drugs and alcohol for all drivers involved in fatal and serious injury crashes.
- ▶ Pursue actions on heavy vehicle driver impairment, including implementation of fitness for duty requirements of fatigue management accreditation and investigation of chain of responsibility options.

Drink and drug driving performance indicators

- » Monitor and report on incidence of alcohol and drug use by drivers and riders involved in fatal and injury crashes.
- » Monitor and report on crash incidence during 'high alcohol' periods.
- » Monitor incidence of drink driving reported from RBT operations.
- » Monitor incidence of illegal alcohol and drug levels per 1000 tests.
- » Monitor and report on community perspectives of the level of RBT enforcement and likelihood of being tested.
- » Collect information on the levels and circumstances of roadside alcohol and drug testing and the types of drivers being tested.
- » Record the number of offenders and non-offenders using alcohol interlocks.

5.4.2 Restraint use

What is known

- » About 1 in 4 vehicle occupants killed in crashes are not wearing a seatbelt.
- » Use of seatbelts has been assessed as reducing the risk of death by a minimum of 40 per cent.
- » Seatbelt non-wearing is an issue for all jurisdictions. A recent study reported a 99 per cent seatbelt wearing rate among drivers of cars fitted with advanced seatbelt reminder systems that fulfill European New Car Assessment Program test criteria²⁴.



Highest-impact actions

- ▶ Increase seatbelt wearing enforcement, particularly targeting rural areas and heavy vehicles.
- ▶ The Australian Government to continue high-level liaison with the vehicle industry to encourage inclusion of effective seatbelt reminder systems in Australian vehicles and achieve cooperative agreement on improved performance beyond existing ADR requirements.
- ▶ Continue support for the ANCAP program and review specifications for seatbelt warning devices to earn points in the program.
- ▶ Include effective seatbelt warning systems in selection criteria for new vehicles purchased by government fleets.
- ▶ Jurisdictions to implement and promote recent agreed changes to the Australian Road Rules making drivers responsible for passengers' use of restraints, and requiring child restraints up to age seven.
- ▶ Increase education and training on the importance of using appropriate and correctly fitted child restraints that comply with the Australian Standard, as well as correct fitting and use of child restraints.
- ▶ Pursue improved restraint use by heavy vehicle drivers by working with operators to implement management practices that promote seatbelt wearing.

Supporting actions

- ▶ Monitor and report on research on improving restraint use.
- ▶ Communicate results of evaluations of performance and ease-of-use of child restraints.

Complementary action under the Safe System framework

- » Promote seatbelt reminder systems in all new cars (Section 5.3).

Restraint performance indicators

- » Monitor and report on vehicle occupants killed who were not wearing restraints, including location data and historical data to provide trend lines.
- » Implement a national seatbelt wearing observation study every two to three years.

5.4.3 Fatigue and distracted driving

Fatigue is a known contributing factor to road crashes but the number of crashes in which fatigue plays a part is difficult to accurately determine. Fatigue is more likely to be a contributing factor in crashes which have involved long trips, extensive periods of continuous driving and trips during



normal sleeping times when the driver has been previously deprived of sleep.

Sources of driver distraction, both within the vehicle and in the general road environment, have increased substantially in recent years. Modern vehicles can include on-board TV, satellite navigation, complex sound systems, climate controls, and audible and visual signals for an array of vehicle operations which compete for driver attention. Surveys show that many drivers still use hand-held mobile phones while driving despite it being illegal in all Australian jurisdictions.

Drivers operate in a complex road environment with advertising billboards; public and promotional lighting; and advisory, regulatory and directional signage. The combined and interactive effects of the stimuli both inside and outside the vehicle generate much potential for distraction.

What is known

- » There has been extensive research aimed at developing fatigue monitoring devices to reduce fatigue risks, but the real-world effectiveness of such devices as a crash prevention measure is unproven.
- » Road engineering treatments that address run-off-road and head-on crashes can be a cost-effective way of reducing deaths and injuries resulting from driver fatigue, inattention and other errors.
- » Laboratory research and crash studies indicate that use of both hand-held and hands-free mobile phones impair driver performance and substantially increase crash risk.²⁵

Highest-impact actions

- ▶ Liaise with business, unions and industry to raise awareness of driver fatigue and distraction and facilitate arrangements for preventing fatigued workers driving from workplaces, or in the course of their work.
- ▶ Enforce the prohibition on use of hand-held mobile phones while driving, and discourage use of mobile phones of any type while driving, particularly for novice drivers.
- ▶ Promote the installation of engineering treatments known to address loss of control crashes.

Supporting actions

- ▶ Implement public education programs targeting better understanding of circadian rhythms and other influences on fatigue.
- ▶ Reinforce current telecommunications industry policies promoting the responsible use of mobile phones.
- ▶ Investigate, and if appropriate, trial the use of electronic enforcement of mobile phone usage laws.



- ▶ Monitor findings of research on driver fatigue and driver distraction.
- ▶ Monitor development of fatigue monitoring and warning devices.
- ▶ Implement and monitor the impact of National Heavy Vehicle Driver Fatigue Management reforms.

Complementary action under the Safe System framework

- » Relevant road engineering measures, including rest area improvements, are identified in Section 5.2.

Fatigue and distracted driving performance indicators

- » Publish performance indicators relating to hazard mitigation treatments for specific routes and road lengths.
- » Undertake research to determine the impact of distraction from in-vehicle and external sources and the incidence of fatigue.
- » Conduct and report on results of observation studies of mobile phone use by drivers.

5.4.4 Safe use of fleet vehicles

Corporate safety programs can be an important means of promoting safe road use. Crashes involving fleet vehicles account for about one-quarter of total road deaths and about two-fifths of all work-related deaths.

Employers have an obligation to provide a working environment that is safe and to minimise as far as practicable the risk to health and safety of their employees. They are in a position to promote higher standards than are required by road traffic law. Effective fleet safety programs can provide significant business benefits.

Governments are major employers, and can provide leadership by example.

Highest-impact actions

- ▶ Implement fleet safety programs in government fleets and encourage private sector organisations to run similar programs.
- ▶ Develop and provide fleet safety guidelines for use by government and private sector fleets which identify duty of care issues under occupational health and safety (OH&S) guidelines for employees whose work involves driving vehicles. The guidelines should emphasise: safe driving behaviour; required use of seatbelts; discouraging any mobile phone use while the vehicle is in motion; and a zero BAC requirement.
- ▶ In conjunction with key industry partners, develop and implement a fleet safety best practice model based on the work currently being developed by Austroads, VicRoads, NSW RTA and other bodies.



Complementary action under the Safe System framework

- » Fleet safety measures relating to safer vehicles are addressed in Section 5.3.

5.4.5 Novice drivers

Young and novice drivers face high levels of risk when making the transition from supervised to solo driving. Lack of experience, propensity for risk-taking, and a number of potential sources of distraction all contribute to elevated crash rates for novice drivers. Young drivers also tend to be on the roads during periods of relatively high risk.

An extensive body of research has shown that conventional skills-based driver training programs provide little benefit and often produce worse outcomes than if such training is not undertaken. Recent approaches have focused on encouraging increased supervised practice during the learner phase and building this experience into graduated licensing arrangements. Best practice post-licence education interventions focus on improving higher-order cognitive skills, including building self awareness and self monitoring of driving behaviour, and better understanding of the consequences of actions.

This Section lists actions specific to novice drivers. However, measures that do not target novice drivers specifically are very important to improving novice driver safety (see Figure 8). For example, general speed management measures are very important because excessive speed is a major risk factor for many novice drivers and because novices – particularly young males – are unlikely to comply with speed limits if they observe that older and more experienced drivers do not do so. Road measures that reduce deaths and injuries from run-off-road crashes are also particularly relevant to young drivers, because they have a high incidence of such crashes.

What is known

- » Novice drivers are over-represented in crash data by a ratio of at least 3:1.
- » Young novice drivers are over-represented among speeding motorists.
- » Young drivers generally use less safe older vehicles because they are more affordable, hence injury risk in a crash is higher.
- » Young driver crash rates are elevated sharply when they drive late at night and during early morning hours and when carrying two or more passengers.

Highest-impact actions

- ▶ Implement and evaluate best practice education programs and graduated licensing systems for novice drivers.
- ▶ Encourage community and industry participation in key graduated licensing initiatives.



- ▶ Increase public awareness of the safety benefits for novice drivers of:
 - extensive supervised experience before solo driving is permitted, and
 - limiting access to higher risk driving, such as late night/early morning driving, driving with peer passengers, and drinking and driving.

Supporting actions

- ▶ Develop better methods for engaging young people in road safety issues.
- ▶ Monitor and report on research into novice driver development, risk factors, and the effectiveness of different interventions.

Novice driver performance indicators

- » Monitor crash and injury incidence for the 17–25 year age group, including data on crash circumstances.
- » Monitor the implementation and effects of the various graduated licensing provisions introduced in Australian jurisdictions.

5.4.6 Motorcyclists

Data from all jurisdictions indicate that serious crashes involving motorcyclists have increased in recent years. The Federal Chamber of Automotive Industries (FCAI) reports continuing substantial sales growth for motorcycles and motor scooters (Appendix 1).

The major initiatives in this Action Plan will have a direct effect on improving the safety of motorcyclists (Figure 8), particularly actions in the area of speeding and safer roads. Nevertheless, the case for additional action focused specifically on motorcycle safety is compelling.

What is known

- » Motorcyclists face a fatal crash risk about 30 times higher than car occupants; their relative risk of serious injury is about 41 times higher.
- » Over 40 per cent of fatal motorcycle crashes are single-vehicle loss of control crashes.
- » The severity of injuries faced by motorcyclists is higher than for other road user groups.
- » Road surface issues have a greater impact on safety for motorcyclists than for other motor vehicle drivers.



Specific motorcycle safety actions

- ▶ Implement public education programs focused on the greater risk faced by motorcyclists and measures to mitigate this risk.
- ▶ Ensure that motorcycle-specific issues are taken into account in the design and construction of new roads and improvements to existing roads, including maintenance and selection of safety treatments, particularly on popular motorcycle routes.
- ▶ Promote to riders the safety advantages of ABS, linked braking systems and traction control in motorcycles, and encourage the motorcycle industry to increase the availability of motorcycles with these features.
- ▶ Consider options for a best practice graduated licensing system for novice riders.
- ▶ Examine feasibility of introducing minimum standards and a national rating system for protective clothing for motorcyclists.

5.4.7 Pedestrians and bicyclists

Improvements in both pedestrian and cyclist safety are important elements in achieving reductions in road deaths. A number of key initiatives in this Action Plan are expected to have major impacts on trauma levels of pedestrians and cyclists (Figure 8).

What is known

- » There is evidence that past improvements in speed management have been a major factor in reducing pedestrian deaths, and that a Safe System approach combining infrastructure and speed management measures would produce further substantial safety gains for pedestrians and cyclists.
- » About four in ten pedestrians killed have a blood alcohol concentration over 0.05 and about three-quarters of these are over 0.15; incidence of intoxication is highest among male pedestrians aged between 15 and 54 years.
- » Nationally around one in every four road deaths in metropolitan/urban areas is a pedestrian.
- » Bicycle helmets substantially reduce the risk of death or brain injury for cyclists.

Specific actions for pedestrians and bicyclists

- ▶ Develop infrastructure which reduces the risk of collisions between motor vehicles and cyclists and pedestrians.
- ▶ Install lower speed limits in areas and at times of higher pedestrian activity.



- ▶ Raise awareness of risks associated with pedestrian intoxication and implement targeted countermeasures, including extension of responsible serving of alcohol programs.
- ▶ Undertake community education to increase the rate of bicycle helmet use, particularly among adolescents.
- ▶ Undertake community education related to cyclist conspicuity, including lighting issues.
- ▶ Develop a national standard of specifications for power-assisted pedal cycles and provide information about safer use.

5.4.8 Relevance of action areas to road user groups

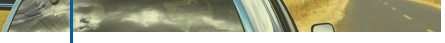
Figure 8 provides a summary of how the broad action areas proposed in this plan are expected to benefit different road user groups. It illustrates the fact that general measures are often very important for specific groups and issues.

Figure 8: Benefits of general action measures to road user groups

	Safer road user behaviour					
	Safer speeds	Safer roads and roadsides	Safer vehicles	Drink and drug driving	Restraint use	Fatigue and distracted driving
Motorcyclists	■■■	■■■	■	■■■		■■
Cyclists	■■■	■■	■	■		■■
Pedestrians	■■■	■■	■	■		■■
Young drivers	■■■	■■■	■■	■■■	■■■	■■■
Older drivers	■■■	■■	■■■	■	■■	■■
Indigenous road users	■■■	■■■	■■	■■■	■■■	■■
International visitors	■■■	■■■	■■■	■■■	■■■	■■■
Rural road users	■■■	■■■	■■■	■■■	■■■	■■■

(The number of 'boxes' reflects the relative benefits expected to accrue to each group)





Appendix 1 Road safety activities in 2007 and 2008

Strategic planning and community engagement

- » The Commonwealth convened the National Motorcycle and Scooter Safety Summit in April 2008.
- » The ACT launched its *Road Safety Strategy 2007–2010*, which incorporates the *ACT Road Safety Action Plan for 2007 and 2008*; and established improved coordination and consultation arrangements for progressing road safety issues.
- » Victoria developed and released *arrive alive* – its 2008–2017 road safety strategy.
- » South Australia released its *Road Safety Action Plan 2008–2010*.
- » Tasmania developed and launched the *Tasmanian Road Safety Strategy 2007–2016* which is supported by the *Action Plan 2007–08 to 2009–2010*.
- » Following an extensive public consultation process involving over 4000 members of the community, the Western Australian Road Safety Council submitted its recommended strategy *Towards Zero 2008–2020* and associated action plan to Government in August 2008 for consideration. Consultation with key stakeholders across multiple government agencies, special interest groups and industry and political leaders was an intrinsic part of the strategy's development process, and these partnerships will continue to develop as the strategy is implemented.
- » In South Australia, a South East Road Safety Strategy was developed in conjunction with the South East Local Government Association.
- » South Australia also established a Heavy Vehicle Safety Task Force to engage industry and a Youth Road Safety Taskforce to assist in feedback mechanisms for the Graduated Licensing Scheme.
- » Western Australia introduced a road safety communication strategy for international visitors, providing safety information through video on incoming flights, signage at airports, information in hire vehicles and a website in eight languages.

Initiatives undertaken to make roads safer

- » Victoria increased investment in road and roadside infrastructure, including treatments to address motorcycle crashes. In South Australia, speed limit reductions were agreed with the outer suburban council of Onkaparinga.



- » NSW commenced a process to mainstream road safety outcomes in all RTA business areas, meaning that large budget engineering programs are now also prioritised on the basis of road safety outcomes.
- » Tasmania installed safety barriers along selected high volume roads to reduce run-off-road and head-on crashes.
- » Tasmania also commenced installation of flashing electronic speed zone signs for all 40 km/h school zones to warn motorists when lower speed limits are operating and installed vehicle-activated electronic warning signs in high-crash locations subject to changeable conditions.
- » Queensland has increased its state-funded Safer Roads Sooner (black spot) program from \$10 million to \$47 million. A program to treat 2000 km of state and national highways with audio tactile linemarking (from this increased allocation) is 50 per cent complete. It has mandated the installation of median barriers on all new motorways (generally using wire rope), and is progressively retrofitting existing motorways. Lower speed limits have been applied to a number of poorly performing sections of highway, which have resulted in significant safety improvements.

Activities to moderate speeds of drivers and riders

- » Several jurisdictions expanded their safety camera networks. NSW implemented a concerted and integrated speed management program: the number of speed related fatalities has decreased from 205 in 2005–06 to 135 in 2007–08 (a drop of 34 per cent).
- » South Australia introduced new legislation for camera enforcement of unregistered and uninsured vehicles and obtained budget approval to introduce point-to-point speed measuring technology.
- » Victoria progressed a range of speed management measures such as an evaluation of a trial of 40 km/h limits at 18 strip shopping centres and the resulting expansion to five additional shopping locations.
- » WA commenced a review of measures to enhance speed enforcement.
- » Trials of Intelligent Speed Adaptation (ISA) systems were commenced in NSW, Victoria and Western Australia.
- » Tasmania implemented a demonstration of safer travel speeds in a local municipality, including a gravel road default speed limit of 80 km/h and a rural default speed limit of 90 km/h.
- » The Northern Territory introduced a default speed limit of 110 km/h on rural roads and a speed limit of 130 km/h on the Stuart, Arnhem, Barkly and Victoria Highways.



Initiatives to address road user behaviour, including impaired driving (alcohol and drugs)

- » Queensland piloted new legislation to allow vehicle impoundment sanctions where drivers repeatedly drive unregistered and uninsured vehicles; drive unlicensed or disqualified; or drink drive over 0.15 BAC. Tasmania commenced a trial of alcohol interlocks for repeat drink driving offenders.
- » The Northern Territory increased its penalties for a range of offences including speeding, red light infringements, drink driving and not wearing seatbelts; and introduced a demerit points scheme. The first of nine planned red light/speed cameras was installed.
- » The Northern Territory developed and broadcast a road safety campaign aimed at reducing the level of trauma experienced by vulnerable road users (pedestrians, cyclists, Aboriginal people, the young and elderly). Specific campaigns also targeted issues for indigenous road users such as riding in the backs of utes, safe pedestrian behaviour, drink driving and seatbelt wearing.

Action on enabling legislation and piloting of random roadside drug testing

- » Western Australia introduced new drug driving laws and associated enforcement; NSW and Queensland introduced random roadside drug testing; and South Australia expanded its random roadside drug testing and increased penalties. In the Northern Territory, police were given the authority to test for drugs following crashes or in cases of unexplained driving behaviour. Random testing was introduced for drivers of heavy vehicles and buses.

Action to improve graduated licensing for novice drivers

- » Several jurisdictions introduced new or amended Graduated Licensing Systems (GLS), with features including restrictions on carrying peer passengers, night driving, use of high-powered vehicles, mobile phone bans, zero BAC limits, increased minimum requirements for supervised driving, longer minimum periods in each provisional stage, and hazard perception tests.
- » The Australian Government committed \$17 million over five years to support the development and national implementation of the Australian Automobile Association's *keys2drive* program. This initiative aims to improve the quality and amount of supervised driving experience obtained by learner drivers.
- » Queensland conducted a review of motorcycle safety and announced that an enhanced graduated licensing system for motorcycles will be introduced. Victoria introduced a Learner Approved Motorcycle Scheme which restricts learner motorcyclists to a list of motorcycles appropriate to their level of experience.



Vehicle safety initiatives

- » Victoria made a commitment to ensuring that vehicles in its government fleet are equipped with electronic stability control (ESC) and head protection technology, and Tasmania mandated a minimum safety standard for the government fleet based on a minimum four-star ANCAP rating.
- » Tasmania and Western Australia undertook public education campaigns on buying safer vehicles, specifically highlighting ESC and curtain airbags.

Enhanced enforcement activity.

- » Queensland developed an Intelligent Traffic Analysis system to promote road safety and compliance through a highly visible police presence on Queensland roads. The system is expected to be available in late 2009.

Legislative reforms

- » The National Transport Commission's 7th package of amendments to the Australian Road Rules was approved by the ATC. The package included changes to seatbelt laws which require that children less than six months old are to be restrained in a rearward facing child restraint; children at least six months old but less than four years old must use either a rearward facing or forward facing child restraint; and children at least four years old but less than seven years old must use either a forward facing child restraint or a booster seat.
- » Some jurisdictions implemented an earlier amendment to the Australian Road Rules making drivers responsible for all passengers using seatbelts.
- » The Northern Territory implemented a legislative requirement for children aged under 12 months to be appropriately restrained while traveling in vehicles.

National heavy vehicle reform projects

- » National fatigue management, compliance and enforcement reforms, developed by the National Transport Commission (NTC), were agreed by ATC. Best practice guidelines for retro-fitting seatbelts to buses were published and a previously agreed proposal to allow higher steer axle mass limits on Heavy Vehicles which had better under-run protection, cab strength and environmental performance than required by Regulations were implemented. A formal approval process for vehicles which meet performance-based safety and road protection standards was approved by ATC and implemented.



Availability of data about road crash injuries

- » The Australian Government began publishing statistics on serious road crash injuries, sourced from the Australian Institute of Health and Welfare's National Hospital Morbidity Database.



Appendix 2 Exposure factors that may be affecting road death rates

Since December 2004 there has been a substantial gap between the actual and the (pro-rata) targeted rates of deaths per 100,000 population under the National Road Safety Strategy. In 2007, this gap equated to an extra 231 annual deaths (6.5 pro-rata 'targeted' annual deaths per 100,000 population rate against 7.6 actual rate).

During the first nine months of 2008, however, numbers of road deaths have fallen sharply. Three of the lowest-ever monthly counts occurred during this period. The total number of deaths for the 12 months ending September 2008 was 6 per cent lower than the corresponding figure one year earlier.

Economic factors and changes in vehicle usage

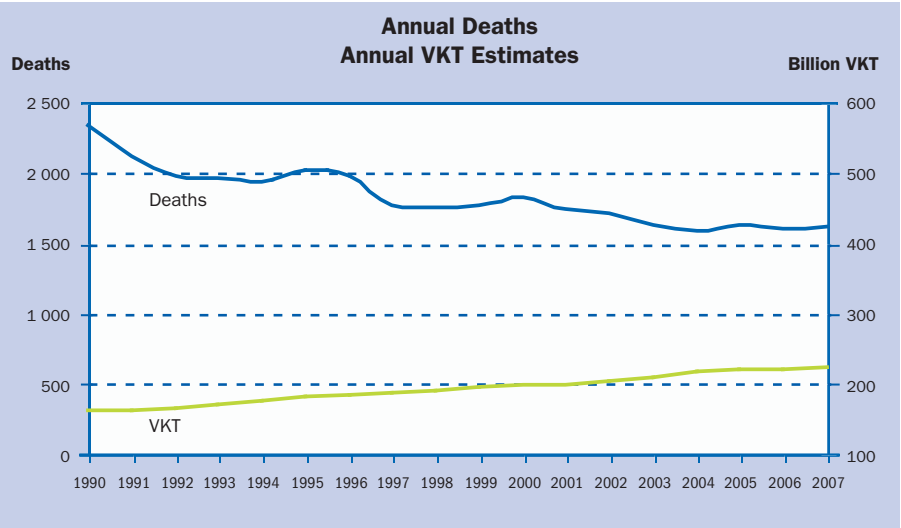
Australia has had an extended period of economic growth. Studies have shown that increased economic activity and discretionary income are generally associated with higher levels of road trauma due to increased travel, including more travel during high-risk periods in the 24-hour cycle. Figure 9 shows the trend in risk exposure – expressed as vehicle-kilometres travelled (VKT) – and the trend in the number of road deaths since 1990.

Growth in total estimated VKT during the middle periods of the current NRSS period was greater than expected when the strategy was developed. The growth over the three-year period 2001 to 2004 was 9.7 per cent; over the three years from 2004 to 2007, the increase was a more modest 3.0 per cent.

However the rate of increase in usage has differed across vehicle types. Growth in VKT has been particularly rapid for motorcycles, trucks and light commercial vehicles (Figure 10).

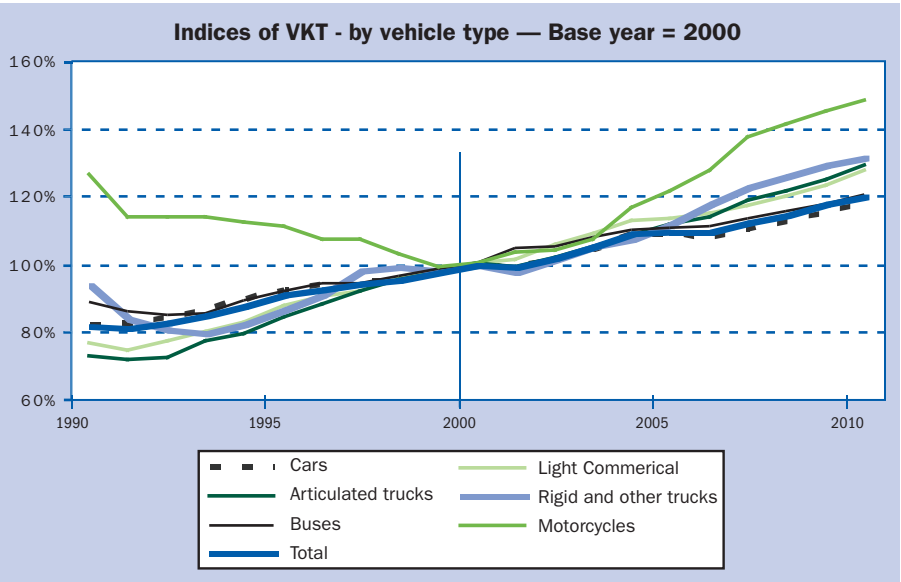


Figure 9: Vehicle-kilometres travelled and annual road deaths, 1990-2007



Sources: VKT estimates: Bureau of Infrastructure, Transport and Regional Economics
Deaths: Department of Infrastructure, Transport, Regional Development and Local Government: Monthly Road Death Series

Figure 10: Indices for vehicle-kilometres travelled by vehicle type, 1990-2007



Source: Bureau of Infrastructure, Transport and Regional Economics



Unexpected increase in motorcycle usage and motorcycle trauma

The increase in the number of motorcyclist deaths appears to be linked to a growth in motorcycling activity that is substantially greater than anticipated at the start of the decade. In addition to the increased usage reflected in the VKT figures, the Federal Chamber of Automotive Industries (FCAI) has reported a rise in average monthly sales of (road) motorcycles from 2,670 during 2004 to 3,790 during 2007²⁶. This is a total increase of 42 per cent, or an annual average growth of 12.5 per cent. Over this three year period, motorcyclist deaths increased by a total of 22.1 per cent.

Vehicle compatibility

The substantial growth in sales of large four wheel drive (4WD) vehicles has increased the diversity in size and mass among vehicles in the fleet. FCAI data for new vehicle sales show that these vehicles have grown from 13.3 per cent of the market in 2000 to 20.2 per cent in 2008. The increasing proportion of vehicles of greater mass in the fleet means that occupants of smaller vehicles have a significantly higher risk of injury in crashes involving 4WDs. Increasing fuel prices could result in a moderation or reversal of this trend.



References

- 1 Australian Transport Safety Bureau estimate, based on a study of the cost of crashes in 1996: Bureau of Transport Economics, *Road crash costs in Australia*, BTE report 102, Canberra, 2000.
 - 2 Rumar K, *Road transport past, present and future road safety work in ECMT*, paper prepared for the Bucharest session of the European Conference of Ministers of Transport, 2002.
 - 3 Bureau of Transport Economics, *Road crash costs in Australia*, BTE report 102, Canberra, 2000.
 - 4 Australian Transport Council. *National Road Safety Strategy 2001–2010*. <<http://www.atcouncil.gov.au/documents/atcnrсс.aspx>>
 - 5 Joint OECD/ECMT Transport Research Centre: Working Group On Achieving Ambitious Road Safety Targets, *Country reports on road safety performance*, July 2006.
 - 6 D'Elia A, Newstead S, Cameron M, *Overall impact during 2001–2004 of Victorian speed-related package* Monash University Accident Research Centre report 267. Melbourne, 2007. <<http://www.monash.edu.au/muarc/reports/muarc267.pdf>>
 - 7 Vulcan P and Corben B, *Options for a National Road Safety Strategy*, report to the National Road Transport Commission, May 1999.
 - 8 US Department of Transportation, Federal Highway Administration, *Halving roadway fatalities: a case study from Victoria, Australia 1989–2004*, International Technology Scanning Program, 2006.
 - 9 Kloeden CN, Ponte G and McLean AJ, *Travelling speed and the risk of crash involvement on rural roads*, Australian Transport Safety Bureau report CR204, Canberra, 2001. <http://www.infrastructure.gov.au/roads/safety/publications/2001/Rural_Speed_1.aspx>

Kloeden CN, McLean AJ and Glonek G, *Reanalysis of travelling speed and the risk of crash involvement in Adelaide South Australia*, Australian Transport Safety Bureau report CR207, Canberra, 2002. <http://www.infrastructure.gov.au/roads/safety/publications/2002/Speed_Risk_3.aspx>
 - 10 Elvik R, Christensen P and Amundsen A H, *Speed and road accidents: an evaluation of the Power Model*. Institute of Transport Economics (TOI), Oslo, 2004. <<http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2004/740-2004/740-2004.pdf>>
 - 11 Austroads, *Balance between harm reduction and mobility in setting speed limits: a feasibility study*. Austroads report AP-R272/05, Sydney, 2005. <<http://www.onlinepublications.austroads.com.au/script/FreeDownload.asp?DocN=AS752543147234>>
- Oxley J, Corben B, Koppel S, Fildes B, Jacques N, Symmons M and Johnston I, *Cost effective infrastructure measures on rural roads*,



Monash University Accident Research Centre report 217, Melbourne, 2004.

- 12 Cameron M, Delaney A, Diamantopoulou K and Lough B, *Scientific basis for the strategic directions of the safety camera program in Victoria*, Monash University Accident Research Centre report 202, Melbourne, 2003. <<http://www.monash.edu.au/muarc/reports/muarc202.html>>

Newstead SV, Cameron MH and Leggett MW, *The crash reduction effectiveness of a network-wide traffic police deployment system*, Accident Analysis and Prevention (33), pp. 393–406, 2001.

Accident Compensation Corporation and Land Transport Safety Authority, *Down with speed: a review of the literature, and the impact of speed on New Zealanders*, New Zealand, 2000. <http://www.acc.co.nz/wcm001/groups/external_ip/documents/internet/wcm000021.pdf>

Zaidel D, *The impact of enforcement on accidents*, Deliverable 3, ESCAPE, project funded by the European Commission under the Transport RTD Programme of the 4th Framework Programme, 2002.

- 13 Austroads, *A review of literature and trials of intelligent speed adaptation devices for light and heavy vehicles*, Austroads report AP-R237, Sydney, 2003.
- 14 Bureau of Transport Economics, *The Black Spot Program 1996–2002: an evaluation of the first three years*, BTE report 104, Canberra, 2001.
- Bureau of Transport and Communications Economics, *Evaluation of the Black Spot Program*, BTCE report 95, Canberra, 1995.
- 15 Tziotis M, Mabbott N, Edmonston C, Sheehan M and Dwyer J, *Road safety in rural and remote areas of Australia*, Austroads report AP-R273/05, Sydney, 2005. <<http://www.onlinepublications.austroads.com.au/script/Details.asp?docn=AS632008461039>>
- 16 Vulcan P and Corben B, *Options for a National Road Safety Strategy*, report to the National Road Transport Commission, May 1999.
- 17 Newstead S, Delaney A, Watson L and Cameron M, *A model for considering the 'total safety' of the light passenger vehicle fleet*, Monash University Accident Research Centre report 228, 2004.
- 18 Zador and Ciccone, *Driver fatalities in frontal impacts: comparisons between cars with air bags and manual belts*, Insurance Institute for Highway Safety, 1991.
- 19 Scully J and Newstead S, *Preliminary evaluation of electronic stability control effectiveness in Australasia*, Monash University Accident Research Centre report 271, 2007.
- 20 Insurance Institute for Highway Safety, *Status Report*, Vol 41, No 5, June 13, 2006. <<http://www.iihs.org/sr/pdfs/sr4105.pdf>>



- Farmer CM, *Effect of electronic stability control on automobile crash risk*, Traffic Injury Prevention, 5:317–325, 2004.
<<http://www.perryhaas.com/PDF/IIHS%202004.pdf>>
- 21 McLean AJ, Holubowycz OT and Sandow BL, *Alcohol and crashes: identification of relevant factors in this association*, Federal Office of Road Safety report CR11, Canberra, 1980.
 - 22 Zador PL, Krawchuck SA and Voas RB, *Relative risk of fatal and crash involvement by BAC, age and gender*, National Highway traffic Safety Administration, 2000. <<http://www.nhtsa.dot.gov/people/injury/alcohol/809-050pdf.pdf>>
 - 23 Austroads, *Drugs and driving in Australia*, Austroads Working Group on Drugs and Driving, Austroads report AP-R172, Sydney, 2000.

Austroads, *Role of cannabis in road crashes*, Australasian Road Safety Handbook, Volume 1, Chapter 6, Austroads report AP-R234/03, Sydney, 2003.

Drummer OH, Gerostamoulos J, Batziris H, Chu M, Caplehorn JRM, Robertson MD and Swann P, *The incidence of drugs in drivers killed in Australian road traffic crashes*, Forensic Science International, 134, 154–162, 2003.

Drummer OH, Gerostamoulos J, Batziris H, Caplehorn JRM, Robertson MD and Swann P, *The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes*. Accident Analysis and Prevention, 943, 1–10, 2003.
 - 24 Krafft M, Kullgren A, Lie A and Tingvall C, *The use of seat belts in cars with smart seat belt reminders – results of an observational study*. Traffic Injury Prevention, 7:2, 125–129, 2006.
 - 25 McEvoy SP, Stevenson MR, McCartt AT, Woodward M, Haworth C, Palamara P, Cercarelli R, *Role of mobile phones in motor vehicle crashes resulting in hospital attendance: a case-crossover study*, BMJ, 2005. <<http://bmj.bmjournals.com/cgi/rapidpdf/bmj.38537.397512.55v1>>

Bellavance F, *Linking data from different sources to estimate the risk of a collision when using a cell phone while driving*, International Conference on Distracted Driving, Toronto, October 25, 2005.
 - 26 Federal Chamber of Automotive Industries (FCAI), Media releases February 2005 and January 2008. <<http://www.fc.ai.com.au/news>>



