

STANDING COMMITTEE ON TRANSPORT

NATIONAL ROAD SAFETY STRATEGY 2011–2020

Draft for consultation

1 December 2010

Safe roads, Safe speeds, Safe vehicles, Safe people

FOREWORD

On average at least four people die and 80 people are seriously injured on Australian roads every day. Almost everyone has, at some stage, been affected personally by a road crash.

No death or serious injury on the roads is acceptable, and bold steps will be needed to reduce further the number of deaths and serious injuries. Australia has shown in the past that this is possible. Initiatives such as compulsory wearing of seatbelts, random breath testing, introduction of electronic stability control, more roadside barriers and lower speed limits have all helped.

The internationally recognised 'Safe System' approach accepts that people using the road network will make mistakes and therefore the whole 'system' needs to be made as safe as possible to ensure it is more forgiving of those errors. This means improving the safety of roads, adding safety features to cars, making sure people obey speed limits and the road rules, and having appropriate sanctions for road users who demonstrate irresponsible behaviour.

This draft *National Road Safety Strategy 2011–2020*, contains a range of initiatives and interventions under four headings – Safe Roads, Safe Speeds, Safe Vehicles and Safe People.

All Australian Transport Ministers have asked that the heads of transport and roads agencies around the country work together to develop a new 10-year National Road Safety Strategy for the period from 2011 to 2020. This document outlines the broad directions in which the nation might want to head, proposed initiatives in the first three years and a range of options that would be further developed for implementation over the later years of the strategy. Transport and roads agency Chief Executives welcome your comments on the draft strategy. Following this feedback, the draft strategy will be reviewed and finalised for consideration by Ministers early next year. The strategy is scheduled to take effect in 2011.

I encourage your input and suggestions. To reduce the level of death and serious injury on the roads will require everyone taking some responsibility and that can start by engaging actively in the provision of feedback on this draft.

I ask that you provide this feedback by **11 February 2011** in written form by:

- Using the feedback form available online at <http://infrastructure.gov.au>
- Emailing your submission to: roadsafetystrategy@infrastructure.gov.au, or
- Posting your submission to: National Road Safety Strategy, GPO Box 594, CANBERRA ACT 2601

Feedback received from individuals using the feedback form may be used in public reports, but will not be attributed to individual sources. Other submissions made as part of this consultation process may be made publicly available.

Any queries about this process can be emailed to: roadsafetystrategy@infrastructure.gov.au

Alan Tesch
Chair
Safety Standing Sub-Committee
SCOT (Transport Chief Executives)

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DRAFT FOR CONSULTATION

DEFINITIONS

Alcohol interlock: device that prevents a vehicle starting if the operator has been drinking.

Australian Transport Council (ATC): a national body comprising Commonwealth, state, territory and New Zealand Ministers with transport responsibilities.

Austroads: company of Australian and New Zealand road transport and traffic authorities.

Casualty crash: a road crash in which someone is injured (to any level of severity).

Chain of responsibility: legislation that extends the general liability for on-road transport offences to all parties in the supply chain.

Electronic work diaries: used to record a heavy vehicle driver's work/rest history.

Graduated licensing system: a series of conditions and/or restrictions in the early years of licensing that allows novice motorists to gain experience in low-risk settings.

National Road Safety Council (NRSC): an advisory body that reports to the Australian Transport Council on road safety implementation issues.

Point-to-point speed enforcement: continuous automated speed enforcement system that measures the average speed of vehicles over an extended length of road.

Safe System principles: a road safety approach which holds that roads, vehicles and speeds should be designed to reduce the risk of crashes and to protect people in the event of a crash.

Seatbelt reminder or interlock: device that detects the failure of a vehicle occupant to wear a seatbelt and: provides a conspicuous visual and/or audible alert (reminder system); or prevents the vehicle from starting or accelerating (interlock).

Serious injuries: people injured in road crashes with enough severity to require hospitalisation.

Serious casualties: people killed or seriously injured in road crashes.

Social cost: total cost of road crashes to society, including estimates of foregone future production, pain and suffering of victims, and services rendered.

Speed camera enforcement tolerance: the margin between the legal speed limit and the minimum detected speed that will incur an infringement.

Tactile line treatments (rumble strips): Road lines that give an audible and tactile sensation to drivers of vehicles passing over them.

Telematics: integrated computing and communication technologies in vehicles that enable electronic monitoring, management and regulation.

Willingness-to-pay: a method of valuing human loss, which reflects the amounts that people are prepared to pay to reduce risks to their lives. (The method most commonly used in Australia – the human capital approach – involves valuing lost output or productivity of crash victims).

ABBREVIATIONS

| | |
|-------|--|
| ABS | Anti-lock Braking Systems |
| ADRs | Australian Design Rules |
| ANCAP | Australasian New Car Assessment Program |
| ATSB | Australian Transport Safety Bureau |
| BAC | Blood Alcohol Concentration |
| ESC | Electronic Stability Control |
| GTRs | Global Technical Regulations |
| HMI | Human Machine Interface |
| ISO | International Standards Organisation |
| ISA | Intelligent Speed Adaptation |
| ITS | Intelligent Transport Systems |
| MUARC | Monash University Accident Research Centre |
| OECD | Organisation for Economic Co-operation and Development |
| RBT | Random Breath Testing |
| RIS | Regulation Impact Statement |
| SPI | Safety Performance Indicator |
| UNECE | United Nations Economic Commission for Europe |
| USCR | Used Car Safety Ratings |
| VKT | Vehicle-kilometres travelled |

1. INTRODUCTION

This draft strategy presents a 10-year plan to reduce the annual number of deaths and serious injuries (serious casualties) on Australian roads by at least 30 per cent. It sets out a range of high-level directions and priority actions to drive national road safety performance to the end of 2020. It also lays the groundwork for longer-term goals and aspirations.

This proposed casualty reduction target for 2020 is ambitious, but achievable. Many severe road crashes are preventable and history provides evidence that the right interventions can make a significant positive impact. Since 1970, Australia has continuously achieved large and lasting road safety gains from road improvements, safer vehicles, lower speed limits, graduated licensing and a range of successful behavioural programs targeting drink driving, seatbelt usage and speeding. Independent studies and other objective evidence have demonstrated the success of each of these initiatives in reducing road trauma.

Despite these achievements, road crashes still cause some 1,500 deaths and 30,000 serious injuries each year. The social impacts are devastating – and the annual cost to the Australian economy is estimated to be \$27 billion [1]¹.

The development of this draft strategy has required looking at how road safety can be improved by considering the whole road transport system. This includes recognising the way vehicles, roads and people interact with each other. Although all road users should take responsibility for safe behaviour, people will always make mistakes. This strategy represents a step towards a long-term ambition – to create a road transport system in which those mistakes do not result in death or serious injury. Ultimately, death and serious injury should not be seen as inevitable or acceptable.

The draft strategy shows the directions proposed to improve the system, with governments committing to a number of first steps, and identifying a range of additional steps for further consideration. In 2014 there will be a review of progress in implementing these first steps, followed by commitments to further actions to help reach the 10-year goal.

The targets and initiatives set out in the strategy were informed by independent analysis and data modelling carried out by the Monash University Accident Research Centre (MUARC).

This National Road Safety Strategy focuses on the main areas where there is evidence that sustained, coordinated effort can lead to large gains. It also focuses on measures which may not see results for some time but which will lead to long-term improvement.

The mix of measures adopted in individual jurisdictions, and the details of specific measures, will vary to reflect local circumstances and priorities. This draft strategy forms the basis for consultation with the community. Implementation will require financial commitment as well as administrative and legislative processes. All jurisdictions agree that an evidence-based approach supports a focus on the priorities identified in this strategy.

¹ This estimate is based on the willingness-to-pay method of valuing human loss, which reflects amounts people are prepared to pay to reduce risks to their lives. A more conservative estimate of \$18 billion is based largely on the human capital approach, which reflects the value of lost output and productivity.

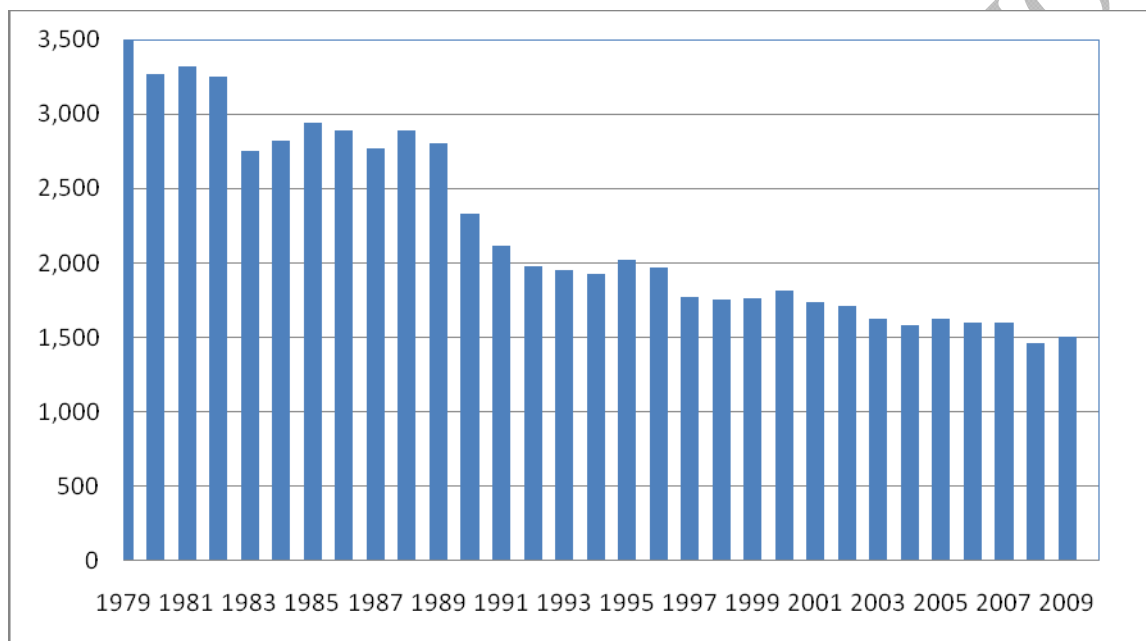
2. THE AUSTRALIAN ROAD SAFETY JOURNEY

General progress

Australia has achieved substantial reductions in road crash fatalities over the last 30 years, despite a 50 per cent growth in population and a two-fold increase in registered motor vehicles. Between 1979 and 2009, the nation's annual road fatality rate declined from 24.2 to 6.8 deaths per 100,000 people.

The chart below shows the progressive reduction in fatality numbers over that period.

Figure 1: Annual number of Australian road deaths.



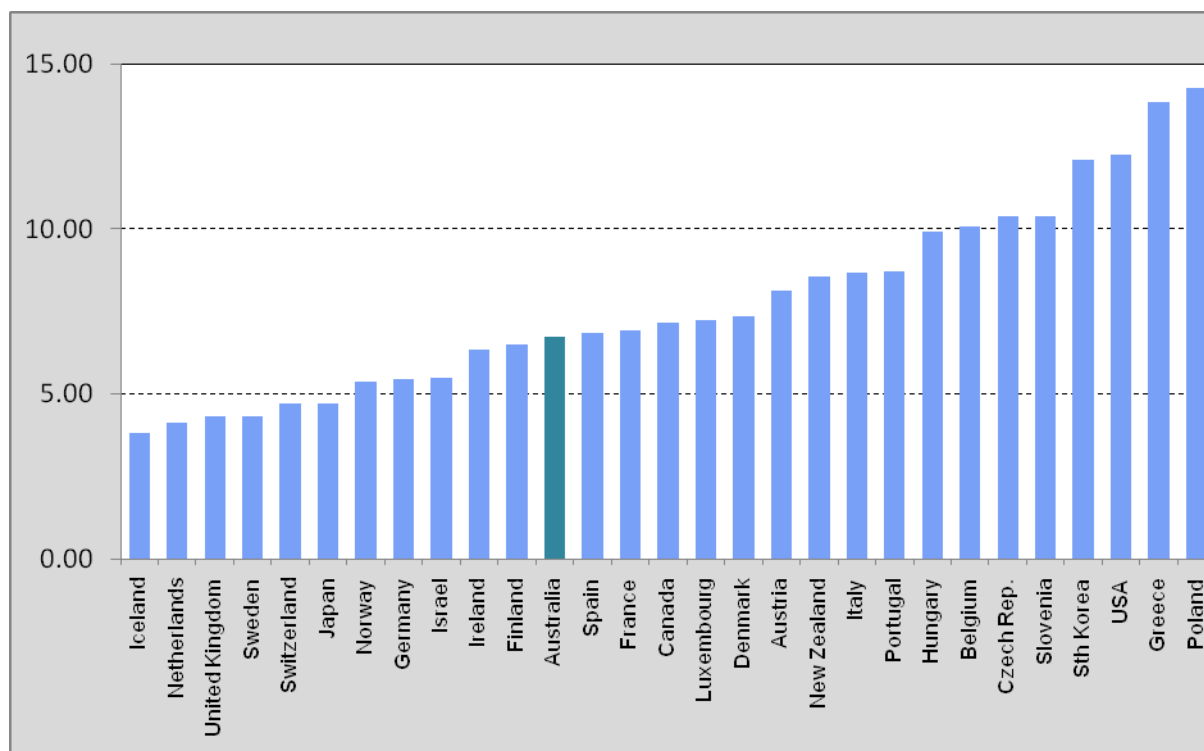
Trends in Australian road trauma have been characterised by short periods of rapid decrease – large downward steps – followed by longer periods of consolidation and incremental improvement. Evaluation evidence indicates that many of these gains can be attributed to specific road safety interventions, some of which have been big and bold enough (such as the introduction of seatbelt laws and random breath testing) to fundamentally change the road safety landscape.

However, the rate of progress has slowed in recent years. Between 2004 and 2009, the average annual reduction in road fatality numbers was less than two per cent. Hospital admissions data for this period also point to little, if any, national improvement in the number of people who were seriously injured in road crashes.

Australia currently ranks 12th out of 29 OECD² countries in terms of road fatalities per capita (Figure 2). Our population fatality rate stands at 6.8 deaths per 100,000 people, while the best performing countries (Iceland, Netherlands, United Kingdom and Sweden) have achieved rates below 4.5 – and some of these countries have set targets to cut their road casualty numbers further by at least 33 per cent over the coming decade.

² Organisation for Economic Co-operation and Development

Figure 2: Road fatality rates per 100,000 population among OECD countries, 2008



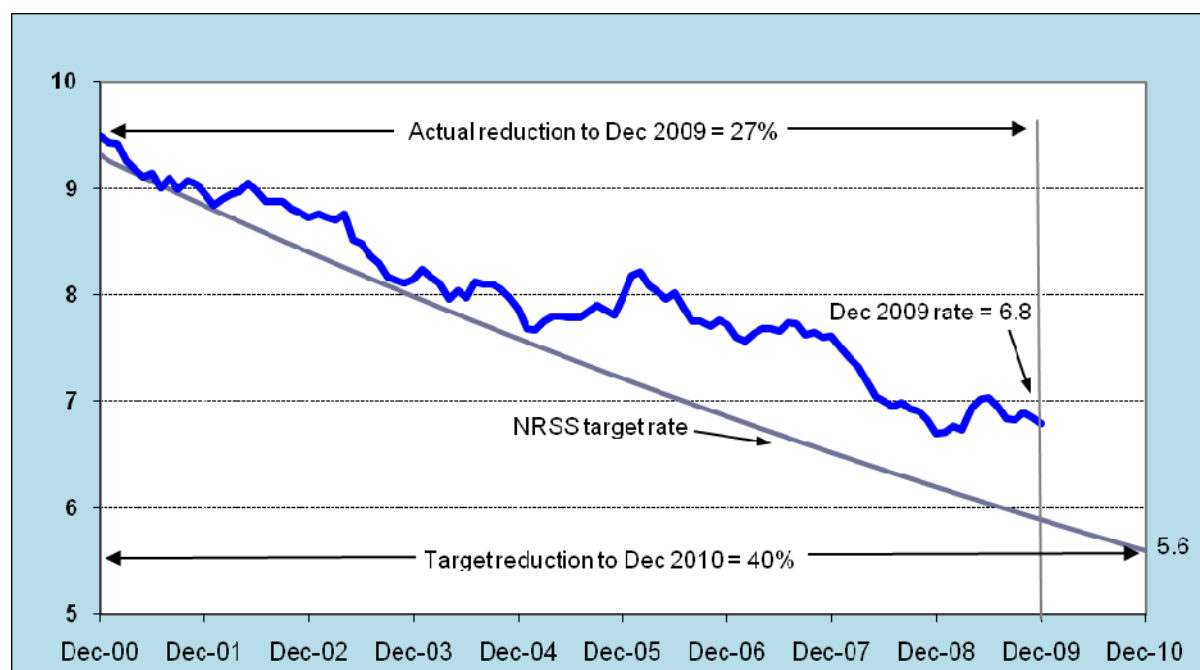
These simple statistical comparisons do not recognise the effects of different social, demographic and geographic circumstances on road fatality rates. However, there is evidence that Australia’s relative road safety performance internationally has slipped in recent times. Looking, for example, at the average annual decrease in fatality numbers, Australia’s ranking among OECD countries fell from 17th place between 1990 to 2000, to 22nd place for the 2000 to 2008 period.

National Road Safety Strategy 2001–2010

In November 2000, Australia’s transport Ministers endorsed the *National Road Safety Strategy 2001–2010*. The strategy provided a framework for prioritising the road safety activities of federal, state, territory and local governments, as well as other organisations that could influence road safety outcomes. Its target was to reduce the annual road fatality rate by at least 40 per cent over the 10-year period to the end of 2010: from 9.3 deaths to no more than 5.6 deaths per 100,000 population.

Despite significant gains over the decade, the 40 per cent reduction target will not be reached. By the end of 2009 an actual reduction of 27 per cent had been achieved and the fatality rate stood at 6.8 deaths per 100,000 population – some way short of the 5.6 target for the end of 2010.

Figure 3: Australian road fatality rate, 2000 to 2009



Note: based on a moving 12-month calculation

As shown in Table 1 below, the trends in fatality rates have not been uniform across the nation. Over the last 10 years, average reductions per year have varied across states and territories from 0.1 to 4.8 per cent; and some jurisdictions – NSW, Victoria and the ACT – achieved rates in 2009 that are close to the national target.

Table 1: Road fatality rates per 100,000 population

| | NSW | VIC | QLD | SA | WA | TAS | NT | ACT | Aust |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1999 | 9.0 | 8.2 | 9.0 | 10.1 | 11.8 | 11.2 | 25.4 | 6.1 | 9.3 |
| 2000 | 9.3 | 8.6 | 8.9 | 11.0 | 11.3 | 9.1 | 26.1 | 5.7 | 9.5 |
| 2001 | 8.0 | 9.2 | 8.9 | 10.1 | 8.7 | 12.9 | 25.3 | 5.0 | 8.9 |
| 2002 | 8.5 | 8.2 | 8.7 | 10.1 | 9.3 | 7.8 | 27.6 | 3.1 | 8.7 |
| 2003 | 8.1 | 6.7 | 8.1 | 10.3 | 9.2 | 8.6 | 26.5 | 3.4 | 8.1 |
| 2004 | 7.6 | 6.9 | 8.0 | 9.0 | 9.0 | 12.0 | 17.3 | 2.7 | 7.9 |
| 2005 | 7.5 | 6.9 | 8.3 | 9.5 | 8.1 | 10.5 | 26.7 | 7.9 | 8.0 |
| 2006 | 7.3 | 6.6 | 8.2 | 7.5 | 9.9 | 11.2 | 21.8 | 3.9 | 7.7 |
| 2007 | 6.3 | 6.4 | 8.6 | 7.8 | 11.1 | 9.1 | 27.0 | 4.1 | 7.6 |
| 2008 | 5.3 | 5.7 | 7.6 | 6.2 | 9.6 | 7.8 | 34.0 | 4.0 | 6.7 |
| 2009 | 6.4 | 5.3 | 7.5 | 7.3 | 8.5 | 12.7 | 13.7 | 3.4 | 6.8 |
| Ave. annual change^a | -4.5% | -4.7% | -1.6% | -4.8% | -1.4% | -0.1% | -2.1% | -3.2% | -3.3% |

Note: Annual rates in smaller jurisdictions (Tasmania, Northern Territory and ACT) can change substantially from year to year because of the relatively low fatality numbers compared with larger jurisdictions.

a. Average annual change is based on the exponential trend for the ten 12-month periods from 1999 to 2009.

Australia has made significant road safety gains under the 2001–2010 strategy, both statistically and in terms of major policy action. Some of the important achievements are outlined in the next section. However, it must not be overlooked that more than 15,000 people have lost their lives on Australian roads in this period, and some 300,000 have been hospitalised with serious injuries.

Over the past several decades, Australia has earned an international reputation as a model country in many areas of road safety intervention. But the overall performance in recent times has not kept pace with the achievements of other developed countries, and there is a need for a major shift in thinking by governments and the community.

The time is ripe for a fresh approach – for a new National Road Safety Strategy that will address the safety deficiencies in the road transport system and deliver significant further reductions in trauma levels.

What strategies and actions have been effective?

- Australia has a strong record of road safety achievement, and has been a world leader in some areas, particularly in introducing key behavioural measures such as compulsory seatbelt wearing, random breath testing, intensive speed camera programs and, more recently, roadside drug testing. Between 2001 and 2010, efforts continued to target the entrenched behavioural causes of serious road crashes, but there was also increasing attention given to some of the systemic problem areas in the road transport system.
- A 50 km/h urban default speed limit was introduced. This has been linked to a 20 per cent reduction in casualty crashes, with greater reductions for crashes involving serious injuries and fatalities; some evaluation studies have shown particular benefits for pedestrians and other vulnerable groups [2,3,4]. Community surveys found that public support for the reduced limit increased after the change [5].
- Limits of 40 km/h or lower were introduced in higher-risk pedestrian and school areas.
- Enforcement of urban speed limits was strengthened, using covert and overt speed cameras and actions to address the significant risks associated with low-range speeding.
- There was progress in infrastructure safety, with some states implementing major reviews and remedial programs to improve the safety of high-risk routes (such as the Pacific Highway and Princes Highway in NSW.)
- Targeted treatment of crash locations continued through federal and state black spot programs.
- Most states and territories progressively strengthened their graduated licensing systems, with measures including: increased supervised driving requirements; peer passenger and night driving restrictions; mobile phone bans; zero blood alcohol concentration limits; restricted access to high-powered vehicles; and targeted increases in offence penalties (especially for speeding).
- Most states introduced random roadside drug testing programs.
- Pedestrian and bicyclist safety was improved through better crossing facilities, cycleways, reduced speed limits (especially at school zones) and barriers to protect pedestrians.
- Standards for Dynamic Side Impact Occupant Protection and Offset Frontal Impact Occupant Protection were mandated for all new vehicles.

- Efforts to promote the benefits of vehicle safety were escalated through public information campaigns and support for consumer ratings initiatives such as the Australasian New Car Assessment Program (ANCAP) and the Used Car Safety Rating (UCSR) scheme.
- Three-point seatbelts were mandated for all seats in new passenger car models and seatbelt and child restraint regulations were strengthened to ensure that all children, up to the age of seven years, are appropriately restrained in passenger vehicles.
- Important national fatigue management, compliance and enforcement reforms were initiated to support the development of a safer heavy vehicle transport sector.

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3. CURRENT SITUATION

Size and nature of the problem

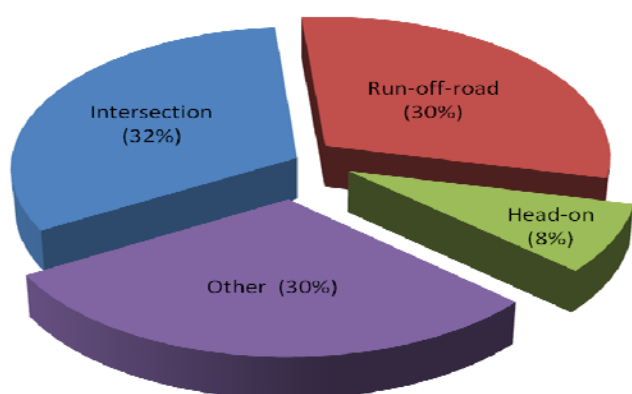
Each year, road crashes kill about 1,500 Australians and hospitalise another 30,000. The total estimated cost to society is \$27 billion [1]³ and the direct human impacts are devastating: in addition to the many lives cut tragically short, debilitating injuries often result in lifelong pain, grief and suffering among road crash victims, their families and communities.

The following analysis of serious casualty (death and serious injury) data⁴ offers some insight into the nature of Australia's road trauma problem and the issues requiring remedial attention.

Major crash types

A large proportion of serious casualties involve three common crash types, as shown below.

Figure 4: Serious casualties by crash type



Run-off-road crashes, typically involving a single vehicle, account for about 30 per cent of all serious casualties (and a higher proportion of fatalities).

Crashes at intersections are the cause of another one-third of serious casualties.

Heavy vehicle crashes

Heavy trucks and buses make up only three per cent of registered vehicles but account for about eight per cent of the vehicle-kilometres travelled (VKT) on Australia's roads. As Table 2 shows, these vehicles are involved in a relatively large proportion of road fatalities.

Table 2: Deaths and serious injuries involving heavy vehicles

| Crashes involving: | Proportion of total VKT | Proportion of total deaths | Proportion of total serious injuries |
|---------------------------|-------------------------|----------------------------|--------------------------------------|
| Articulated trucks | 3% | 10% | n.a. |
| Rigid trucks | 4% | 6% | n.a. |
| Buses | 1% | 2% | n.a. |
| All heavy vehicles | 8% | 17% | 3% |

Note: Serious injury estimates are not available for individual heavy vehicle categories; percentages may not add to 100% due to rounding.

³ Based on the willingness-to-pay method of valuing human loss, which reflects the amounts that people are prepared to pay to reduce risks to their lives.

⁴ The statistics in this Section are drawn from several data sources to provide national estimates. They should be regarded as approximations only.

Road user groups

The following table lists a number of particularly vulnerable or high-risk road user groups, defined by their mode of transport, demographic profile or licence status.

Table 3: Deaths and serious injuries among vulnerable road user groups

| | Proportion of total deaths | Proportion of total serious injuries |
|------------------------------------|----------------------------|--------------------------------------|
| Pedestrians | 13% | 9% |
| Motorcyclists | 16% | 22% |
| Bicyclists | 2% | 15% |
| Young drivers (17-25 years) | 12% | 10% |
| Older people (65+ years) | 16% | 10% |
| Children (0-14 years) | 4% | 10% |
| Indigenous people | 10% | 5% |
| Unlicensed motorists | 6% | n.a. |

Note: categories are not mutually exclusive.

Behavioural factors

Certain behavioural factors continue to be implicated in many serious casualty crashes. The most significant are identified below.

Table 4: Deaths and serious injuries by main behavioural factor

| | Proportion of total deaths | Proportion of total serious injuries |
|--------------------------|----------------------------|--------------------------------------|
| Speeding | 34% | 13% |
| Drink driving | 30% | 9% |
| Drug driving | 7% ^a | 2% |
| Restraint non-use | 20% | 4% |
| Fatigue | 20%–30% ^b | 8% |

Note: categories are not mutually exclusive.

a. Estimate excludes fatalities involving both alcohol and other drugs, which are included in the drink driving estimate.

b. Estimates of fatigue involvement in serious casualty crashes vary considerably. However, it is widely recognised as significant contributing factor.

Geographic distribution of crashes

As indicated in Table 5, serious casualty crashes are widely dispersed across Australia's metropolitan, regional and remote areas. The issues in these areas can vary considerably, even though there are substantial underlying similarities. What is materially important in one category of region or one area within a region may not be as important in another.

Table 5: Deaths and serious injuries by crash region

| | Proportion of total deaths | Proportion of total serious injuries |
|-----------------------------|-----------------------------------|---|
| Metropolitan areas | 25% | 36% |
| Inner regional areas | 41% | 45% |
| Outer regional areas | 24% | 14% |
| Remote areas | 4% | 2% |
| Very remote areas | 6% | 3% |

Key challenges

The statistics outlined above are far from comprehensive, but they indicate the complexity of road trauma and the wide range of factors that need to be considered by road safety organisations. They also point to some of the major systemic problems on our roads, such as the frequent occurrence of three basic crash types: run-off-road, intersection and head-on.

Much of Australia's past road safety effort has focused on countering illegal behaviours. While the benefits of this have been clear, it is now understood that a large proportion of casualty crashes result from drivers – or other road users – making mistakes. To achieve substantially greater gains in the future, much greater emphasis needs to be placed on initiatives that improve the inherent safety of the road transport system.

Some of the major strategic challenges for Australian road safety are to:

- Reduce the number of serious casualty crashes involving the three major crash types: single vehicle run-off-road, multiple vehicle intersection and head-on crashes.
 - Between 2004 and 2009, the number of fatal single-vehicle crashes on Australian roads *increased* by five per cent despite a five per cent *decrease* in total road deaths.
- Reduce the number of crashes involving heavy vehicles.
 - Heavy trucks and buses make up only three per cent of the vehicle fleet, but are involved in 17 per cent of all road fatalities – about 240 deaths each year.
- Reduce the number of serious casualties among pedestrians and cyclists.
- Reduce the number of serious casualty motorcycle crashes.
 - Motorcycle riders make up 22 per cent of serious casualties, yet motorcycle usage accounts for less than one per cent of vehicle-kilometres travelled.
 - Between 2000 and 2009 the number of motorcyclist deaths increased by 18 per cent.
 - Single vehicle crashes account for 42 per cent of motorcyclist deaths.

- Protect young road users, particularly novice drivers.
 - People aged 17 to 25 years make up 25 per cent of drivers killed or seriously injured, but represent only 16 per cent of the adult population.
- Reduce poor road user behaviour and the consequences of such behaviour, particularly
 - drink driving (28 per cent of fatality injured drivers are over the legal limit)
 - failing to wear seatbelts (28 per cent of vehicle occupant fatalities are unbelted)
 - illegal and inappropriate speed (a major causal factor in 34 per cent of deaths).
- Develop interventions that respond to the different needs and circumstances of urban, regional and remote Australia.
 - The predominant crash types and risk factors vary between these broad areas.
 - Fatality rates per population are significantly higher in regional and remote areas.
- Reduce serious casualties on outer metropolitan arterial roads.
 - There is evidence that the number of serious injury crashes at major outer metropolitan intersections is increasing.
- Reduce serious casualties on roads controlled by local government.
 - Local roads account for more than 50 per cent of serious casualties in some states.
- Reduce the incidence of serious casualties within Indigenous communities and among other disadvantaged people.

4. THE WAY FORWARD

Australia has adopted a principled road safety vision, backed by ambitious but realistic targets and performance indicators. Achieving the targets will require a range of strategic interventions and commitment to a road safety management system that will build towards the realisation of this vision.

Our vision

Safe roads, Safe speeds, Safe vehicles and Safe people

Australians should not regard death and serious injury as an inevitable cost of road travel. Crashes will continue to occur on our roads because humans will always make mistakes no matter how informed and compliant they are. But we do not have to accept a transport system that allows people to be killed or severely injured as a consequence.

This is a new way of thinking about road safety. It reflects a high level of intolerance to road trauma, a focus on the overall safety performance of our road transport system and attention to each of the elements that make up the system.

We are not likely to see the elimination of death and serious injury on Australia's roads by the year 2020. However the implementation of actions in this strategy will lay the foundations for the creation of a genuinely safe system of road travel.

The journey towards this vision will require significant effort to enhance the quality of our roads, to strengthen regulation and demand for safer vehicles, to improve road user compliance with traffic laws and to create a safety culture through all levels of our society.

This strategy describes the steps needed now, and in years to come, to put safety at the very heart of our road transport system – a system which delivers Safe Roads, Safe Speeds, Safe Vehicles and Safe People.

Building a national road safety culture – our strategic objective

Road safety is a shared responsibility. Achieving lasting change in road safety will require governments, industry and the broader community to work together. It will also require significant improvements in the way governments and other organisations manage the safety of our road transport system.

This means we all need to change the way we think and act about road safety. Each one of us has a role – whether we are road planners, designers or builders, vehicle engineers or fleet operators, policy makers or business professionals, or individual road users going about our everyday activity. Our collective task is to build a culture where safety is an inherent part of all decision-making that affects the road system, its operation and its use.

Targets

As a step towards realising this vision, specific targets will be adopted for reductions in the annual number of fatalities and the annual number of serious injuries, to be achieved by the end of 2020.

Under the previous *National Road Safety Strategy 2001–2010*, a reduction target was set for fatalities only. For this new strategy, due attention will be given to the serious injury dimension of the road trauma problem.

Based on the modelling conducted for this strategy (described in Section 5), and consistent with the desire to set ambitious goals for Australian road safety, it is proposed to set fatality and serious injury reduction targets of **30 per cent**. Achieving such targets will require a concerted effort to implement effective road safety measures. A range of proposed initiatives is set out in Sections 7 to 10 of this strategy.

Safe System principles

The strategy is based on the Safe System approach to improving road safety. This approach requires a holistic view of the road transport system and the interactions among roads and roadsides, travel speeds, vehicles and road users. Consistent with the long-term road safety vision, it recognises that people will always make mistakes – and may have road crashes – but that those crashes should not result in death or serious injury.

The Safe System approach was adopted in Australia during the period of the previous national strategy, through the National Road Safety Action Plans and the strategies of individual states and territories. It is consistent with the approaches adopted by the safest countries in the world, and is a central theme of the landmark OECD report *Towards Zero: Ambitious road safety targets and the safe system approach*, published in 2008 [6].

There are several guiding principles to this approach:

- 1. People make mistakes.** Humans will continue to make mistakes, and the transport system must accommodate these. The transport system should not result in death or serious injury as a consequence of errors on the roads.
- 2. Human physical frailty.** There are known physical limits to the amount of force our bodies can take before we are injured.
- 3. A ‘forgiving’ road transport system.** A Safe System ensures that the forces in collisions do not exceed the limits of human tolerance. Speeds must be managed so that humans are not exposed to impact forces beyond their physical tolerance. System designers and operators need to take into account the limits of the human body in designing and maintaining roads, vehicles and speeds.

Shared responsibility

Responsibility for road safety is shared by all.

While individual road users are expected to be responsible for complying with traffic laws and behaving in a safe manner, it can no longer be assumed that the burden of road safety responsibility simply rests with the individual road user. Many organisations – the ‘system managers’ – have a primary responsibility to provide a safe operating environment for road users. They include the government and industry organisations that design, build, maintain and regulate roads and vehicles. These and a range of other parties involved in the performance of the road transport system, and the way roads and roadsides are used, all have responsibility for ensuring that the system is forgiving when people make mistakes.

Linkages and synergies

There are many factors that will impact on road safety performance into the future. Economic conditions, environmental priorities and a range of other issues in society will bring many and varied transport challenges. Based on the above principles, much of road safety activity can be considered as a means to support:

- a more sustainable and active lifestyle
- improved environmental outcomes, which will reduce energy consumption and reduce greenhouse gas emissions
- reduced pressure on health and hospital systems from trauma and substance abuse
- improved workplace safety
- improved land use planning and urban amenity
- productive economic activity resulting from fewer crashes, unreliable travel times and associated effects.

Increasing use of public transport is a good example of how this new approach can generate greater synergies between road safety and other societal factors. Buses and trains are safer modes of travel than cars and motorcycles, and the fewer people using light vehicles on the roads, the fewer road deaths and serious injuries will occur. Increasing the use of alternative modes of transport, as well as land use planning that reduces the demand for travel, will improve safety, reduce congestion and vehicle emissions, and support sustainability.

Government efforts to improve road safety benefit from strong partnerships between transport agencies and agencies in other key sectors, particularly health – recognising that road safety is, above all, a major public health issue – and police and education (see Section 11). For example, by fostering greater use of emergency crash notification systems, road safety agencies can help the health sector improve the delivery of medical assistance.

This strategy is complemented by other national strategies and activities that are addressing specific areas of road safety. These include:

- the National Railway Level Crossing Safety Strategy 2010–2020
- the Australian National Cycling Strategy
- state and territory road safety strategies.

Interventions

Achieving the 10-year casualty reduction targets, and building a platform for the strategy's longer-term aspirations, will require a range of specific road safety actions or interventions.

The strategy is based on four 'cornerstone' areas of intervention:

- Safe roads
- Safe speeds
- Safe vehicles
- Safe people.

These cornerstone areas, along with the proposed interventions, are described in detail in Sections 6 to 10 of this strategy.

Making it happen

The cornerstone interventions must be supported by a series of management functions focused on achieving results. These are addressed in Section 11, which outlines the priorities for:

- adopting a results focus for the implementation of the strategy
- ensuring effective coordination of activity among all key players
- ensuring rules are in place to back the commitment to road safety
- identifying funding and prioritising the allocation of resources to safety
- promoting a shared responsibility for road safety
- monitoring and evaluating road safety progress
- investing in research and development, and knowledge transfer.

5. RESEARCH AND MODELLING

Modelling the strategy's ambitions

Strategy initiatives and their likely benefits were estimated through extensive data modelling carried out by the Monash University Accident Research Centre (MUARC). This work was informed by a review of Australian and overseas research on the effectiveness of specific road safety interventions. The base crash data used in the model was provided by each state and territory road authority.

The modelling process

A *macro* modelling approach was used by MUARC to estimate the reductions in serious casualty numbers (people killed or seriously injured) that would result from a range of possible road safety interventions. The model focused on those initiatives likely to have a significant effect on *national* serious casualty numbers, based on research evidence and/or expert opinion. The model involves two time periods, called the *reference period* and the *baseline period*.

The reference period is 2002–2007. This represents a pre-strategy timespan that can be used to extrapolate serious casualty trends into the future. During the reference period, serious casualty numbers per vehicle-kilometre travelled (VKT) declined by an average 2.45 per cent per year. This trend was combined with the projected growth in VKT out to 2020, to determine the future path of serious casualty numbers if there were no change in the conditions experienced during the reference period⁵.

The model then estimated the impact on these projected numbers of a range of interventions in excess of those that operated during the reference period.

The baseline period is 2005–2007. This is the baseline for calculating projected percentage reductions in the annual number of serious casualties and for measuring progress towards the strategy targets. Using the latest available national data on serious casualty crashes, a baseline period of three years (2005–2007) was used to average out any short-term variations.

What the modelling shows

The main purpose of the modelling is to estimate what level of serious casualty reduction can be achieved during the life of this strategy and to indicate what kind of action would be required to bring this about. Table 6 describes two *possible* packages of key interventions that are estimated to achieve a **30 per cent** reduction in the annual number of serious casualties. The packages are based on some different assumptions about the mix of initiatives and policy settings implemented during the life of the strategy. They are not the *only* options for achieving the proposed reduction, but are indicative of the type and level of intervention that may be required.

⁵ For these conditions the model projects a **9% reduction** in the annual number of serious casualties by the year 2020. This estimate assumes a continuation of the underlying level of road safety activity and rate of improvement that occurred during the reference period; and it factors in a 2% per year growth in vehicle-kilometres travelled (based on mid-range projections produced by the BITRE).

Table 6: Possible packages estimated to achieve a 30 per cent reduction in annual serious casualties by 2020

| PACKAGE A: | | | | | |
|---|---|---|--|---|--|
| Roads | Speed limit reductions | Speed compliance | Vehicles | Road use | Cumulative serious casualties prevented⁶ |
| Strong investment in targeted safety programs | Targeted speed limit reductions on higher risk 50, 60 and 100 km/h roads ^{7 8 9} | 1% speed reduction on urban roads (reach: 100% of casualties) ¹⁰ 1% speed reduction on regional/remote roads (reach: 20% of casualties) ¹¹ | Full Electronic Stability Control (ESC) uptake in light passenger vehicles Intelligent Speed Adaptation (ISA) progressively introduced (from year 8) ESC and side impact protection in light commercials (from year 4) | Enhanced graduated licensing systems (from year 3) Reduced Blood Alcohol Concentration (BAC) limit for all drivers to age 25 years | 32,000 (if road initiatives introduced in year 3 and speed initiatives in year 4) 34,000 (if road initiatives introduced in year 3 and speed initiatives in year 2) |
| PACKAGE B: | | | | | |
| Moderate investment in targeted safety programs | Same as Package A plus: Targeted speed limit reductions on medium risk 60 km/h roads | Same as Package A | Same as Package A | Same as Package A | 33,500 (if road initiatives introduced in year 3 and speed initiatives in year 4) 36,500 (if road initiatives introduced in year 3 and speed initiatives in year 2) |

Note: In addition to the effects of the specific interventions listed in each package, the model assumes that there will be ongoing incremental gains from: continuing improvements in a range of behavioural programs; continuing improvements in the safety of the general vehicle fleet; and continuing investment in general infrastructure improvement (at current levels).

⁶ Total number of serious casualties (fatalities and serious injuries) prevented during the life of the strategy from the specific interventions modelled.

⁷ Targeted speed limit reductions on higher risk 50 km/h roads. Modelling assumes that this will apply to 50% of serious casualties on 50 km/h roads.

⁸ Targeted speed limit reductions on higher risk 60 km/h roads. Modelling assumes that this will apply to 25% of serious casualties on 60 km/h roads.

⁹ Targeted speed limit reductions on higher risk 100km/h roads. Modelling assumes that this will apply to 20% of serious casualties on 100 km/h roads.

¹⁰ Enhanced speed enforcement to reduce overall speeds by 1% on urban roads. Modelling assumes that this will apply to 100% of serious casualties on urban roads.

¹¹ Enhanced speed enforcement to reduce overall speeds by 1% on higher risk regional/remote roads. Modelling assumes that this will apply to 20% of serious casualties on regional/remote roads.

While the packages outlined above are not the only options for achieving a 30 per cent reduction in annual serious casualty numbers, they serve to identify the areas of greatest potential gain during the life of the strategy. They also illustrate the degree of intervention (at a national level) that would be required in each area.

Estimated road safety benefits from this strategy

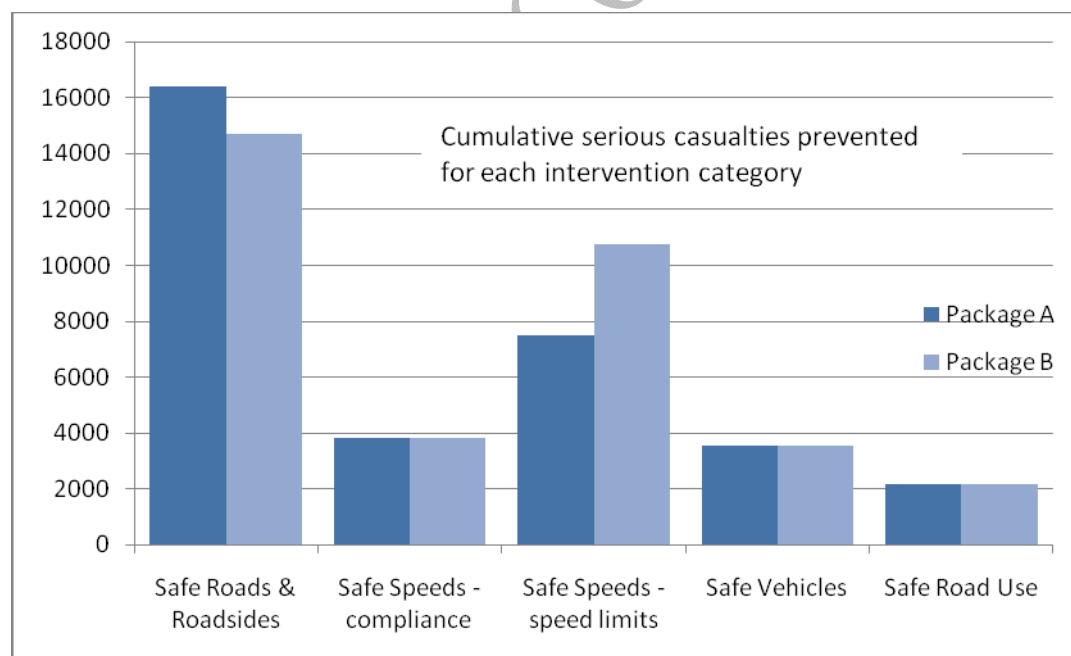
While the policy scenarios outlined above relate to a 30 per cent reduction in annual serious casualties, there is clearly potential to achieve larger reductions by increasing the level of intervention in one or more of the cornerstone areas. Once the detailed elements of this strategy have been finalised – after consulting with the community – further modelling will be undertaken to inform the adoption of specific targets for 2020¹².

To achieve these 2020 reduction targets, the relevant interventions would need to be in place *sometime* during the life of the strategy – that is, they could be introduced quickly or phased in gradually over the next 10 years.

However, the pace of implementation will have an important effect on the *cumulative numbers of deaths and serious injuries* prevented. Early implementation of major initiatives such as speed limit reductions, enhanced enforcement or increased road investment can significantly increase the total number of serious casualties prevented over the life of the strategy. This is illustrated in the last column of Table 6 above.

The relative contributions of the different intervention areas are shown in Figure 5.

Figure 5: Serious casualties prevented from each intervention category *



* Chart shows the estimated number of serious casualties prevented for each intervention area *in isolation*. These cannot be added together to determine the aggregate benefit because of overlap effects between the areas.

¹² The 30 per cent reduction in serious casualties projected by the MUARC model is calculated from the baseline period 2005–2007 as described on page 14. The actual reduction target(s) adopted for the strategy may be referenced to a later period (such as 2009–2010).

For both packages presented here, most of the estimated serious casualty reductions come from interventions in the *safe roads* and *safe speeds* (both speed limit reductions and improved compliance) cornerstones. The MUARC research indicates that these areas have the greatest potential to significantly influence casualty reductions over the next 10 years.

This does not diminish in any way the importance of the other cornerstone areas:

- The benefits of vehicle safety improvements accrue over many years – effective action in this area will deliver some benefits in the short-term, and also will have a significant impact on safety gains beyond the life of the current strategy.
- New initiatives in the safe road user area form a very important component of the strategy by targeting specific groups and risk behaviours. It is difficult to quantify the benefits of many of these targeted interventions – such as training and education programs for novice drivers – which can play an indirect role in supporting change in other areas. (It should be noted that a lot of activity in this area was initiated under the previous strategy; the model assumes that continuing incremental gains will flow from these initiatives.)

All of the scenarios modelled for this strategy would result in significant reductions in road trauma and would deliver substantial benefits to Australia's health services, businesses, tax payers and the general community.

DRAFT FOR CONSULTATION

6. STRATEGY INTERVENTIONS

Presentation of interventions in this strategy

As indicated in Section 4, this strategy is based on four cornerstone areas of intervention. The next Sections (7 to 10) describe the interventions intended for priority implementation, as well as others for further consideration, for each of these areas. Table 7 describes the strategic aim of improvements for each cornerstone.

Table 7: Strategic intent in each of the cornerstone areas

| |
|---|
| Safe Roads Roads and roadsides designed and maintained to reduce the risk of crashes occurring and to lessen the severity of injury if a crash does occur. Safe roads prevent unintended use through design and encourage safe behaviour by users. |
| Safe Speeds Speed limits complementing the road environment to manage crash impact forces to within human tolerance; and all road users complying with the speed limits. |
| Safe Vehicles Vehicles which not only lessen the likelihood of a crash and protect occupants, but also simplify the driving task and protect vulnerable users. Increasingly this will involve vehicles that communicate with roads and other vehicles, while automating protective systems when crash risk is elevated. |
| Safe People Encourage safe, consistent and compliant behaviour through well-informed and educated road users. Licensing, education, road rules, enforcement and sanctions are all part of the Safe System. |

In Sections 7 to 10 on each of the four cornerstone areas, the specific aims and actions to be pursued through this strategy are presented under the following headings:

Directions – what the strategy aims to achieve by 2020

This is a broad picture of the major changes expected to take place over the period of the strategy.

First Steps – actions for the first three years

These initiatives represent specific commitments to action in the early years of the strategy.

Future Steps – what else will be considered?

These are some of the possible longer-term initiatives that will be given further consideration as the strategy progresses. Many of these represent measures which will require considerable discussion with the community about how they might be implemented and why they are important. In the medium-term, some of these may not proceed as initially envisaged. Inclusion of the more forward looking initiatives will provide a basis for on-going consultation.

A full review of the strategy will be conducted in 2014. This will include an assessment of progress in delivering each of the initiatives listed under First Steps and further consideration to implementing other proposed initiatives.

Developing interventions to address the most important road safety issues

To guide the development of a combination of initiatives which are likely to help reach the ten-year casualty reduction targets, first the major crash risk issues were identified (see Section 3) and then the types of intervention most likely to be effective in tackling these issues. These broad areas for improvement became the focus for developing more detailed measures in each cornerstone area. They need to:

- have considerable potential to yield benefits based on available evidence, and
- not present the community with a potentially unreasonable burden.

Table 8 below shows how actions in each of the four cornerstone areas address the major crash problems identified in Section 3, and the benefits they can be expected to provide for specific road user groups.

Table 8: Crash problem areas mapped to the strategy cornerstone areas

| Crash problem areas (See Section 3) | Strategy initiatives | | | |
|--|----------------------|------------|---------------|-------------|
| | Safe Roads | Safe Speed | Safe Vehicles | Safe People |
| Crash type | | | | |
| Intersections | | | | |
| Run-off-road | | | | |
| Head-on | | | | |
| Crashes involving heavy vehicles | | | | |
| Behaviours | | | | |
| Speeding | | | | |
| Fatigue | | | | |
| Distraction | | | | |
| Drug driving | | | | |
| Drink driving | | | | |
| Restraint non-use | | | | |
| Road user groups | | | | |
| Novice drivers | | | | |
| Motorcyclists | | | | |
| Indigenous road users | | | | |
| Pedestrians | | | | |
| Bicyclists | | | | |
| Older road users | | | | |
| Unlicensed motorists | | | | |

| | | | |
|----------------------------------|--------------------------------------|-------------------------|----------------------------|
| Key to relative benefits: | some or indirect benefit only | moderate benefit | substantial benefit |
| | | | |

Where there is insufficient proof or community support for particular measures, establishing demonstration or pilot projects may provide a means of demonstrating the practical application and benefits of new initiatives.

Identification, monitoring, and responding to new and emerging crash risk issues will continue, particularly in geographic sub-areas, or specific road user/demographic groups, with a high crash risk.

Tailoring interventions for different areas

A large proportion of Australia's fatalities (65 per cent) and serious injuries (59 per cent) occur in regional areas and the fatality rates per population are significantly higher in both regional and remote areas.

It is important that interventions are developed to respond to the different needs and circumstances of metropolitan, regional and remote Australia. It is just as important to acknowledge and respond to the differences encountered in each jurisdiction. This process must take into account not only differences in the most common crash types and risk factors, but also the relative practicality and feasibility of certain interventions for different areas.

The following table shows how some of the key interventions will have a particular impact in certain locations.

Table 9: Key areas of intervention by cornerstone and geographical location.

| Area | Safe roads | Safe speeds | Safe vehicles | Safe road use |
|----------------------------------|---|--|---|--|
| All of Australia | All road projects to comply with Safe System principles. Safer roads programs targeting key crash types. | Best practice speed enforcement. Public information about the community benefits of lower travel speeds. Introduction of risk-based national speed limit guidelines. | Improved vehicle safety standards. Increased uptake of crash avoidance and occupant protection measures. | Ongoing behaviour change programs to meet geographic needs. |
| Metropolitan areas | Safer roads programs targeting intersection crashes and protecting vulnerable road users. | Reduce speed limits at intersections. More 40 km/h speed limits in pedestrian and cycling areas. | Improved intersection crash avoidance and pedestrian and cyclist protection. | |
| Regional and remote areas | Safer roads programs targeting run-off-road and head-on crash risk, and safer intersection treatments. | Review of speed limits on higher crash risk routes. | Focus on countering run-off-road crashes. | Improved access to graduated licensing for disadvantaged groups. |

Accountability through Safety Performance Indicators

The primary measure of success of this strategy will be the actual reduction in the number of serious casualties on the roads. This measure will be used to monitor progress towards the 2020 targets.

In addition, a range of Safety Performance Indicators (SPIs) is to be established to help assess progress in implementing the specific strategy interventions. These will be based on measured changes in serious casualty outcomes relating to key strategic directions, and indicators of intermediate effects (such as changes in average traffic speeds) relating to key initiatives.

The SPIs will be further developed and refined through the first two years of the strategy. Some preliminary indicators have been identified, and these may be used to commence monitoring and reporting on progress annually. Examples are set out in each of the cornerstone intervention areas in Sections 7 to 10.

As part of the accountability arrangements for the strategy, it is proposed that:

- the Australian Transport Council will be provided with an annual progress and performance report, informed by the measures described above
- a full review of the strategy will undertaken before the end of 2014, including an assessment of implementation progress, a review of the strategy objectives and targets, and identification of priority actions for the next three years.

7. SAFE ROADS

Safety treatments to the road and roadside have a major influence in preventing crashes or minimising the consequences of a crash.

Infrastructure investment

Road safety improvements derive from two broad categories of infrastructure investment:

- Investment in new road construction and major upgrades, including highway duplication. This activity is primarily associated with mobility and economic performance benefits, with safety being an ancillary benefit. Together with ongoing maintenance work, it accounts for most of the road funding in Australia.
- Expenditure on safety-focused road works. This includes black spot remedial programs, but also covers route-based (mass-action) treatments to improve the risk profile of larger sections of the network. Such investment is associated with high benefit-cost ratios in general and high safety returns in particular.

Compared with many other countries, Australia has a very large road network and a relatively small population. This places limits on the level of expenditure on infrastructure and infrastructure safety per kilometre of network, and on the proportion of highways that are likely to ever be converted to dual carriageway. It is therefore important to maximise the safety benefit of the overall investment in the nation's road infrastructure.

Total national expenditure on specific safety-focused road works is expected to be \$506 million in 2010–11. 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. While safety-targeted spending has increased substantially over recent years, it still represents only five per cent of the total investment in Australia's road infrastructure. There may be scope to adjust the mix of general and safety-focused road funding to substantially increase road safety outcomes while still achieving other important transport objectives.

Investment decisions are informed by the estimated value of expected safety benefits. The estimation method traditionally used in Australia is based on the objective value of lost output or productivity of crash victims (the human capital approach), which produces relatively conservative estimates. An alternative valuation approach, known as the willingness-to-pay method, reflects the amounts that people are prepared to pay to reduce risks to their lives. While this method is widely regarded as superior [1], there is a need to develop and adopt suitable willingness-to-pay estimates at a national level.

Land use planning

The Safe System approach requires a holistic view of the road transport system. There are opportunities to improve overall safety, and in some cases avoid the need for expensive remedial treatments, by considering the road safety implications of land use planning decisions. This could ensure, for example, that strip shopping centres on major roads incorporated safe access facilities for all road users, and that high speed roads were not built with uncontrolled access points.

EVIDENCE – what is known

- The majority of serious road casualties involve the following crash types: intersection crashes (about 32 per cent); run-off-road crashes (about 30 per cent); head-on crashes (about 8 per cent).
- There are many uncontrolled accesses to the arterial high-speed network per kilometre.
- A low proportion of the network is fitted with median barriers to separate opposing flows and side barrier protection.
- There are many high-speed intersections in rural areas and limited use of roundabouts and raised platforms at intersections.
- There are many narrow traffic lanes and unsealed and narrow shoulders on many routes.
- There is limited use of tactile line treatments (rumble strips) on road medians and edges.
- Many roads have insufficient clear zones, which can be treated with increased clear zones, sealed shoulders and/or appropriate barriers.

These factors indicate that there is a substantial ongoing opportunity for targeted improvement of infrastructure safety. Many of the treatments are relatively low cost but collectively will require considerable funding.

Infrastructure improvements can have a major effect on reducing crashes. In many cases these interventions are relatively low cost and can provide community benefit worth many times the cost. Examples of treatments known to provide significant casualty crash reduction benefits on high-speed rural roads are: installation of a roundabout (70 per cent), sealing shoulders (30 per cent), adding a right turn lane at an intersection (32 per cent), edge lining on the shoulder of the road (24 per cent), and installation of barrier systems (90 per cent of serious casualties involving errant vehicles) [7].

Substantial reductions in casualty crashes can also be achieved by lowering speed limits on the approaches to intersections, with or without supporting infrastructure treatments [8].

Intersection crashes can be reduced through:

- Roundabouts – the most effective safety treatment at intersections because they require motorists to significantly reduce their speed when approaching and travelling through an intersection.
- Platforms – raised pavement through an intersection to slow traffic, usually in urban areas.
- Traffic separation – can improve safety at intersections by creating a better separation between traffic turning and travelling through the intersection. Improvements can include better lane marking, traffic islands and separate lanes (but still under signal control) for left and right turning vehicles; as well as separation of vulnerable road users where possible in higher traffic areas.
- Rumble strips – can be installed at certain locations which will alert motorists that they are approaching intersections and rail level crossings.
- Reducing the speed limit on the approach to the intersection.
- Appropriate and safe amenity for pedestrians.

Run-off-road crashes can be avoided or reduced in severity through:

- Infrastructure treatments including safety barriers, tactile edgelines, shoulder sealing, and removal/relocation of roadside hazards and objects.
- Setting speed limits according to the safety standards of roads and roadsides.
- Effective management and clear accountability for removal and trimming of vegetation in order to maintain the safety and efficiency of the road.

Head-on crashes can be the result of poor overtaking decisions but more often come from drivers straying over the centre line due to inattention, fatigue, or losing control of the vehicle for some other reason. This is particularly a problem on higher-speed rural roads. A variety of proven treatments can be undertaken on standard two-lane or one-lane undivided roads to create more secure separation:

- This can be achieved with the addition of wire rope barriers in the median and on the side of the road (see photo to right), with some provision of overtaking opportunities (like the so-called 2+1 roads in Sweden).
- Median wire rope with clear zones either side also has the potential to yield dramatic improvement. A recent study of this type of treatment on the Pacific Highway in NSW indicates that the number and severity of crashes have been substantially reduced along the treated sections of the highway [9].
- Separation of opposing traffic on rural roads through wider (one metre) medians (see photo to right) has also been shown to reduce casualty crashes [9].
- All of these options are considerably less expensive than dual carriageway and can deliver significant safety benefits.



Although black spot programs do a good job of fixing problems in specific locations with poor crash records, the majority of crash sites are widely dispersed across the road network. A broader, more strategic (and more resource intensive) approach to improving the safety of the road network can be achieved by treating high-risk sections. These include lengths of road that have a history of serious casualty crashes (black links) or that have been identified as high-risk through a safety review process. The aim is to progressively make the overall network safer over time through the strategic application of effective treatments.

Road infrastructure has a life of 25 or more years, so the investment made today will not only save lives over the next 10 years, but will continue to save lives and avoid serious injuries well beyond the life of this strategy.

Up to 50 per cent of serious casualty crashes occur on roads controlled by local governments. Local governments will need support to apply the Safe System approach and to find and apply cost-effective and innovative solutions.

Case study- road safety review of the Pacific Highway¹³

A comprehensive, multi-disciplinary road safety review was undertaken for the Pacific Highway in NSW from Hexham to the Queensland border. The review focused on identifying measures able to protect motorists from the consequences of error. It involved inspections of the entire length of the highway, analysis of all fatal crash locations for the last five years, and detailed crash data analysis. Based on this review, a program of engineering works was developed, and the implementation of these works resulted in the annual number of fatalities being reduced from 55 to 25 and injuries being reduced from 617 to 483 (between 2003 and 2006). The benefit-cost ratios for the works were estimated to be over 10.



A similar review and resulting works on the Princes Highway also resulted in dramatic reductions in annual fatalities from 25 to 4, and injuries from 324 to 294 (between 2004 and 2006).

¹³ Supplied by the Roads and Traffic Authority, NSW.

DIRECTIONS – what the strategy aims to achieve by 2020

- All new roads designed, built and operated in accordance with Safe System principles.
- A substantial reduction in serious casualties due to roadside, intersection and head-on crashes.
- All levels of government to:
 - have assessed risk on their road network and re-focused road investment programs to treat higher-risk sections of the road network (road segments, traffic routes and defined areas) in addition to more targeted black spot programs
 - have adopted and applied the willingness-to-pay methodology to value reductions in fatalities and injuries¹⁴
 - be assessing the benefits and costs of safety treatments using a whole-of-life assessment
 - have accepted accountability and responsibility for the road safety performance of their networks in accordance with Safe System principles.
- Widespread application of improved safety-focused standards for road design and construction consistent with Safe System principles.

FIRST STEPS: Actions for the first three years

| |
|--|
| 1. Road authorities at all government levels will ensure that all new road projects apply Safe System principles ¹⁵ . |
| 2. Modify infrastructure funding guidelines and agreements to increase the safety benefits resulting from such programs. |
| 3. Target safety treatments to address head-on, run-off-road and intersection crashes. |
| 4. Target infrastructure treatments and supporting measures addressing safety issues for vulnerable road users, for example: motorcyclists for popular motorcycle routes; infrastructure improvements for older road users; people accessing public transport; bicyclists. |
| 5. Develop a nationally agreed approach to applying the willingness-to-pay methodology to value safety. |

¹⁴ Willingness-to-pay estimates reflect the amounts that people are prepared to pay to reduce risks to their lives.

¹⁵ Guidelines scheduled to be developed by Austroads.

FUTURE STEPS – what else will be considered?

- Establishing projects in selected provincial towns to demonstrate the practical application and benefits of Safe System design principles, or other means of promoting the value of such interventions.
- Working with local governments to develop and deliver infrastructure improvement strategies that include cost-effective safety treatments (for example, flexible barriers, roundabouts, shoulder sealing, rumble strips).
- Systematically assessing risk levels for highest volume roads and prioritising road sections for safety improvement. This would build on Austroads work to develop a risk-based assessment model.
- Implementing infrastructure measures to physically separate cyclists and motor vehicles on higher-speed roads with significant bicycle usage.
- Introducing motorcycle black spot/black length programs in all jurisdictions, potentially funded by a levy on compulsory third-party injury insurance for motorcyclists (as Victoria has done).
- Improving land use planning to reflect Safe System principles, including greater control of roadside development for safety.

How will progress be assessed?

Ongoing

- Number of serious casualties from single-vehicle crashes.
- Number of fatal crashes in the three major crash types: intersection, head-on, run-off-road.
- Performance reporting of serious casualties on specifically nominated and treated road links.

By 2014

- Report on delivery of action items 1 to 5.

8. SAFE SPEEDS

Speed is highly implicated in a large proportion of serious casualty crashes. As well as having a direct causal role in many instances, speed contributes significantly to the severity of most crashes. Measures addressing vehicle speed can mitigate the severity of crashes regardless of the underlying reasons for the crash. The speed problem is partly a behavioural issue, with motorists frequently choosing to travel at illegal or inappropriate speeds. However, speed limits across the network should be aligned with Safe System principles.

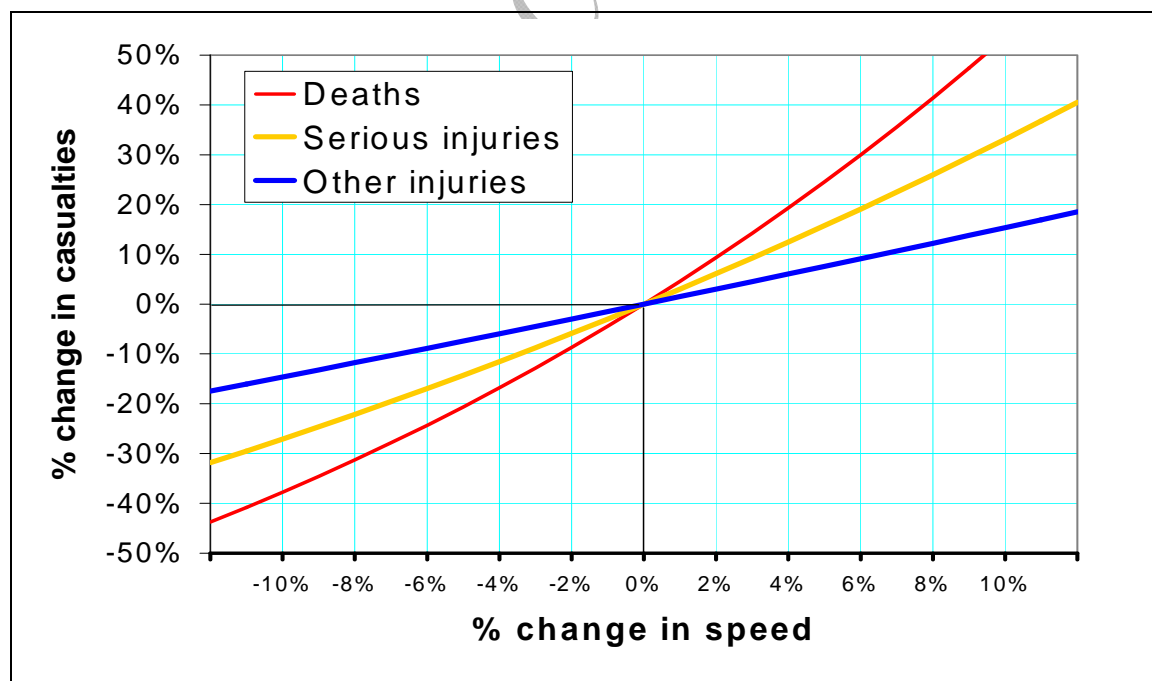
EVIDENCE – what is known

Crash risk evidence

The likelihood of being involved in a serious casualty crash rises significantly with even minor changes in travelling speed. For example, Australian research has shown that the risk of a serious casualty crash doubles with just a 5 km/h speed increase on 60 km/h urban roads or with a 10 km/h increase on rural highways [10, 11].

Internationally accepted research by Nilsson [12] has established a clear relationship between changes in average traffic speed and crash outcomes. The Nilsson model shows a 5 per cent speed increase leads to around a 15 per cent increase in serious injury crashes and a 22 per cent increase in fatal crashes. Similarly, for a 5 per cent decrease in mean speed, there are typically about 15 per cent fewer serious injury crashes and 20 per cent fewer fatal crashes.

Figure 6: Relationship between change in mean speed and crashes

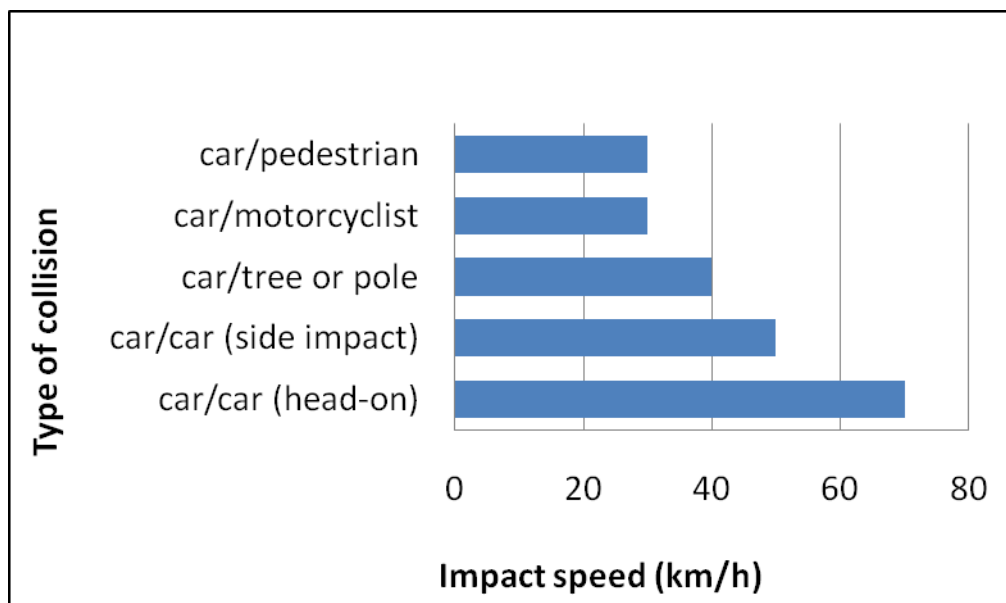


Survivability of crashes

The chances of surviving a crash decrease rapidly above certain impact speeds, depending on the nature of the collision [13]:

- car/pedestrian: 30 km/h
- car/motorcyclist 30 km/h
- car/tree or pole: 40 km/h
- car/car (side-impact): 50 km/h
- car/car (head-on): 70 km/h.

Figure 7: Survivable impact speeds for different crash scenarios



Note: The range of impact speeds shown for each crash type are considered to be survivable in most cases.

Compliance

Non-compliance with speed limits contributes directly to a large proportion of serious casualty crashes. Crash statistics conservatively identify speeding as a major causal factor in around 30 per cent of fatal crashes. Speeds up to 15km/h over the speed limit contribute to a large proportion of serious casualties: speeding in this range is not as risky as higher-level speeding, but it is far more common.

While site-based speed cameras can be a very cost-effective way of reducing serious casualties at high-risk locations, large reductions in serious casualties can be achieved from enforcement programs aimed at improving speed compliance more broadly across the network (as shown in the case study below).

A speed enforcement case study

In 2000, Victoria had a relatively intensive enforcement program, including covert speed cameras, backed by an extensive speed-related public information program. Starting in December 2000, Victoria progressively introduced a package of measures to improve speed compliance, including:

- increasing speed camera operating hours by about 50 per cent
- making enforcement more covert and unpredictable
- increasing the number of enforcement sites in use
- lowering the speed camera enforcement tolerance
- reducing the thresholds for penalties applying to different levels of speeding offence
- increasing the amount of speed-related advertising.

A comprehensive statistical evaluation of the impact of this package found that by the latter half of 2004 it had resulted in a 10 per cent reduction in all casualty crashes (involving death or injury) and a 27 per cent reduction in fatal crashes [14].

Point-to-point speed camera technology allows continuous automated speed enforcement to be applied over an extended length of road. Instead of checking the spot speed of vehicles at a fixed point on the road, the cameras measure the average speed of vehicles over a substantial distance. In this way, point-to-point enforcement targets sustained speeding behaviour and can be more acceptable to the public than single-camera enforcement [15]. Installing point-to-point systems on high-volume highways is a cost-effective way of achieving wide-ranging improvements in speed compliance and consequently reducing serious casualties [16].

Intelligent Speed Adaptation (ISA) systems are vehicle-based devices incorporating digital speed limit maps and satellite navigation technology. They have proven effectiveness in improving driver compliance with posted speed limits by warning drivers when they are speeding or (in more interventionist approaches) by physically limiting the speed of the vehicle. Evaluation studies have found substantial crash reduction benefits for the speed limiting systems. Implementation approaches could include voluntary driver assist systems for the general community, speed limiting systems for fleet operations, and/or mandatory ISA systems for high-risk groups (such as repeat speeding offenders).

More work needs to be done at a national level to enable the uptake of this technology, such as developing and maintaining updateable digital speed limit maps across all networks and jurisdictions, and investigating options to encourage and/or require uptake by vehicle manufacturers.

Speed limits

Australia has relatively high speed limits across much its road network compared with the speed limits on similar roads in most OECD countries.

The majority of regional roads in Australia are single-carriageways where the default speed limit applies (100 km/h in most jurisdictions). These roads have been found to consistently have much higher fatal crash rates than other road stereotypes [17].

As suggested by the images below, the safety standard of Australia's regional roads varies considerably and some may not be of an appropriate standard for their current speed limit. Identifying and applying suitable speed limits are necessary measures to improve safety. Alternatively, for higher volume routes, infrastructure safety investment will be needed to maintain speeds.

Crash risk and speed limits

The speed limit in each of these photographs is 100km/h. With the exception of the divided road (first image), the crash rates on each of these road types are higher than the average rate for regional arterial roads in that state.



The 100 km/h limits above all meet the current speed limit setting criteria. Yet the consequences of driver error leading to a head-on, run-off-road or intersection (driveway access) crash in the situations shown above are highly likely to be fatal.

Despite the legacy effect of these inconsistent crash risk situations, actual or perceived community pressure makes it very difficult for roads authorities to address these issues in a systematic manner. The community is entitled to expect that speed limit setting criteria would result in a level of crash risk that is reasonably consistent and not above average for that category of road.

Many lives could be saved if appropriate speed limits could be applied on higher crash rate roads. The decisions on speed limits are a matter for road authorities. Opportunities to review speed limits and apply changes would reduce crash risk and improve safety.

There is a large body of Australian and overseas evaluation evidence to show that significant casualty reductions flow from reductions in speed limits.

Speed limits case studies

Victoria

Speed limits were increased on a number of Victorian regional highways in 1987 from 100 km/h to 110 km/h. This resulted in a 20 per cent annual increase in casualty crashes on those roads.

Two years later, the speed limits were returned to 100 km/h, leading to a 20 per cent annual reduction in casualty crashes [18].

South Australia

In July 2003, the speed limit was reduced from 110 km/h to 100 km/h on about 1,100 kilometres of regional arterial roads in South Australia. These were typical arterial roads with typical traffic volumes.

The casualty crashes on these roads in the two years before and after the change were compared with crashes on 8,600 kilometres of road sections where the speed limit remained at 110 km/h. The evaluation study concluded that a 20 per cent reduction in casualty crashes on the affected roads could be attributed to the lowered speed limit [19].

New South Wales¹⁶

In early 2000, the speed limit on a 40 kilometre length of the Great Western Highway between Bathurst and Lithgow was reduced from 110 km/h to 100 km/h. This part of the Great Western Highway is a typical undivided regional highway and provides an important freight function through central west NSW. The road passes through undulating countryside with adjacent farms, forests and bushland. There was substantial community concern raised at the time; however, it was demonstrated that increases to travel time were minimal and that the lower speed limit would create a safer travel environment for all road users. A comparison based on before and after the speed limit was lowered shows there has been a 26 per cent reduction in casualty crashes.

¹⁶ Supplied by the Roads and Traffic Authority, NSW.

There is potential to obtain major national benefits by systematically reviewing crash rates and travel speeds, leading to either infrastructure improvements and/or speed limit reductions on higher-risk roads.

Speed limit reviews and targeted infrastructure safety investment: two complementary and alternative means to reduce crash risk

Speed limit changes are one means of reducing crash risk on the road network. However, managing the transport system requires the provision of timely, safe and convenient travel. The notion of reducing speed limits where travel times are little affected, and improving the road and roadside infrastructure to allow high travel speeds on important commuter roads and roads of national significance, is a balanced means to improve overall safety. Such an approach indicates how speed limit changes can be managed in a considered manner, while recognising the functional requirements for a viable and effective transport system.

Community acceptance

The community generally recognises that speed is an essential consideration of any road safety strategy but there is reluctance by some to accept lower speed limits.

Pedestrians and cyclists strongly support lower speed limits because they make sharing the roads safer and less stressful and improve public amenity in urban areas.

There are mixed reactions to proposals for general reductions in speed limits on metropolitan, regional and remote roads.

Although evidence concludes travel times are only increased by seconds on typical urban journeys and less than five minutes for every hour on open road trips, the community is concerned that speed limit reductions would increase travel times and could affect mobility.



The community has an expectation that travel speeds will be as high as possible, while providing for safe travel. National surveys over the decade to 2004 show a gradual increase in public understanding of speed-related risk and public support for progressive speed management measures [20]. However, there has been little further change in recent years, and the views of those opposed to stricter speed management continue to have considerable influence in Australia. Achieving further substantial change in this area will require ongoing public engagement to build sufficient acceptance of new initiatives. This will include:

- an ongoing dialogue with motoring organisations and other key stakeholder groups
- a national community dialogue explaining the safety rationale for speed management actions and the complementary environmental and economic benefits relating to reduced emissions, fuel consumption and noise.

DIRECTIONS – what the strategy aims to achieve by 2020

- Speed limits that reflect a better balance between safety and mobility objectives.
- A substantial improvement in overall compliance with speed limits, particularly on highly trafficked and/or higher-risk sections of the road network.
- Network-wide alignment of speed limits with the inherent risk and function of the road and roadside environment.

FIRST STEPS: Actions for the first three years

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| 6. Governments will work in partnership to improve compliance with speed limits across the road network using best practice enforcement, including a combination of on-road policing and speed camera technologies, with a mix of covert and overt strategies. |
| 7. Governments will develop and implement more effective sanctions for speeding offences. |
| 8. The National Road Safety Council will work with all jurisdictions to develop a national public information campaign about the community safety benefits of nationally consistent, appropriate travel speeds. This will provide education resources suitable for use by government agencies, local governments and community forums. |
| 9. Governments will develop and commence implementation of plans to install point-to-point cameras to improve speed compliance among all vehicles, targeting road lengths with high serious casualty crash rates. |
| 10. Governments will use national guidelines to assess speed limits on higher-risk roads and road lengths not amenable to cost-effective engineering fixes. This work will examine issues such as: <ul style="list-style-type: none">▪ Setting safe speed limits on road lengths that are narrow, have substantial levels of roadside hazards, have many intersections or property entrances, are windy or undulating, or have higher than average serious casualty crash rates.▪ Reducing limits at high-risk intersections, especially on high-volume outer urban arterials, where engineering treatments are not feasible. |
| 11. State and territory road authorities will work with local governments to expand the number and scope of projects that implement safe speed limits in areas of high pedestrian and cycling activity. |
| 12. Facilitate the implementation of Intelligent Speed Adaptation (ISA) systems, by encouraging the development of digital speed limit maps. |
| 13. Examine the scope to require advisory ISA in all government fleets; and mandatory speed limiting ISA and/or other technologies for recidivist speeders and P-plate drivers. |
| 14. Initiate discussion with insurers to encourage voluntary fitting of ISA and recorders through lower insurance premiums, especially for young drivers. |
| 15. Increase the effective application of chain of responsibility legislation to prosecute heavy vehicle speeding (including speed limiter) offences, and harmonise legislation to assist cross-border enforcement. |

FUTURE STEPS – what else will be considered?

- Investigating the case for promoting or mandating speedometer displays which place more emphasis on the range of Australia’s legally permissible speeds, and limit the display of higher speeds.
- Promoting or mandating speed governing and ISA in a broader range of vehicles.
- Developing telematics as a regulatory tool for heavy vehicle speeding.
- Developing and implementing new risk-based national speed limit guidelines for different road categories/functions. Consistent limits would be encouraged based on measured risk/crash rates, while minimising multiple speed zones over short distances.
- Improving the effectiveness of registration sanctions for heavy vehicles that have non-operational speed limiters.
- Introducing lower speed limits for heavy vehicles from both a safety and environmental perspective.
- Working with toll road operators to implement point-to-point speed enforcement on motorways.
- Investigating the scope for provision of enforcement powers and speed cameras for local government management of road safety on local roads.
- Examining options for improved enforcement of motorcycle speeding.

How will progress be assessed?

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| Ongoing |
| <ul style="list-style-type: none">▪ Mean speeds by speed limits and road category▪ Per cent compliance with speed limits (mobile camera measurements) – regional and urban▪ Percentage of vehicles/drivers over the speed limit by road category▪ Proportion of new vehicles supplied to the market with ISA▪ Proportion of highway network monitored by point-to-point speed cameras. |
| By 2014 |
| <ul style="list-style-type: none">▪ Report on delivery of action items 6 to 15. |

9. SAFE VEHICLES

Improvements in vehicle safety have contributed significantly to road trauma reduction. These improvements reflect steady advances in automotive safety design, including occupant protection performance, braking, handling and lighting and the inclusion of life saving safety features such as seatbelts and airbags.

The Australian vehicle fleet has an average age of around 10 years, so new vehicle safety features can take several years to permeate through the fleet. Improvements in occupant protection such as crumple zones and airbags, as a result of regulation introduced in the late 1990s and early 2000s, will continue to produce benefits throughout the period 2011–20. Mandatory electronic stability control (ESC) – which helps drivers avoid crashes – for light passenger vehicles and front underrun protection for heavy vehicles from 2011 will have considerable effect over the next 10 years. Measures in this strategy will therefore be important in improving vehicle safety in 2011–20, but even more for the period beyond.

New options based on advances in computing and sensor technologies have paved the way for new primary safety systems such as lane departure warning devices, collision avoidance warning and other advanced braking and driver management systems. There are also a number of vehicle safety technologies currently available or under development with the potential to target illegal driving behaviours, including Intelligent Speed Adaptation (ISA), alcohol interlocks, and seatbelt reminders and interlocks.

Continued progress will be achieved through a combination of manufacturers' evolving designs, consumer information programs and other non-regulatory means, such as fleet purchasing policies and industry codes of practice, as well as mandated standards. Initiatives adopted need to be as responsive as possible to advances in vehicle safety design and technology while distinguishing these from the ever-increasing range of features being promoted by manufacturers.

Where the approach to be adopted involves regulation, standards for new vehicles in Australia are set in the Australian Design Rules (ADRs) by the Commonwealth, in consultation with the states and territories, industry and the community. There are over 50 ADRs relating to vehicle safety. They are generally harmonised with United Nations Economic Commission for Europe (UNECE) vehicle regulations and Global Technical Regulations (GTRs), which are the peak international standards, because over 85 per cent of vehicles are imported into Australia and Australia constitutes only one per cent of the global vehicle market. There are also some local ADRs such as the Full Frontal Occupant Protection ADR.

All standard setting must be justified by a Regulation Impact Statement (RIS) through which industry and the community are consulted about how the intended standard will impact and at what cost. Maintaining harmonisation with the active program of international standards development will provide the greatest safety benefit at the least cost, ensuring that new vehicles remain as affordable as possible.

In-service regulatory standards for vehicles are set by the states and territories, which generally require continuing conformance with relevant ADRs.

Among consumer information programs, the Australasian New Car Assessment Program (ANCAP) provides star ratings for vehicles – up to five stars – based on crash testing and inclusion of safety features. ANCAP continually reviews the criteria required for a vehicle to have a five-star rating. For example, in 2008, ESC was added to requirements for a five-star rating prior to agreement on an international vehicle regulation on ESC and mandating it in Australia.



The Commonwealth, states and territories, and motoring and other organisations fund ANCAP and a recent increase in funding will significantly expand its crash test program. Used Car Safety Ratings are also produced by a consortium of government and motoring organisations. Work is currently underway to increase public awareness and usage of these ratings, particularly among younger drivers.

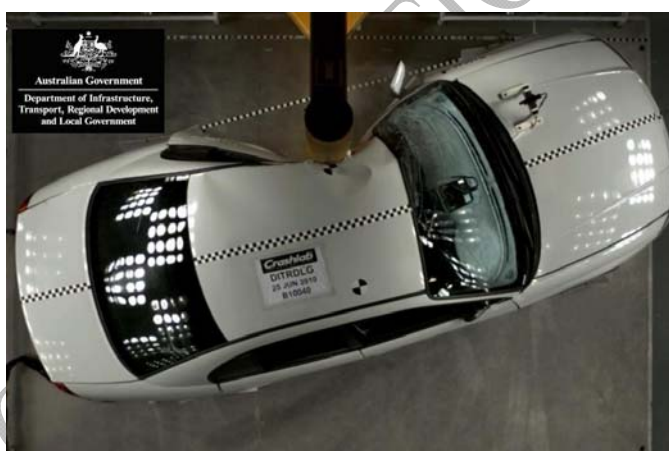
EVIDENCE – what is known

- Australia has a relatively high average age of vehicles (around 10 years).
- There has been a marked increase in the number of two-wheeled vehicles in the Australian fleet.
- Older vehicles are often used by higher-risk motorists such as novice drivers.
- The risk of death or serious injury in a crash is lower for later model vehicles: the risk in a vehicle made in 2007 is about half that of a vehicle made in 1987 [21].
- The proportion of ANCAP tested cars to be awarded a five-star rating has grown from less than 10 per cent in 2003 to over 60 per cent in 2009.
- It has been estimated that if everyone drove the safest car in its category, road trauma involving light passenger vehicles could be reduced by 26 per cent. If each vehicle incorporated the safest design elements for its class, such trauma could be reduced by 40 per cent. [22]
- Safety in light commercial vehicles has not kept pace with light passenger vehicle safety, in terms of ANCAP star ratings and inclusion of safety features. These vehicles are used in both the business and family environment.
- Considerable work is currently underway regarding vehicle to vehicle and vehicle to infrastructure communication. A frequency for these communications has been reserved (5.9 GHz) and research is active regarding potential applications.
- Substantial work on vehicle safety is underway internationally on Intelligent Transport Systems (ITS), including the development of guidelines for in-vehicle information systems.

- A large proportion of new vehicles in Australia are purchased for private sector and government fleet use. As these vehicles are generally sold for private use within a few years, there is an opportunity to improve the uptake of safety features in Australian vehicles by encouraging fleet purchasers to demand them.
- Australia has a uniquely diverse range of heavy vehicles, which makes it important to ensure braking technologies are compatible. The National Heavy Vehicle Braking Strategy released in 2008 recommended the development of Australia’s brake regulations to capitalise on the significant safety improvements achievable with new braking technologies.

DIRECTIONS – what the strategy aims to achieve by 2020

- A regulatory system ensuring that proven safety design features and technologies are mandated in new Australian vehicles as quickly as possible.
- A greater penetration of five-star ANCAP rated vehicles in the general fleet, with ANCAP star ratings available for all new vehicles.
- A reduction in the average fleet age in Australia.
- Enhanced safety commitment from the commercial sector, including a demand for fleets to be equipped with key safety features such as five-star ANCAP rated vehicles, ESC, side curtain airbags, alcohol and seatbelt interlocks, and ISA.
- A substantial increase in the proportion of heavy vehicles with advanced braking systems.
- Significant improvement in the safety of the light commercial vehicle fleet.



FIRST STEPS: Actions for the first three years

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| 16. Develop nationally-agreed fleet purchasing policies with practical, evidence-based safety criteria that drive an increase in the safety features required for vehicle purchases. |
| 17. Require all government fleets to implement nationally-agreed fleet purchasing policies and encourage adoption by other fleet operators. |
| 18. Improve the current ADR process to ensure that minor changes to UNECE regulations are accepted automatically, timely consideration is given to new and amended UNECE regulations and GTRs, and priority is given to implementing new and amended ADRs that can deliver the greatest safety benefits. |

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| 19. Subject to the final outcomes of Regulatory Impact Statements (RISs), mandate the following vehicle safety features for new vehicles: advanced seatbelt reminders (driver's seat); provision for ISOFIX child restraint ¹⁷ fittings; ESC in light commercial vehicles; pedestrian collision safety requirements for vehicles; Anti-lock Braking Systems (ABS) / load proportioning brake systems for heavy vehicles and trailers. |
| 20. Prepare RISs to consider mandating of ABS for motorcycles, increased heavy vehicle cabin strength, ESC and Lane Departure Warning Systems for heavy vehicles, and Brake Assist Systems for light passenger vehicles. |
| 21. Lead international development of a GTR on pole side impact, which will require strong protective measures for motorists involved in side impacts with narrow objects (such as a street lamp or tree), other side impacts and rollovers. This will entail provision of effective side curtain airbags or other airbag configurations. |
| 22. Expand the ANCAP program to increase the coverage of crash test results across the full range of new vehicles on the Australian market, including light commercial vehicles, and develop a crash test standard and protocol for rollover crashes. |
| 23. Support the implementation of a national 'Stars on Cars' program to increase consumer demand for safe vehicles through the promotion of ANCAP safety ratings. |
| 24. Encourage vehicle manufacturers to develop industry codes of practice committing to incorporation of vehicle safety features, while ensuring that safety features are not packaged only with luxury or comfort features. |
| 25. Investigate incentives (including tax-based and insurance incentives) and promote options to encourage greater turnover of the vehicle fleet and/or the inclusion of enhanced safety features, encourage young drivers and their parents to purchase safer new or used cars, and encourage vehicle manufacturers to support ANCAP through the provision of vehicles pre-release. |
| 26. Evaluate community concerns and work with the vehicle industry to strengthen regulation of vehicle advertising to avoid display and promotion of unsafe and illegal behaviours. |
| 27. Strengthen regulation of post-production modifications and additions (for example, by adopting appropriate standards for bullbars and limiting the raising of vehicles) which may compromise the safety of the vehicle as manufactured. |
| 28. Investigate further regulation of speed and other safety features for powered alternative vehicles (for example, mobility scooters and power-assisted bicycles). |

¹⁷ Type of child restraint fitting not currently provided for in the ADRs.

FUTURE STEPS – what else will be considered?

- Mandating the following vehicle safety features for new vehicles, subject to the outcomes of a RIS: Advanced Emergency Braking Systems for heavy and possibly light vehicles; battery and system safety and protection of servicing personnel for electric and hybrid vehicles; crash protection of occupants from high voltage vehicle systems; rear impact injury mitigation (head restraints); adaptive lighting¹⁸; the expansion of advanced seatbelt reminders or interlocks to other vehicle categories and seating positions.
- Investigating the scope for regulatory action to further improve stability, traction and braking standards on motorcycles supplied to the Australian market.
- Investigating the case for standards to minimise driver distraction from vehicle devices, and Intelligent Transport System (ITS) standards for Human Machine Interface (HMI) and interoperability.
- Working with ANCAP, so that it continues to encourage the latest high-benefit vehicle safety innovations in areas where regulation cannot be justified or is still being developed and supplements regulatory crash test requirements.
- Introducing automatic crash notification similar to the European eCall system.
- Developing telematics as heavy vehicle regulatory tools to enforce mass limits, to minimise road damage and maintain optimal vehicle braking and handling performance.
- Working with industry to secure good community understanding of vehicle safety ratings systems, including evaluating the case to mandate display of safety ratings on all new vehicles.
- Implementing international standards to improve light commercial vehicle safety.

How will progress be assessed?

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| Ongoing |
| <ul style="list-style-type: none"> ▪ Proportion of new vehicles fitted with key safety features, including ESC ▪ Improved safety performance of newer vehicles based on real-world crash data ▪ Proportion of new car and four-wheel-drive vehicle sales of five-star ANCAP rating ▪ Surveys among consumers and fleet managers on the importance of safety items in new car purchasing decisions. |
| By 2014 |
| <ul style="list-style-type: none"> ▪ Report on delivery of action items 16 to 28. |

¹⁸ Headlights that switch on automatically in low-light conditions.

10. SAFE PEOPLE

Most road users respect the law, have good safety awareness and use the roads in a sensible manner. But even these people make unintended mistakes – and sometimes those mistakes result in death or serious injury. Improved road safety systems can be developed to reduce the level of road user error and provide greater forgiveness or protection in the event of a crash occurring.

But people do not always use the roads in a responsible way. Some people frequently break the road laws, putting themselves and others at unacceptable risk, and contribute disproportionately to the number of casualties on the roads. There is a need to further reduce dangerous behaviours on the roads through enhancing enforcement and ensuring penalties are effective.

Since the early 1970s, Australia has had great success in changing dangerous behaviours. Through a combination of enforcement and education, rather than education alone [23], community attitudes and social norms have shifted in areas such as drink driving and not wearing a seatbelt – these behaviours are now widely regarded as unacceptable in our community and road users are generally more compliant with traffic laws. However, such risky behaviours are still prevalent among an irresponsible minority and they continue to play a big role in serious casualty crashes. The aim is to increase support for responsible road use while toughening responses towards those who use the roads irresponsibly. There is a need to maintain deterrence because many responsible drivers are kept responsible by the threat of detection and sanctions.

RESPONSIBLE ROAD USE

EVIDENCE – what is known

It has been estimated that people making mistakes contribute to more than 50 per cent of serious casualty road crashes. There are many types of mistakes and many underlying issues. A large part of the solution lies in improving the safety design of roads, vehicles and speed limits – to make them more forgiving of human error – but there is also a need to help people avoid making mistakes in the first place.

This can be done by improving licensing, education and information systems. Other ways of supporting responsible road use also will be explored. This is relevant to all road users; however, some groups of road users are particularly vulnerable:

- Young drivers are over-represented, making up about 14 per cent of all licence holders but being involved in about 25 per cent of all serious crashes. This reflects a number of factors, including inexperience in driving, under-developed higher-order cognitive and decision-making skills and a greater propensity to take risks, especially among young males. It is known that young drivers are most at risk of crashing in the first 6-12 months of gaining their licence.
- Research shows that raising the licensing age for young drivers to 18 would save young lives, but would also have an impact on the mobility of 17 year olds, particularly in regional areas.

- Motorcyclists are highly vulnerable compared with other motorists due to the lack of vehicle crash protection as well as the inherent difficulty of handling a vehicle with only two wheels.
- Australian children are safer than ever but the road death rate for children aged 0 to 14 years is still high compared with other OECD countries, with Australia ranked 18th in 2006. Children are particularly vulnerable as unrestrained or incorrectly restrained passengers and also as pedestrians.
- Older drivers do not have a high level of crash involvement. However, their relative fragility makes them more likely to be seriously injured or killed in a crash than younger people and their numbers are expected to grow substantially as our population ages.
- Indigenous people have three times the rate of road death compared with non-Indigenous people. There is a complex range of factors involved, including over-representation in crashes involving alcohol and non-wearing of seatbelts, in crashes on lower-standard remote roads, and in vehicles that are often of lower safety rating. Many Indigenous people experience poor access to licensing services and support systems.
- Graduated licensing arrangements are intended to allow novice drivers and riders to develop experience in reduced risk conditions in the first few years of licensing. Research evidence supports a graduated approach with restrictions and sanctions that are progressively reduced as experience is gained. Australian states and territories have progressively strengthened their graduated systems over recent years.
- While there is a lack of evidence that school road safety education programs reduce road crashes, it is important that children and young people are taught to use the roads safely as pedestrians, cyclists and later as riders and drivers. Programs designed to instil safe attitudes and behaviours from an early age are strongly supported by parents and the wider community.
- There is community support for driver education programs; however, the research evidence on the effectiveness of such programs in reducing serious crashes remains disappointing.
- It is often observed that there is more effort put into punishing bad behaviour on the roads than rewarding good behaviour. While there have been some attempts to encourage responsible road use through incentive schemes, the effectiveness of this approach is unproven.

Driver distraction

Driving is a complex task and 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 DVD, satellite navigation, complex sound systems, climate controls, and audible and visual signals for an array of vehicle operations which compete for driver attention. Although it is very difficult to quantify the effect of all of these and other sources of distraction on serious road casualties, they are recognised as a major and potentially growing problem area.

Mobile phones are a widely recognised form of distraction (see section below on Irresponsible road use). Other sources of distraction, both inside and outside vehicles, should be monitored. People will continue to be distracted while driving, particularly by technology,

and it is not possible to eradicate or outlaw every form of distraction. A harm minimisation approach would enable emerging problems to be addressed before having fully effective management responses by:

- supply reduction, through laws, technology design, planning guides and infrastructure design;
- demand reduction, using voluntary actions, technology design and deterrence;
- vehicle technologies that help drivers avoid the harmful consequences of distraction; and
- allowing more information to directly influence the vehicle (for example, speed limiting) rather than bombarding the driver with more information.

DIRECTIONS – what the strategy aims to achieve by 2020

- Australia will have a best practice graduated licensing scheme for novice drivers and riders.
- A best practice framework for the assessment of older drivers' fitness to drive will be available and all jurisdictions will have effective processes for managing older driver licensing.
- Road safety education resources will be developed and available to the pre-primary sector and all primary and high schools.
- Increased use of effective protective equipment by motorcyclists.
- Increased access of Indigenous people to graduated licensing and vehicles with higher safety ratings will be substantially improved.

FIRST STEPS: Actions for the first three years

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| 29. Develop an evidence-based model of graduated driver licensing for car drivers. Elements for examination include minimum supervised driving hours, minimum provisional licence age, passenger restrictions, night driving restrictions, mobile phone bans, vehicle power restrictions, speed and alcohol restrictions, and more effective sanctions for speed and alcohol offences. |
| 30. Review licensing arrangements for motorcycle riders. Elements for examination include graduated restrictions for novice riders (including minimum period with a car licence before motorcycle licensing) and education and training if proven to deliver road safety benefits. |
| 31. Investigate licensing options to improve the safety of returning motorcycle riders. |
| 32. Develop and implement a national helmet assessment and rating program to stimulate market demand for the safest motorcycle helmets – and examine options for other protective gear. |

33. Develop and implement programs to increase the opportunities for driving practice for disadvantaged learner drivers, particularly in Indigenous communities.

34. Implement, and promote the use of, new Fitness to Drive guidelines to improve the management of at-risk and medically-impaired drivers.

35. Pilot electronic work diaries for heavy vehicle drivers as an alternative to paper-based diaries to improve fatigue management.

36. Mandate seatbelt wearing for taxi drivers.

FUTURE STEPS – what else will be considered?

- Addressing the substantial increase in crash risk at the beginning of the unrestricted licence period through more gradual relief from the provisional licensing restrictions.
- Continuing to explore the case for a national post-licence driver education program, taking account of evaluation results of driver education interventions with proven road safety benefits.
- Promoting alternative mobility options for older drivers through local government community transport programs.
- In partnership with agencies responsible for delivering school education, developing road safety resources for parents of pre-school children, and for primary and secondary school students prior to licensing.
- Examining options for competency based licensing of heavy vehicle drivers above the age of 25 years.
- Developing interventions to minimise driver distraction.

How will progress be assessed?

Ongoing

- Monitor the overrepresentation of young and novice drivers in serious casualties.
- Monitor the number and proportion of serious motorcycle casualties.
- Monitor the number of pedestrian and cyclist serious casualties.
- Monitor percentage of heavy vehicles fitted with ESC.
- Monitor older drivers' involvement in serious casualties.

By 2014

- Report on delivery of action items 29 to 36.

IRRESPONSIBLE ROAD USE

Effective deterrent and publicity measures, such as a combination of police enforcement and public education campaigns, can motivate road users to change their behaviour, if they are concerned with being 'caught' and having to deal with the consequences. This concern is driven by the perceived probability of being caught and the efficacy of the penalty. Because many drivers believe their risk of crashing is very low, fear of penalties is often more effective than the fear of being involved in a crash. However, measures to inform and educate road users about risk factors and to motivate longer-lasting behaviour modification are also required.

Emerging vehicle technologies also offer potential assistance in addressing illegal behaviours (including drink driving, speeding, non-use of seatbelts, driving fatigued or distracted) by the relatively small non-compliant proportion of the driving population. This will be an important opportunity for road safety improvement.

There are three key challenges over the life of this strategy:

- To shift the social norm for speeding in the way it has been shifted for drink driving and seatbelts.
- To further reduce the high risk behaviours of drink driving, not wearing a seatbelt and drug driving by a minority of people that while socially unacceptable, feature significantly in crashes causing serious injury and death.
- To respond to the well-established link between driving without a licence and involvement in serious crashes.

EVIDENCE – what is known

Speed compliance

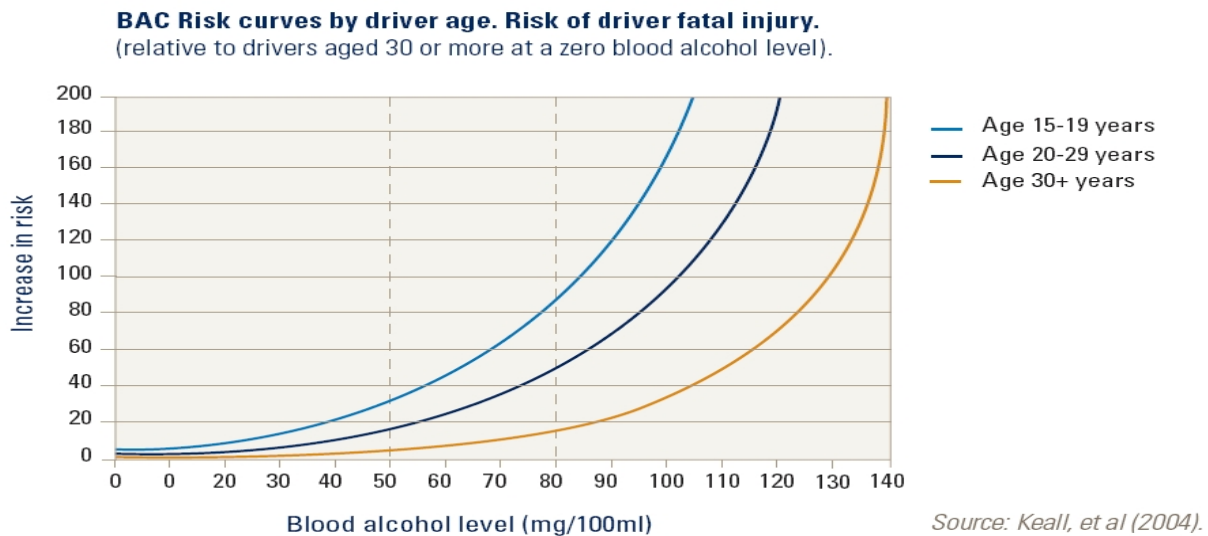
Speed is one of the key road user behaviour issues, with motorists frequently travelling at illegal or inappropriate speeds, leading to increased crash risk and increased severity of crashes. Illegal and inappropriate speed is a major factor in 30 per cent of fatal crashes.

- Specific objectives and measures to address this problem are covered in the Safe Speeds Section.

Drink and drug driving

Alcohol continues to be a major factor in serious casualties, with more than a quarter of fatal crashes involving a driver over the legal BAC limit. There is a large body of research evidence showing that the risk of involvement in a casualty crash increases rapidly with increasing BAC levels.

Figure 8: Risk of driver fatality by BAC level and age [24]



In Victoria, those aged 18-25 represent only 13 per cent of licensed drivers, but 36 per cent of all drink drivers killed in road crashes. When the 18-25 age group is split into groups aged 18-20 and 21-25, the over-representation of young drivers in drink driving casualties increases for the older group.

Lower BAC limits

Some studies that have evaluated the effects of Sweden's reduction in legal BAC from 0.05 to 0.02 have found that there was a 10 per cent reduction in fatal crashes related to drink driving after the change [25].

A prescribed zero limit has the advantage of not relying on drivers' perceptions of how much alcohol they can consume to stay under a legal limit.

When the Australian Capital Territory reduced the legal BAC limit from 0.08 to 0.05, random breath testing (RBT) showed a 34 per cent reduction in the number of drivers with a BAC between 0.15 and 0.20, and a 58 per cent reduction in the number with a BAC above 0.20 [26].

Reducing the legal BAC limit from 0.05 to zero (or 0.02) for young drivers up to the age of 26 would prevent a significant number of deaths and serious injuries per year across Australia. It has been suggested that this would have a similar benefit as raising the legal drinking age from 18 to 21 years without the same level of impact on the community.

Extending the application of zero (or 0.02) BAC limits to all drivers, or at least to all young drivers (who are inherently at higher risk), has the potential to reduce the incidence of alcohol-related crashes. The evidence for such action will be examined in greater detail, including the benefit of removing ambiguity and sending a strong statement that drinking and driving should be separated. Any specific proposal to reduce existing BAC limits would need to be explored with relevant stakeholders and the broader community.

Alcohol interlocks

A substantial proportion of drink drivers – particularly recidivist offenders – are not responsive to mainstream deterrence measures because they have serious alcohol abuse and broader social problems.

Alcohol interlock programs have had some success in changing the behaviour of serious offenders. There is scope to extend the application of alcohol interlocks to cover a wider segment of the driver population, initially focusing on offenders and other higher-risk groups such as novice drivers.

The majority of the community ride or drive responsibly, but may lapse occasionally. If the community supported the widespread implementation of alcohol interlocks, then in the next ten years drink driving could almost be eliminated. Some countries are creating initial markets to support the eventual widespread uptake of alcohol interlocks through fleets, in buses, taxis and trucks as a quality assurance action by responsible companies and employees.

Drug driving

There is a range of evidence linking certain illegal and prescription drugs to elevated crash risk, though alcohol still makes a bigger overall contribution to the number of serious casualties.

Roadside drug testing has been introduced in many jurisdictions in recent years. There is scope to develop a consistent national approach to roadside testing for illicit drugs, based on both evidence and recent experience, as well as a national approach to improved management of impaired driving due to medical conditions or use of prescription medication.

Fatigue

The effects of fatigue on serious road casualties is difficult to quantify, but is recognised as a major and potentially growing problem area. Fatigue is a contributing factor in crashes which involve long trips and extensive periods of continuous driving, and also in short trips when the driver has previously been deprived of sleep. Shift workers are particularly at risk.

There is evidence that sleep deprivation can have similar hazardous effects to alcohol consumption. Studies have found that people driving after being awake 17 to 19 hours perform more poorly than those with a BAC of 0.05, and after 21 hours their performance is about the same as driving at 0.15 BAC [27, 28].

While infrastructure treatments are presently the main response to the fatigue problem, research on direct remedies (including technological solutions) should be supported and evaluated.

Mobile phones

Mobile phone use produces a significant increase in casualty crash risk, regardless of whether the phone is hand-held or hands-free [29]. Evidence also indicates that the risks are higher for novice drivers than for more experienced drivers. National surveys show that many drivers still use hand-held mobile phones while driving, despite it being illegal in all Australian jurisdictions. A recent survey found that 61 per cent of drivers reported using

mobile a phone while driving, with 30 per cent admitting to reading text messages and 16 per cent to sending them [20].

There is evidence to support bans on all mobile phone use while driving. Several jurisdictions already have such bans in place for P-platers as part of their graduated licensing arrangements.

Seatbelt use

The majority of Australians always wear seatbelts when travelling in motor vehicles. However, a significant minority sometimes do not wear seatbelts, which is a very significant risk factor. Some 28 per cent of vehicle fatalities are unbelted, where restraint use is known.

There is evidence that seat belt reminders in vehicles can improve seatbelt wearing rates. Coordinated enforcement and publicity efforts are also necessary to improve and maintain public understanding and acceptance of the importance of seatbelts, including properly fitted child restraints.

- The Safe Vehicles Section includes an action to examine the scope to introduce an ADR requiring seatbelt reminders for the driver's seat as an early priority and to later consider mandating reminders for all seating positions.

Unlicensed driving

Unlicensed driving has been identified by police as a factor in about 16 per cent of fatal crashes. Of course, simply being unlicensed does not imply that a driver is more likely to behave dangerously, but many unlicensed drivers have had their licences removed for earlier dangerous behaviour. Because unlicensed drivers are unlikely to be deterred by the normal licensing sanctions (for example, loss of demerit points), there is a need to look at other detection and deterrence measures to target this group. There has been some recent success in tackling this issue with the introduction of vehicle sanctions and improved detection through automatic number plate recognition cameras. However, further work needs to be undertaken to enhance these initiatives and apply them in a more strategic and coordinated manner at the national level.

DIRECTIONS – what the strategy aims to achieve by 2020

- Elimination of driving while impaired by alcohol or drugs as significant contributors to road trauma.
- Development of suitable technology to combat driver fatigue.
- Elimination of mobile phone use while driving.
- A substantial reduction in the rate of driving by those without a licence.
- All vehicle occupants are effectively restrained.

FIRST STEPS: Actions for the first three years

37. In relation to driving after consuming alcohol or drugs:

- Work in partnership with police to strengthen the deterrence effect by refreshing the scale, time and location targeting, and awareness of RBT and random roadside drug testing programs.
- Review, in consultation with stakeholders and the community, the application of BAC limits currently applying to certain licence categories.
- Require demonstrated rehabilitation from alcoholism before removal of interlock conditions (for repeat offenders).
- Expand the use of vehicle sanctions for repeat drink and drug driving offences.
- Expand random roadside drug testing.

38. In relation to mobile phones:

- Promote phone-off policies (including hands-free) in government fleets and encourage phone-off policies with all fleet operators.
- Examine the case for prohibiting all mobile phone use (including hands-free) by novice, heavy vehicle, bus and taxi drivers.

39. Pilot operational field trials of driver and vehicle devices that measure drowsiness crash risk using metrics based on ocular dynamics or carriageway position, including back-to-base monitoring of data.

FUTURE STEPS – what else will be considered?

- In consultation with stakeholders and the community, examining the scope to reduce the legal blood alcohol concentration (BAC) limit for all drivers.
- Extending the application of alcohol interlock technology to cover a wider segment of drink driving offenders. Undertaking research on options to extend alcohol interlock applications to other high-risk road user groups and potentially to the broader driver population.
- Encouraging voluntary use of alcohol interlocks by corporate fleets and other drivers. Reviewing (with liquor control commissions and the health and police sectors) the adequacy of operating responsibilities applying to venues for responsible alcohol serving.
- Developing national workplace random drug testing standards for commercial vehicle industry application. Companies with testing regimes in place which meet this standard would have a defence against chain of responsibility prosecutions for drug driving.
- Investigating the use of emerging roadside drug testing technology to apply to other illicit and licit drugs.
- Compulsory blood testing for drugs and alcohol for all drivers involved in serious casualty crashes.
- Monitoring and assessing the findings of the ongoing US naturalistic driving studies (and

European in-car instrumented vehicle studies) into driver distraction, for identification of linkages between specific behaviours and crash risk, with a view to developing additional countermeasures for Australia.

- Examining the scope to ban all mobile phone use (including hands-free) by drivers.
- Increasing traffic surveillance to improve detection of unregistered vehicles and unlicensed drivers. Consider extending seizure and other vehicle sanctions for drivers of uninsured vehicles and unlicensed and suspended drivers.
- Examining the use of seatbelt interlocks and other regulatory means to increase seatbelt wearing by heavy vehicle drivers.
- Investigating the use of new technologies to minimise driver error and automatically monitor driver performance.

How will progress be assessed?

Ongoing

- Number of police alcohol tests at high alcohol times and high alcohol locations.
- Proportion of drivers/riders under legal limits (alcohol/drugs) from police testing.

By 2014

- Report on delivery of action items 37 to 39.

11. MAKING IT HAPPEN

This strategy has the potential to achieve large and lasting road safety benefits for all Australians.

Realising that potential will require significant commitment by government agencies to implementing the targeted actions in this strategy, and by non-government agents to giving effect to the strategic directions in this strategy in those areas where they can influence road safety outcomes. It will also demand ongoing attention to the following management functions that will help to implement the evidence-based countermeasures needed to achieve the targets.

Results focus

Government responsibilities for road safety delivery are spread across multiple jurisdictions and among different agencies within jurisdictions. To achieve the best road safety outcomes, an overall management framework is required in each jurisdiction with a clear results focus. Other major participants within the community are encouraged to consider how they will contribute to improved road safety in Australia.

As a priority, jurisdictions will:

- Maintain or establish targets that are consistent with these national targets, an accountability mechanism to help deliver those targets between partner agencies, and a nominated lead agency.
- Examine the scope to improve institutional structures, capacities and delivery arrangements at a national level to optimise road safety efforts ahead of a scheduled full review of this strategy in 2014.
- Adopt and promote the new International Standards Organisation standard for road traffic safety management systems (ISO 39001), which is intended for all organisations wishing to reduce death and serious injury related to road travel, and which will help them to define their contribution to this goal.

A stronger results focus and improved performance assessment for road safety will help bring all elements together (a long term vision to eliminate serious road trauma, interim targets over the next decade as a step towards that vision, and a series of interventions to achieve those targets) into a management approach that will ensure this strategy is delivered.

Coordination

Road safety progress depends on coordinating strong road safety partnerships effectively across all sectors – government, industry, business and community. Achieving the ambitions expressed in this strategy will require key government agencies, including transport, health, education, planning, local government finance and policing, to be well-aligned with this strategy. There will need to be engagement with those organisations that can directly influence, and build community support for, road safety.

As a priority, jurisdictions will:

- Form a closer alliance between road, transport and police agencies to support the enforcement elements of the strategy.
- Work with and support local governments in improving the safety of local roads and communities.
- Enlist the support of the motor vehicle industry in advancing the safety of Australia's vehicle fleet.
- Work with the National Road Safety Council to raise the profile of road safety as a major public health issue across government, industry, business and community sectors.
- Engage with key stakeholders, such as the peak motoring organisations, to exchange expertise, experiences and research.

Legislation, regulation and standards

Legislation, regulation and standards will be needed to support some new directions to improve the safety net for road users in Australia. Some initiatives, such as nationwide improvements to driver licensing, will require decisions at a national level in order for them to be implemented effectively. Others will need to be left to individual jurisdictions to progress.

Funding and resource allocation

Sufficient resources will be required to meet these targets, from government, industry and the community. This will require additional investment or reallocation or reprioritisation of resources throughout the life of the strategy. Some interventions are significant and expensive, but there is opportunity to develop, trial and implement alternative low-cost measures.

As a priority, jurisdictions will:

- Explore opportunities to secure alternative sources of funding or shared funding arrangements for road safety activities, including targeted infrastructure investment¹⁹.
- Develop a nationally agreed approach to applying the willingness-to-pay methodology to value safety.

Promotion and education

The ultimate success of the strategy will depend on the willingness of individual community members and organisations to support the changes that are needed to improve the safety of

¹⁹ For example, with the injury insurance industry (which would potentially see a commercial return on investment)

the road transport system, and to accept their share of responsibility for road safety improvement. To this end, there is a need to promote public understanding of key policy directions in road safety and encourage public discussion about new road safety proposals.

As a priority, jurisdictions will:

- Develop and maintain a National Road Safety Strategy website as a prime means of sharing road safety information and reporting on progress.
- Ensure public education campaigns and resources are aligned with the Safe System objectives of this strategy, which include improving understanding of crash and injury factors and achieving support for use of innovative cost-effective road safety treatments.

Monitoring and evaluation

Progress towards the 10-year casualty reduction targets will depend on many factors, some of which are beyond the control of governments. However, a feature of this strategy is a commitment to public accountability for its delivery. To this end, arrangements will be established to monitor national road safety progress, report on performance in implementing agreed actions, and periodically review the key elements of the strategy.

As a priority, jurisdictions will:

- Publish and regularly update the key statistical measures of road safety progress.
- Present an annual report to the Australian Transport Council documenting progress in implementing this strategy.
- Undertake a full review of the strategy before the end of 2014, including an assessment of implementation progress, a review of the strategy objectives and targets, and identification of priority actions for the next three years.

Research and development and knowledge transfer

Continued research and development effort is required to ensure that road safety risk factors, and the most effective safety measures, are understood by road safety professionals and the wider community. Safe System thinking needs to be better understood and adopted in practice by all parties involved in the development and management of the road transport system, including road agencies, traffic managers and regulators, urban planners, the vehicle industry and transport operators. Australian road safety policy has always been firmly based on robust evidence and continued investment in research and data. However, there are gaps in national data collections that need attention; and ongoing research, analysis and evaluation activities will have an important role in informing road safety actions.

As a priority, jurisdictions will:

- Work towards the adoption of nationally consistent road crash classification definitions and the development of an improved national serious injury database.

- Work towards the creation of a national vehicle safety database to provide real-time research data on the characteristics of the Australian vehicle fleet and crashes.
- Ensure that jurisdictional and Austroads road safety research programs adequately support the objectives of this strategy.

Roles and responsibilities

Adopting a system-wide perspective on road safety places primary responsibility on the ‘system managers’ – the organisations that design, build, maintain and regulate roads and vehicles – for ensuring safe conditions for all who use the road transport system.

Governments are responsible for planning, designing and managing the operation of a safe road transport system. They are expected to contribute leadership and resources to improving road safety, including developing and enforcing laws, setting standards, providing safer roads, informing the public about road safety issues and requiring improvements in vehicle safety.

The Australian Government is responsible for allocating agreed infrastructure resources, including for safety, across the national highway and the local road networks, and for regulating safety standards for new vehicles.

State and territory governments are responsible for the funding, planning, design and operation of the road network, managing a wide range of vehicle registration and driver licensing systems, and enforcing road user responsibilities.

Local governments are responsible for funding, planning, design and operation of the road networks in their local areas.

A broader range of individuals and organisations also influence the way the road transport system functions and the level of safety enjoyed by Australians. Chief among these are vehicle suppliers, employers (who have considerable power to ensure that their corporate policy and practice support a safety culture), freight companies, the vehicle marketing industry (which is expected to display social responsibility in the way it promotes vehicles for sale), automobile clubs and insurance groups (who have an important role in encouraging safety among their members and policy holders, as well as acting as advocates for safety), and transport and land use planning authorities.

Road safety practitioners need to work with these decision-makers to achieve mutually beneficial partnerships and improvements. All of these parties must work collaboratively towards the provision of a safe transport system.

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