Trends and Strategy

3 how risky is road travel?

Is travel in a light aircraft safer than a typical journey in a private car? What is the difference in risk between motorcycle riding and driving a car? The relative safety of different transport modes is a matter of common interest.

The terms 'safety' and 'risk' are often used interchangeably. Risk is the converse of safety: more safety implies less risk. Absolute safety is unattainable: all modes of transport involve some degree of risk, no matter how small.

Research shows that people generally overestimate the magnitude of low-probability events such as fatal motor vehicle crashes, floods, cancer, tornadoes and air crashes, and under-estimate high-probability risks such as heart disease, diabetes and stroke. In a 1978 study by S Lichtenstein and others on how people perceive different types of risk, the perceived risk of motor vehicle crashes was found to be over six times the actual risk, whereas in the case of heart disease, the perceived risk was about half the actual risk.

To be alive at all involves some risk.

Harold Macmillan, former British Prime Minister

Overestimated risks are generally more sensational, whereas underestimated risks tend to be low-key events which claim one victim, or a few, at a time. The tendency of people to overestimate some risks is usually reinforced by media reporting, which generally provides disproportionate coverage of violent and catastrophic events.

An 'optimism bias' is commonly encountered in personal risk assessment: many people believe that their chances of experiencing a risky event is lower than average: it is quite possible to overestimate other people's crash risk and underestimate one's own. Road crashes, for example, are commonly thought of as only happening to other people. Many people consider themselves better than average drivers, and despite the various risks they encounter on the roads, may have crash-free records for long periods. Such experience, together with actual observations of crashes experienced by others and news media reports of such crashes, reinforce the notion that crashes only happen to other people. Such a notion often leads people to underestimate their risks and to sometimes neglect precautionary action such as seat belt wearing.

What is dangerous driving?
I have a tendency to believe that everyone's driving is dangerous, except my own.

George Bernard Shaw

Comparing risk between transport modes is not straightforward

The numbers of deaths recorded over time in each transport mode are readily available, but limited data on consistent risk exposure levels (such as distance travelled) across modes makes reliable comparisons difficult. For example, one useful measure of risk exposure for aviation is hours flown, while for road travel, distance travelled measured by vehicle-kilometres is generally used.

Exposure data for road travel are usually gathered as part of surveys covering detailed travel patterns for individuals.

The death rate per 100 000 people is a commonly used population or public health measure, but it does not adequately take into account the extent of exposure to transport-related risk. The risk

On the basis of passenger distance travelled, general aviation is up to 6 times more risky than travelling by car, and motorcycling is over 20 times more risky. Travelling by bus, train, ferry and tram involve very low risk levels.

exposure aspect is more evident when making comparisons between countries. For example, in 1996 Australia had a road death rate of 11 per 100 000 people and 2 per 10 000 motor vehicles. By contrast, Tonga had a marginally better road death rate of 10 per 100 000 people, but a much worse death rate of 52 per 10 000 motor vehicles. The use of a single risk measure could therefore provide misleading results.

Table 2:
Deaths per passenger distance travelled (based on car occupant = 1.0)

	Australia					*United Kingdom*
	1960s	1985–86	1988	1992	1993	1990–99
AIR						
High capacity RPT	0.03	0.00	0.00	0.00	0.00	0.01
Low capacity RPT		0.00		0.22	0.33	-
General aviation (fixed wing)	5.52	6.22	4.15	6.27	6.83	-
ROAD						
Car occupants	1.00	1.00	1.00	1.00	1.00	1.00
Motorcycles	12.15	24.18	15.99	10.29	26.67	31.52
Bus passengers	0.18	0.18	0.05	-	0.17	0.12
Pedestrians	-	15.36	-	-	-	18.79
Bicyclists	-	4.04	-	-	-	13.33
RAIL						
Passengers	-	0.23	-	-	0.17	0.15

RPT regular public transport

Note: The data in all columns in this table, except the last column, are from Australian studies. For details on data sources, see www.atsb.gov.au/public/discuss/cross_modal.cfm

Source: Australian Transport Safety Bureau

There is also the question of risk weighting per passenger. For example, how can appropriate and accurate risk data for a train and a bus per kilometre of travel be obtained when the average bus may carry 20 to 30 passengers and the train several hundred? Deaths per vehicle kilometre, deaths per passenger kilometre, and fatal crashes per vehicle or passenger kilometre can give somewhat different perspectives of the relative safety of different modes. Yet another issue is that some risk exposure measures cannot be applied to all modes – for example, pedestrian activity and pedal cycling cannot be measured in terms of registered vehicles.

No single measure of travel risk exposure is ideal in all circumstances and the most useful information is generally a comparison of trends using various measures of exposure. Lack of data, however, generally restricts the types of comparisons that can be made.

Risk comparisons across modes

The ATSB has made comparisons drawing on the best data available and the results are very broadly comparable.

Inter-modal comparisons using available data are presented in table 2, in which risk is assessed in terms of passenger distance travelled. For each mode, the risk has been expressed as a ratio relative to car occupant safety, where car occupant safety is standardised at 1.0. Tram and ferry data are not available, but are likely to be similar to bus and train data.

The data in table 2 show that high capacity airline travel is the safest form of transport. There have been no deaths in high capacity airline travel in Australia since the 1960s, and there have never been any fatal accidents involving high capacity passenger jet aircraft in Australia. High capacity air travel therefore remains the safest form of transport, irrespective of the measure of risk exposure used. The relatively low risk of the high capacity aviation sector is often expressed in statements such as: 'driving to the airport is more dangerous than catching a flight'.

Low capacity air transport involves relatively low numbers of fatal crashes, but one or two crashes can significantly affect the safety rating.

Table 2 shows that general aviation is significantly less safe than car travel. Some sectors of general aviation are particularly risk-prone, such as aerial agriculture which involves mustering and spraying.

Bus and rail are the safest forms of land transport and have very similar safety rates. Motorcycling is the least safe form of transport.

Table 2 shows that there is a significant degree of consistency among the results of Australian researchers and that the relative safety of different modes of transport in Australia is broadly in line with the United Kingdom. The exception is that bicycling in Australia appears significantly safer than in the United Kingdom. This may reflect the lower kilometres travelled per person for bicycles and all modes of land transport, other than rail, in the United Kingdom. A comparison based on a different measure such as deaths per trip may provide a more accurate picture of safety.

4 australian road safety developments and trends

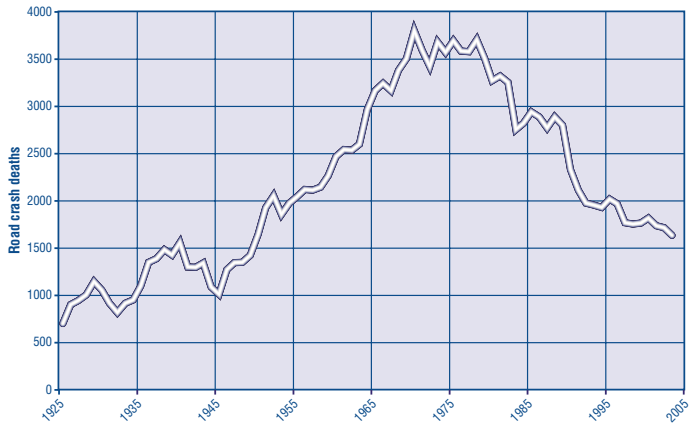
Historical perspective

Road crash deaths in Australia from 1925 to 2003 are shown in figure 4. Over this period, road deaths increased rapidly until 1970, when they peaked, and then remained relatively stable throughout the 1970s. Road deaths have decreased substantially since the 1970s.

The 1 634 road crash deaths in 2003 are comparable with those in 1950, when there were 1 643 deaths; however, current death *rates* are substantially lower. In 1950, the death rate per 100 000 people was 20.1 and the death rate per 10 000 registered vehicles was 11.8. In 2003, the death rate per 100 000 people was 8.2 and the death rate per 10 000 registered vehicles was 1.2.

In 1970, 3 798 people were killed in road crashes, in 2003 the number had fallen to 1 634.

FIGURE 4:
Road crash deaths, 1925 to 2003



Source: Australian Transport Safety Bureau

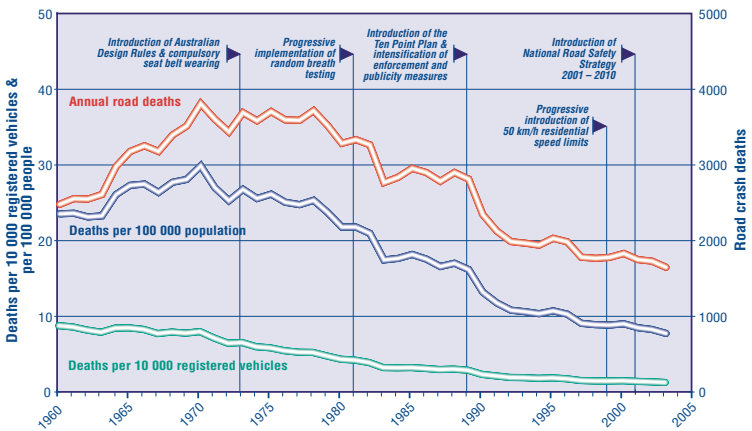
Programmes to reduce road crash deaths

Figure 5 shows trends in deaths and death rates from 1960 to 2003, together with an implementation time-line of some major road safety initiatives during this period.

Following the introduction in 1969 of Australian Design Rules requiring seat belts in new vehicles and the law requiring compulsory seat belt wearing in 1970, the climb in road deaths levelled out and the number of deaths remained fairly stable for the remainder of the 1970s. By 1979 – a few years into the progressive implementation of random breath testing – road deaths began to fall, and the decline has, by and large, continued up to the current period.

The *National Road Safety Strategy 2001–2010* and Action Plans are described in chapter 5. The strategy aims to reduce road deaths per 100 000 people from 9.3 in 1999 to no more than 5.6 by the end of 2010. At the end of 2003, the death rate per 100 000 people was 8.2 – slightly above the pro-rata rate of 8.0 required to reach the 2010 target.

FIGURE 5:
Trends in road deaths and major road safety initiatives, 1960 to 2003



Source: Australian Transport Safety Bureau

Victoria became the first jurisdiction in the world to introduce compulsory wearing of seat belts in 1970, and the first in the world to make bicycle helmets compulsory in 1990.

A chronology of developments in road safety

1925 Record keeping commenced and reported 12 deaths per 100 000 people.

1927 All jurisdictions, except Tasmania, adopted standardised road signs.

1927 The National Safety Council, the first road safety group in Australia, was formed.

1930 Introduction of traffic lights.

1932 *Motor Act 1932* required all vehicles to adhere to safety standards for maintenance of tyres, rear-view mirrors and vehicle horns.

1960 Legislation passed in Victoria requiring the wearing of motorcycle helmets.

1969 Australian Design Rules for mandatory fitting of seat belts in new passenger vehicles.

1970 Road deaths peaked at 3 798 or 30.4 deaths per 100 000 people.

Victoria became first in the world to introduce compulsory wearing of seat belts. By 1973, legislation was passed throughout Australia for compulsory wearing of fitted seat belts in motor vehicles.

1976 Victoria introduced random breath testing. By 1988, similar legislation was passed in all Australian states and territories (breath testing technology having been employed by Australian police since the early 1960s).

Legislation was passed in Victoria requiring child restraints in motor vehicles. By 1982, all Australian states and territories had passed similar legislation.

1987 Intensification of random breath testing in New South Wales.

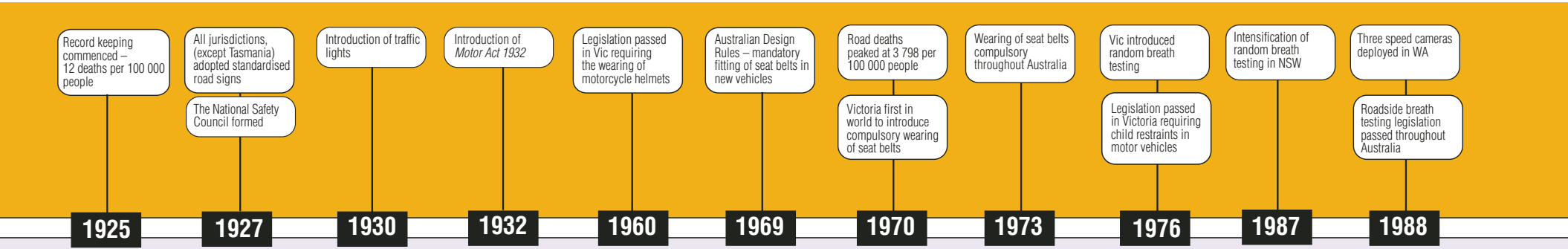
1988 Three speed cameras deployed in Western Australia (following trials in 1986).

1989 Introduction of intensive road safety advertising (e.g. Transport Accident Commission).

Intensification of random breath testing, particularly in Victoria.

Motor Vehicles Standards Act 1989 set the standards vehicles must meet in order to be supplied to the Australian market. The national standards are known as the Australian Design Rules.

Austroads launched on 1 July 1989.



1989 The Ten Point Plan (progressive implementation from 1990):

1. National 0.05 blood alcohol concentration limit
2. National licensing of heavy truck and bus drivers
3. National uniform speed limits so that no speed limits will exceed 110 km/h
4. Speed limiters for heavy vehicles
5. Zero blood alcohol limits for young drivers
6. Enforcement to ensure that one in four drivers is random breath tested annually
7. Graduated licensing system for young drivers
8. Compulsory bicycle helmet wearing for all cyclists
9. Daylight running lights for motorcycles
10. Enforcement of seatbelt and child restraint wearing.

1990 Introduction of speed camera programmes (e.g. Victoria in 1990, New South Wales in 1991, Queensland in 1996).

Victoria introduced legislation requiring compulsory wearing of bicycle helmets.

The Australian Government launched the highly successful Black Spot Programme.

1991 New South Wales introduced radar speed cameras.

1992 Legislation governing compulsory wearing of bicycle helmets in force in all Australian jurisdictions.

First National Road Safety Strategy (target of reducing the national road death rate to below 10 per 100 000 people by 2000).

1994 First National Road Safety Action plan.

1996 Australia's Rural Road Safety Action Plan launched.

Roads of National Importance scheme introduced.

1998 Progressive introduction of 50 km/h speed limits in urban residential areas (1998–2004).

1999 Uniform Australian Road Rules finalised by the National Road Transport Commission.

Australia Cycling – The National Strategy 1999–2004.

2000 National Road Safety Strategy 2001–2010 (implementation from 1 January 2001) aims to reduce the number of road deaths per 100 000 people by 40 per cent, from 9.3 in 1999 to no more than 5.6 in 2010.

2001 National Road Safety Action Plan for 2001 and 2002.

Roads to Recovery 2001–2005, launched on 1 January 2001 (extended to 2009).

South Australia introduced alcohol interlock devices.

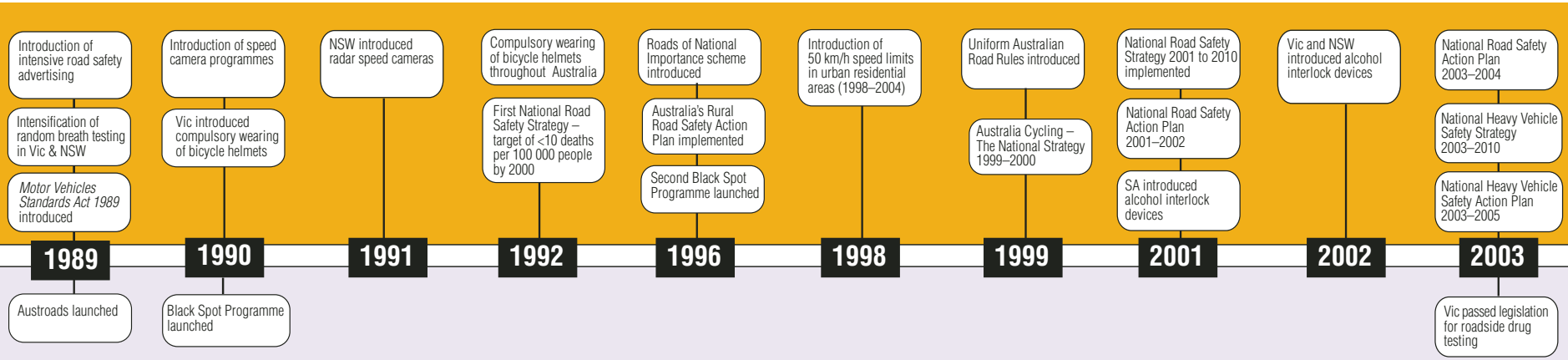
2002 Victoria and New South Wales introduced alcohol interlock devices.

2003 National Road Safety Action Plan for 2003 and 2004.

National Heavy Vehicle Safety Strategy 2003–2010.

National Heavy Vehicle Safety Action Plan 2003–2005.

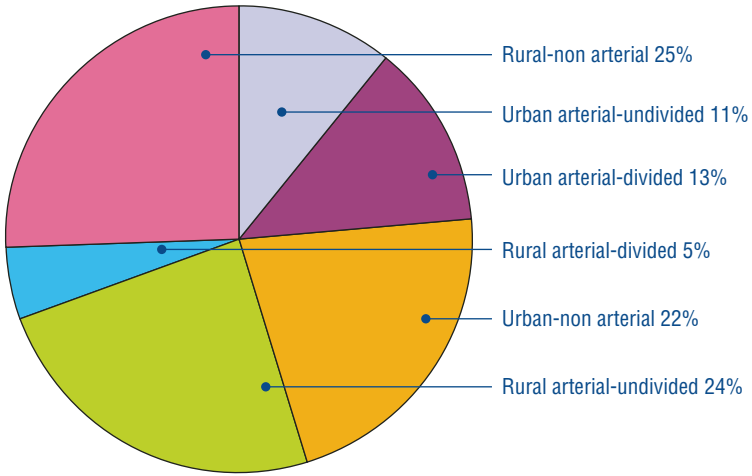
Victoria passed legislation for roadside drug testing.



Risk in urban and rural areas

For purposes of analysis, a rural area is defined as an area of fewer than 100 000 residents. Using this definition, figure 6 shows that over 50 per cent of road deaths occur in rural areas.

FIGURE 6:
Proportion of deaths by urban/rural location and type of road, 1999



Source: Australian Transport Safety Bureau

Road crashes are a major cause of death and injury for people living outside major cities and urban areas. There is a common perception that it is visitors and tourists rather than 'locals' who are involved in rural crashes, but in fact the majority of those who die on rural roads are rural residents. In 1999, around 70 per cent of people killed in rural road crashes lived outside a major urban area.

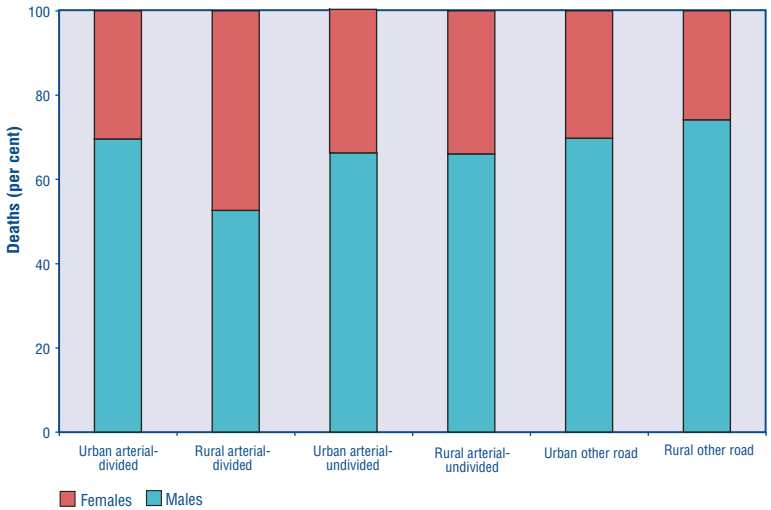
On average, people who live in country areas drive greater distances, are further from medical help and are less likely to wear seat belts compared with those residing in cities and major urban areas. Country residents also tend to drive longer distances on roads with speed limits of 100 km/h or more, and on roads with low design standards where police enforcement (speed, alcohol, seat belts) is relatively limited (see chapter 31).

Over half of all road deaths occur on rural roads.

Figure 7 highlights that, in 1999, about two-thirds of deaths on the different categories of roads were males. The only exception was on rural arterial-divided roads, where the proportions of males and females killed were roughly equal.

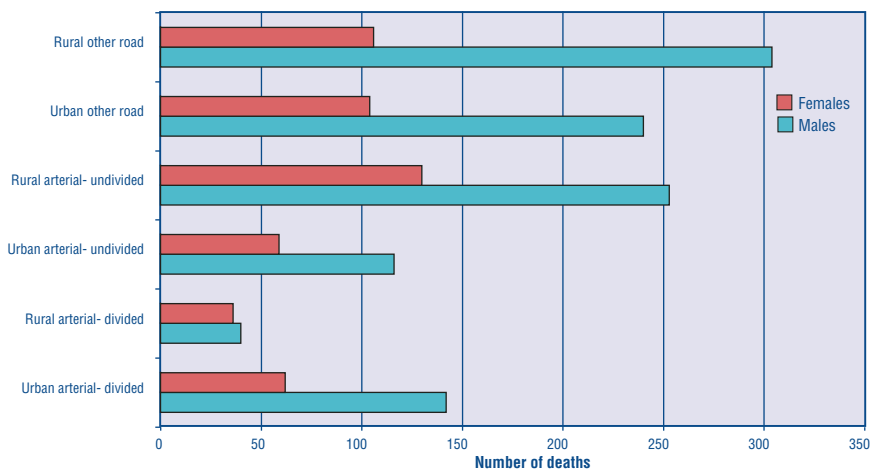
Figure 8 shows actual male/female deaths on the different urban and rural roads. A comparison of deaths on the different roads is not strictly possible, as data on the overall length of the different roads are not available. However, the much smaller number of deaths on rural arterial-divided roads were probably because of lower traffic densities on rural arterial divided roads compared with urban arterial divided roads.

FIGURE 7:
Proportion of male/female deaths in urban/rural areas, 1999



Source: Australian Transport Safety Bureau

FIGURE 8:
Male/female road crash deaths in urban/rural areas, 1999



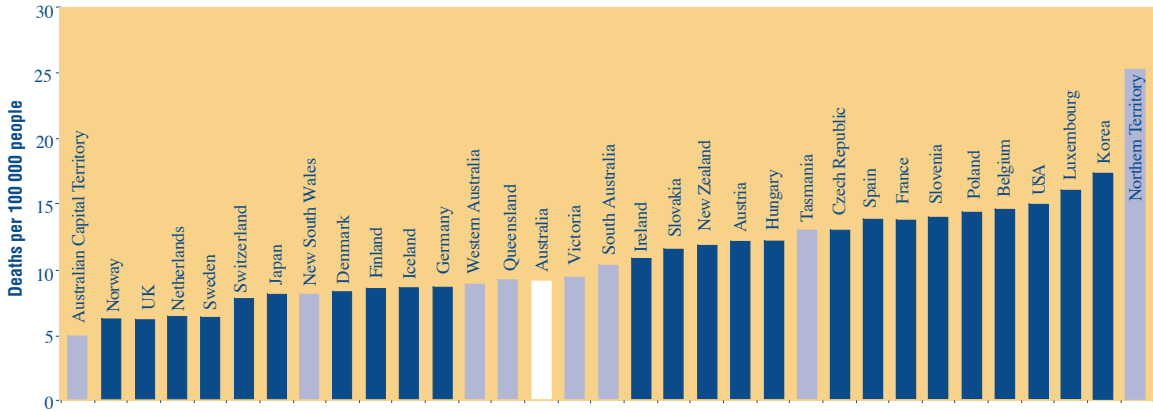
Source: Australian Transport Safety Bureau

International comparisons

The road death rates compiled by the Organisation for Economic Cooperation and Development (OECD) allow Australia's road safety performance to be compared with other OECD nations, while taking account of the differing levels of population, motorisation and distances travelled.

Three rates are commonly used in assessing road safety performance. Deaths per 100 000 people is a measure of the public health risk associated with road use (figure 9). It enables road risk to be compared with the risk of death due to other causes. The number of deaths per 10 000 registered vehicles enables road deaths rates of countries with different levels of motorisation to be compared. The death rate per 100 million vehicle-kilometres travelled is a measure that takes account of different levels of risk exposure. Consistent data for this measure are not available in all OECD countries.

FIGURE 9:
Deaths per 100 000 people, OECD nations and Australian states/territories, 2001



Source: Australian Transport Safety Bureau

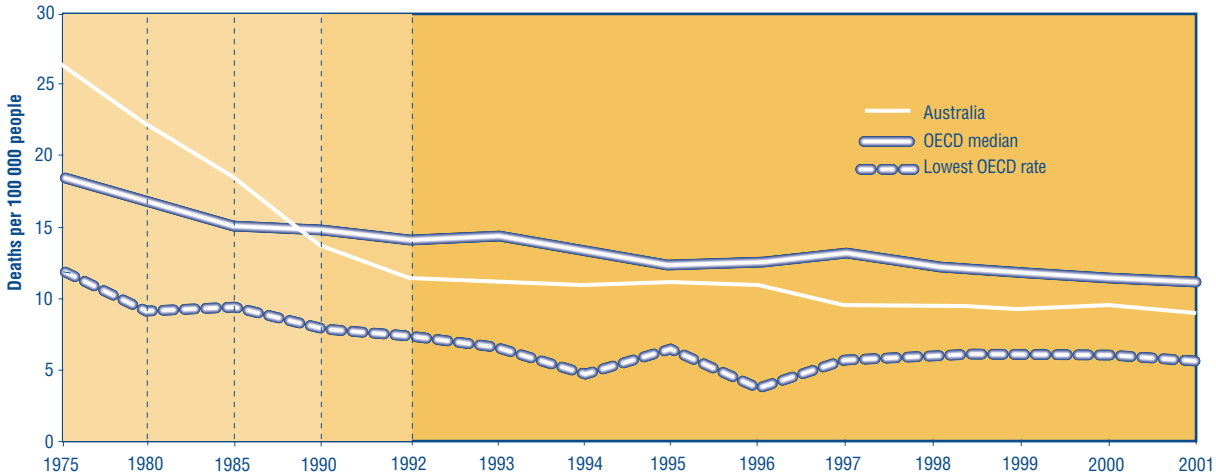
Australia's road death rates in 2001 (the most recent year for which OECD data are available) for population, motorisation and distance travelled, were all below the corresponding OECD median rates. Among the 25 nations comprising the OECD in 2001, Australia had:

- the eleventh lowest rate in terms of deaths per 100 000 people
- the ninth lowest rate in terms of deaths per 10 000 registered vehicles
- the fourth lowest rate in terms of deaths per 100 million vehicle-kilometres travelled.

Of the OECD nations for which 2001 data were available, Norway recorded the lowest rate of 6.1 deaths per 100 000 people (of 25 nations), the lowest rate of 1.0 deaths per 10 000 registered vehicles (of 25 nations), and the lowest rate of 0.8 deaths per 100 million vehicle-kilometres travelled (of 12 nations). Within Australia, the Australian Capital Territory recorded the lowest rate of 5 deaths per 100 000 people, and the Northern Territory recorded the highest rate (25).

As figure 10 shows, Australia's reduction in the rate per 100 000 people has reflected greater improvement than the OECD median. In 1975, the Australian rate was 44 per cent above the OECD median; in 2001, it was 22 per cent below the OECD median.

FIGURE 10:
Deaths per 100 000 people, OECD median, lowest OECD rate, and Australia, 1975 to 2001



Source: Australian Transport Safety Bureau

5

reducing road deaths and injuries: a national strategy

The road toll should not be accepted as inevitable.

The National Road Safety Strategy 2001–2010

Australia's road safety strategy

Several nations, including Australia, have national strategies and associated fatality reduction targets.

The target of Australia's strategy is to reduce the annual number of road deaths per 100 000 people by 40 per cent – from 9.3 in 1999 to no more than 5.6 in 2010 (figure 11). The target is expressed in relative terms (i.e. no more than) implying that road deaths are neither inevitable nor acceptable.

Achieving this target will save an estimated 3 500 lives by 2010 and reduce annual road deaths in 2010 by approximately 700.

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

In Australia's federal system of government, road safety strategy and policy measures are principally driven by the states, territories and local government who conduct their own road safety programmes. The role of the Australian Government and its agencies includes funding major road programmes and the treatment of

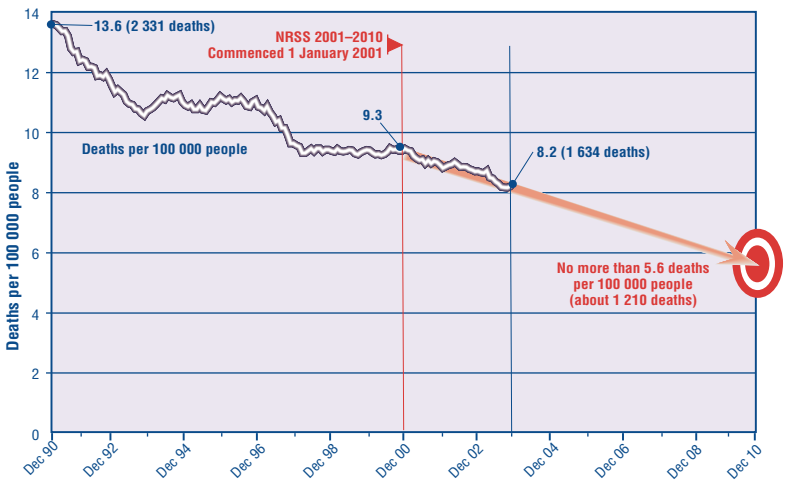
black spots; regulating new vehicle standards; research; compilation and analysis of national statistics; and facilitating the sharing of ideas and information among stakeholders.

The strategy provides a framework for coordinating and complementing the road safety initiatives of all levels of government and of others capable of influencing road safety outcomes.

Individual governments and others will continue to develop and implement their own road safety strategies and programmes consistent with this strategy, but reflecting local imperatives.

The ATC agreed that a series of biennial action plans should be developed, setting out specific measures available to achieve the objectives of the strategy. Each action plan was to be reviewed toward the end of its two-year period and a further action plan developed and submitted for the approval of the ATC. The development of action plans for 2001 and 2002 and for 2003 and 2004 was coordinated by the ATSB through the National Road Safety Strategy Panel (see chapter 38) and approved by the ATC.

FIGURE 11:
Road deaths per 100 000 people – moving 12-month total



Source: Australian Transport Safety Bureau

How was the target chosen?

There are different approaches to target setting. The top-down or idealistic approach is based on ideal or aspirational standards such as Canada's vision of having the safest roads in the world or Sweden's 'Vision Zero', which is about placing priority on preventing death and serious injury before all other considerations. The bottom-up or realistic approach adopted by Australia (and a few other countries including the United Kingdom and New Zealand) is based on research and analysis.

The bottom-up approach adopted by Australia meant that the target was not chosen arbitrarily: it was a research-based estimate by experts of what could be achieved with a concerted effort, taking into account the effects of known measures. The target-setting process was based on the proposition that there are viable options available to achieve a much safer road system.

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

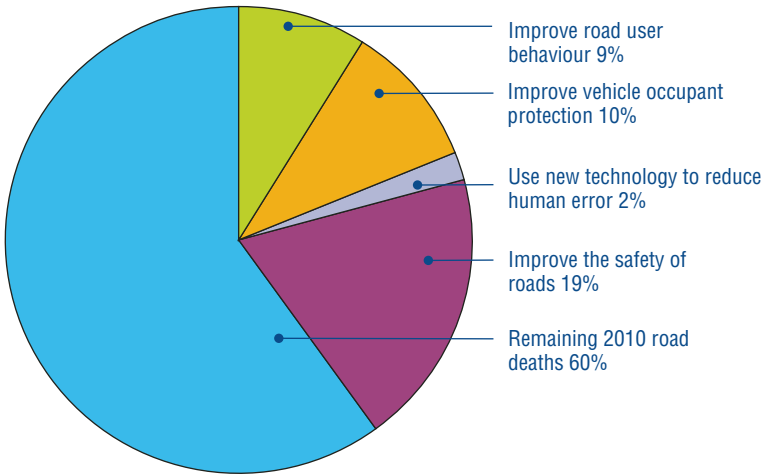
Safer roads	19%
Improved vehicle occupant protection	10%
Improved road user behaviour	9%
New technology to reduce human error	2%
Total reduction in population fatality rate	**40%**

The estimates (figure 12) indicated that almost three-quarters of the targeted 40 per cent reduction in per capita fatality rates could be achieved by maintaining real funding for road measures and by the flow-through effects of vehicle safety improvements that were already implemented or scheduled. Most of the remaining improvement was expected to be achieved through improved compliance with existing rules on drink driving, speed and restraint use (by extending and refining enforcement programmes, backed by public education and persuasion).

Translating the above estimates into lives saved (or deaths avoided) in 2010: 332 of the 700 lives saved could be attributable to better road infrastructure, 175 lives to safer vehicles, 158 lives to improved road user behaviour, and 35 lives to new technology.

Only a very small proportion of the total projected safety improvement was associated with measures that had inherently long lead times. The accumulation of road and vehicle improvements over the decade to 2010 was expected to be fairly uniform, and it was considered that changes through improved compliance with existing rules should be achievable sooner rather than later.

FIGURE 12:
Estimated effect of possible road safety measures by 2010 in terms of percentage reduction in deaths per 100 000 people



Source: Australian Transport Safety Bureau

How is the target to be achieved?

The strategy's vision is 'safe road use for the whole community'. Research indicates that many current road safety measures have not reached their full potential in terms of cost-effectiveness. The target of the strategy is to be achieved by:

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

The strategic objectives are:

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

Whoever wants to reach a distant goal must take many small steps.

Helmut Schmidt, former Chancellor of West Germany

Areas of focus in the Action Plan for 2003 and 2004

The Action Plan for 2003 and 2004 was designed to provide a clear focus on priority action areas in road safety. These include areas where there is the potential to achieve a significant impact on road trauma within the next few years, and others that will lay the foundation for longer-term gains.

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

- Speed management
  - improving compliance with speed limits, and selective reduction of limits on roads with a relatively high crash rate.
- Application of engineering measures to improve the safety of roads
  - including both black spot programmes and targeted 'mass application' of cost-effective measures to improve the safety of larger sections of the road network.

The plan also identifies other areas where there is a prospect of substantial gains (or worthwhile gains at relatively low cost):

- driver impairment (alcohol, other drugs and fatigue)
- vehicle measures (including seat belt reminder devices; encouraging corporate and individual vehicle purchasers to select safer vehicles; and development of a National Heavy Vehicle Safety Strategy)
- licensing and driver management (including measures to reduce the incidence of unlicensed driving and motorcycle riding, and to enhance the effectiveness of licence suspension as a deterrent penalty)

The most important problem of safety… arises from its position in time. Safety rests in the future… One has to act now if the promise or hope is to be fulfilled later.

John Polya, 1964

- special groups and issues

  the National Strategy noted particular concerns about safety outcomes for a number of specific groups of road users, including cyclists, motorcyclists, pedestrians, elderly road users, youth and indigenous people. The Action Plan suggests that the most effective options for improving the safety of these groups include measures that are not specifically targeted at group members, such as improved speed management and safer road infrastructure. However, the Action Plan puts forward a small number of group-specific measures to supplement the general measures.

The mix of measures adopted in individual jurisdictions, and the details of specific measures, will vary to reflect local circumstances and priorities. The Action Plan cannot pre-empt the administrative or legislative processes required before implementation of many of these measures. However, all jurisdictions agreed that planning and implementation should focus on these priority areas.

The National Road Safety Strategy and current and future action plans provide a blueprint for achieving significantly better road safety outcomes in the period to 2010. However, as road safety is not just the responsibility of governments but should be everyone's concern, a concerted and sustained effort by the Australian community is necessary to achieve or exceed the target.

6 road safety performance of Australian jurisdictions

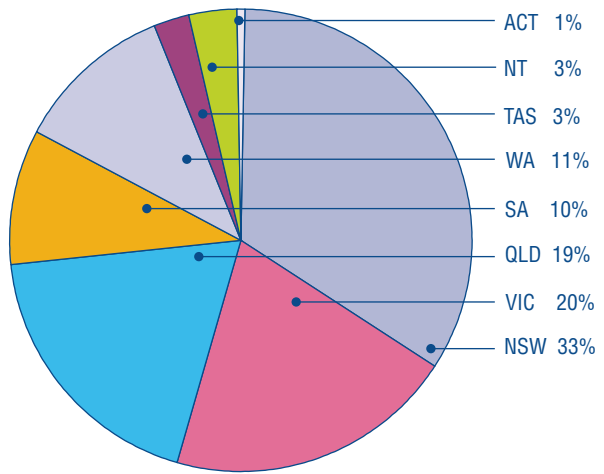
Performance by Australian states and territories

The Australia-wide rate of road crash deaths per 100 000 people was 8.2 in 2003. As would be expected on the basis of population, 72 per cent of road deaths occurred in the three eastern seaboard states of New South Wales, Victoria and Queensland (figure 13).

Table 3 outlines the deaths and death rate per 100 000 people for each state and territory in 2003. The death rates in the more populous states have the greatest impact on the overall death rate for Australia.

Almost three-quarters of all road deaths in Australia occur in New South Wales, Victoria and Queensland.

FIGURE 13:
Road deaths by state and territory, 2003



Source: Australian Transport Safety Bureau

Table 4 shows deaths per 100 000 people for each jurisdiction from 1999 to 2003, and the percentage changes between each year from 1999 to 2002 relative to 2003. The reduction in road deaths in Victoria in 2003 relative to 2002 (64 deaths, 17 per cent) accounts in large measure for the national reduction of 81 deaths (6 per cent) in 2003. The downturn in Victoria began in 2002, and coincided with the introduction of stricter speed enforcement measures, including reduced enforcement tolerances.

Table 3:
Deaths and death rate per 100 000 people, by state/territory, 2003

	Fatalities	*Fatality rate per 100 000 population*	*Population ('000)*[a]
New South Wales	554	8.2	6 695
Victoria	330	6.7	4 930
Queensland	310	8.1	3 787
South Australia	156	10.2	1 527
Western Australia	180	9.2	1 953
Tasmania	41	8.6	474
Northern Territory	52	26.0	199
Australian Capital Territory	11	3.4	325
AUSTRALIA	1 634	8.2	19 891

a. Populations are based on Australian Bureau of Statistics estimates. Figures do not add to total due to rounding.
Note: Deaths for any year are always subject to minor revisions throughout the following year as more accurate data are obtained.
Source: Australian Transport Safety Bureau

The Northern Territory has over three times the national death rate, while the ACT has less than half the national rate.

Table 4:
Deaths per 100 000 people, by state/territory, 1999 to 2003

	NSW	*VIC*	*QLD*	*SA*	*WA*	*TAS*	*NT*	*ACT*	*Australia*
1999	8.9	8.2	9.4	10.1	11.9	11.2	25.6	6.1	9.4[a]
2000	9.2	8.5	8.8	11.0	11.2	9.1	26.0	5.7	9.4
2001	7.9	9.2	8.8	10.1	8.6	12.9	25.3	5.0	8.9
2002	8.4	8.1	8.6	10.1	9.2	7.8	27.9	3.1	8.7
2003	8.2	6.7	8.1	10.2	9.2	8.6	26.0	3.4	8.2
Change: 1999 to 2003	-8%	-18%	-14%	1%	-23%	-23%	2%	-44%	-13%
Change: 2000 to 2003	-11%	-21%	-8%	-7%	-18%	-5%	0%	-41%	-13%
Change: 2001 to 2003	4	-27%	-8%	1%	6%	-33%	3%	-32%	-8%
Change: 2002 to 2003	-2%	-17%	-6%	1%	-1%	11%	-7%	9%	-6%

a At the time the National Road Safety Strategy was finalised, the death rate for Australia was calculated as 9.3. Over the following year, deaths were updated by the jurisdictions and resulted in the original rate of 9.3 increasing to 9.4.

Source: Australian Transport Safety Bureau

FIGURE 14:
State/territory road crash death rates per 100 000 people, 1990 to 2003

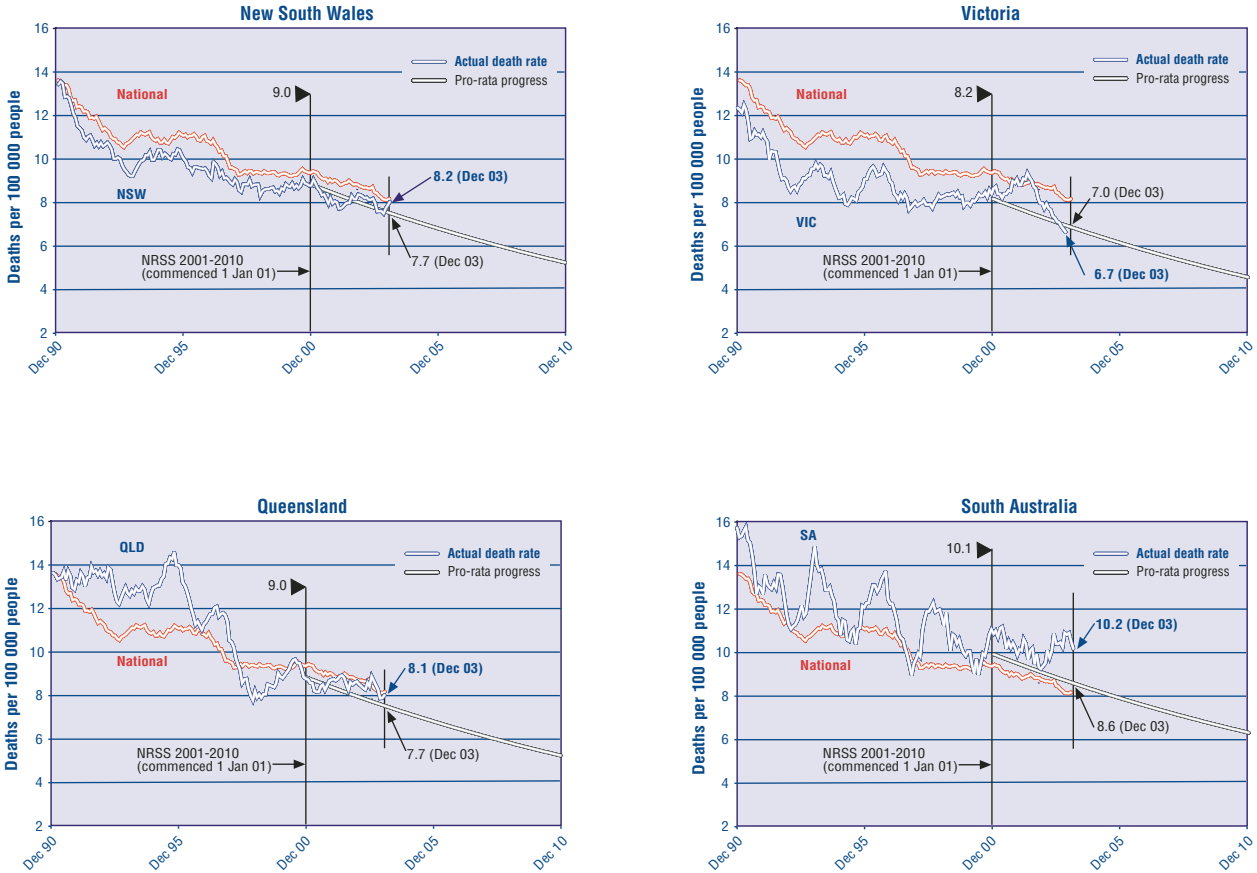
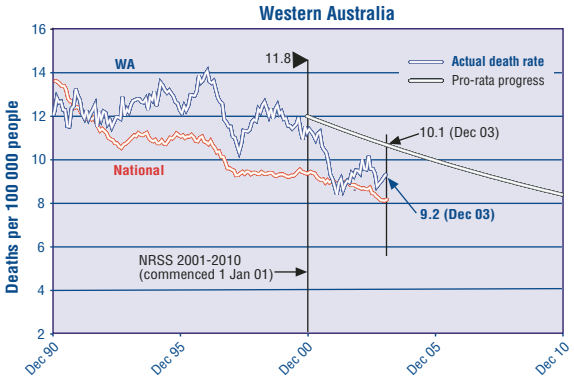
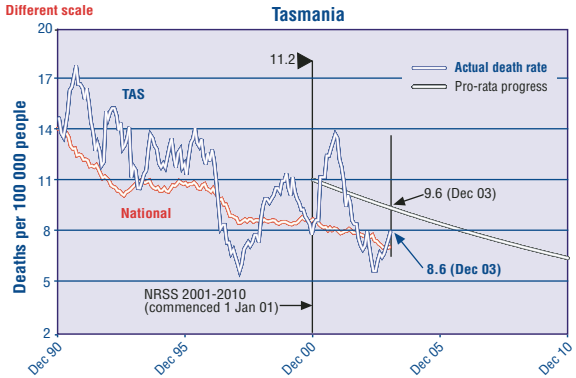
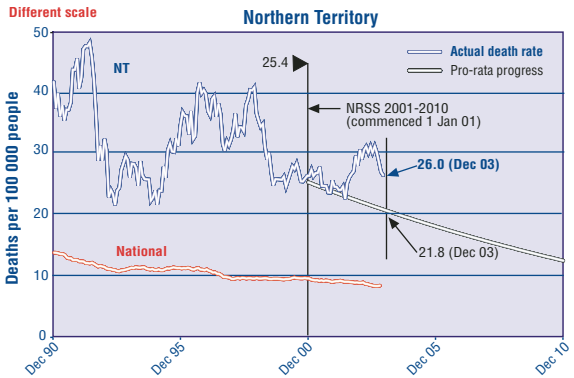
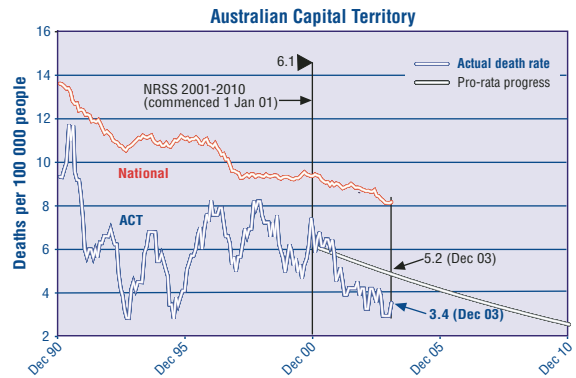


Figure 14 shows the performance of each jurisdiction. Although the National Road Safety Strategy involves a commitment to an overall national target by 2010 (not necessarily an equivalent progress target for each jurisdiction), the eight jurisdictional graphs have been generated assuming a uniform 40 per cent pro-rata reduction for each jurisdiction. The graphs are therefore indicative of performance of jurisdictions relative to overall national performance and to each other, but do not represent performance against a commitment to a specific target by each jurisdiction.









Notes:

1. The straight sloping line represents uniform progress towards a 40 per cent reduction by 2010.
2. 'Dec' refers to data as at 31 December.

Source: Australian Transport Safety Bureau

7

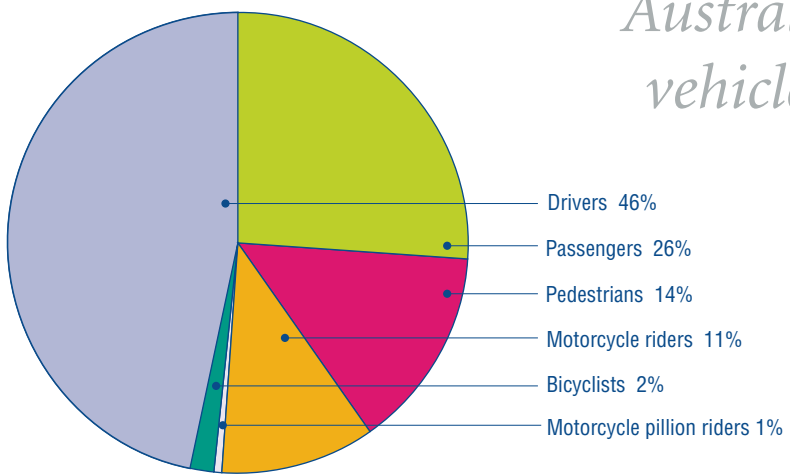
safety performance of australian road users

Safety performance of road user groups

Over 70 per cent of the 1 634 road deaths in 2003 were occupants of vehicles (figure 15). Pedestrian deaths constituted half the remaining deaths, and a combination of motorcyclist and bicyclist deaths comprised the other half.

Over 70 per cent of road deaths in Australia are motor vehicle occupants.

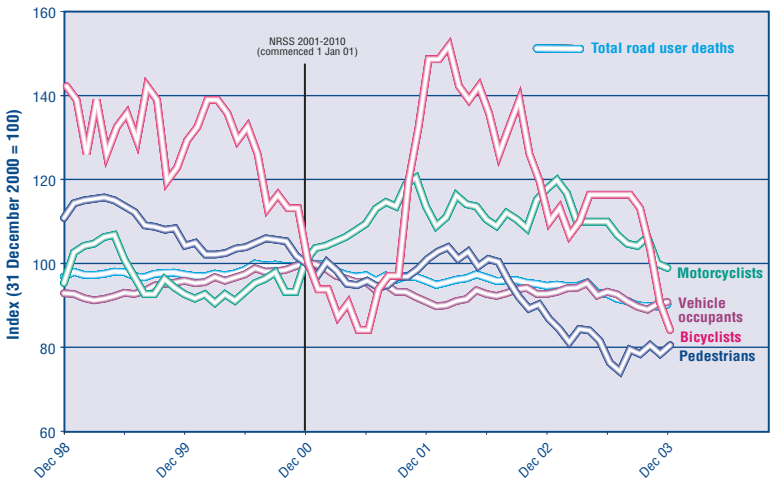
FIGURE 15:
Road crash deaths by road user, 2003



Source: Australian Transport Safety Bureau

Figure 16 shows trends in road crash deaths by road user, indexed relative to the date of implementation of the National Road Safety Strategy 2001–2010.

FIGURE 16:
Index of road crash deaths by road user, using a moving 12-month total[a]



a. Each point represents the index of the number of deaths in the preceding 12 months, with 31 December 2000 = 100. 'Dec' refers to data as at 31 December.

Source: Australian Transport Safety Bureau

(As at 31 December 2003, average monthly deaths over the preceding 12 months were: vehicle occupants = 99, pedestrians = 19, motorcyclists = 16, bicyclists = 2).

Using road deaths at 31 December 2000 (the day preceding the implementation date of the National Road Safety Strategy) as an index equal to 100, figure 16 indicates that, by the end of 2003, total road deaths had fallen by 10 per cent.

Disaggregated into the separate road user categories:

- vehicle occupant deaths had fallen by 9 per cent
- pedestrian deaths had fallen by 20 per cent
- motorcyclist deaths had fallen by 2 per cent
- bicyclist deaths had fallen by 16 per cent.

Vehicle occupant deaths represent over 70 per cent of total road deaths and consequently direct the course of the total deaths line in figure 16.

Because bicyclist deaths are low (averaging 2 per month during 2003), even a change of one death in this category will tend to make the bicycle index vary significantly.

Road crash death rates by gender

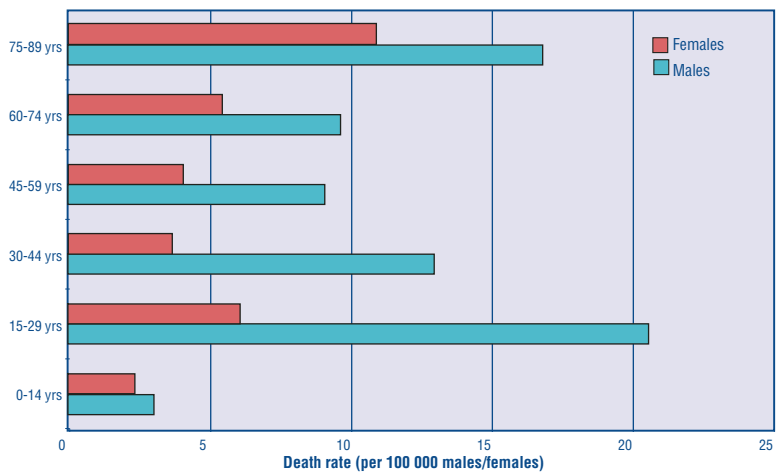
The road crash death rates in figures 17 and 18 are calculated using 2003 data for each age group/age and gender against the population per 100 000 within each age group/age and gender. For instance, the death rate for males in the 15–29 years age group in figure 17 was calculated using the number of 15–29 year old males killed as a result of road crashes in 2003, and the Australian Bureau of Statistics population estimate for 15–29 year old males in 2003. The figures includes deaths in all road user groups.

The demographic differences reflect age and gender differences in risk-taking behaviour; differences in the amount of travel and mode of travel (car, bus, motorcycle, walking); and the physical frailty of older road users.

In 2003, the overall male road death rate was almost two and a half times that of females. Figure 17 shows that death rates for males were higher than those for females in all age groups. The male and female death rates are similar in the under 15 age group; however, after persons are of an age to legally drive vehicles, the male death rate soars.

A male in Australia is two and a half times more likely to be killed in a road crash than a female.

FIGURE 17:
Road crash death rate per 100 000 males/females by gender and age group, 2003



Source: Australian Transport Safety Bureau and Australian Bureau of Statistics

The death rate is particularly high for young males in the 15–29 year age group.

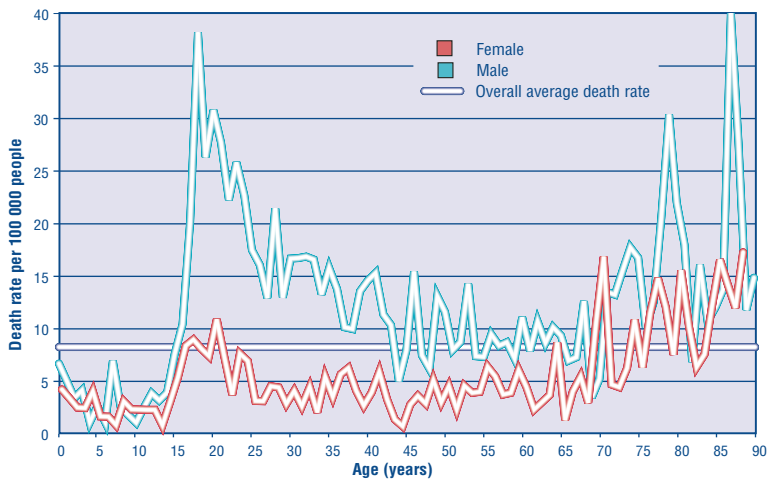
The female death rate is highest in the 75–89 year age group, and this age group also registers the second highest male death rate. Two things in particular must be remembered when considering the high elderly death rate. Firstly, the male population in the 75–89 year age group is less than a quarter of that for the 15–29 year age group, while the equivalent elderly female population is a third of its 15–29 year age group. Secondly, a relatively minor road crash which, to a young person, might cause no more than a few bruises, can be lethal to the frail or vulnerable elderly person. For the elderly, driving remains a critical aspect of mobility and independence beyond the home.

Figure 18 shows the 2003 death rate per 100 000 of the male and female populations on the basis of the ages of those killed. The figure also incorporates a straight line indicating the overall Australia-wide death rate of 8.2 for 2003.

The death rate for young males peaks at 17 years of age, and then decreases and begins to level out at about 30 years of age. There is a further reduction in the male death rate between 55 and 70 years of age, after which it begins to climb again.

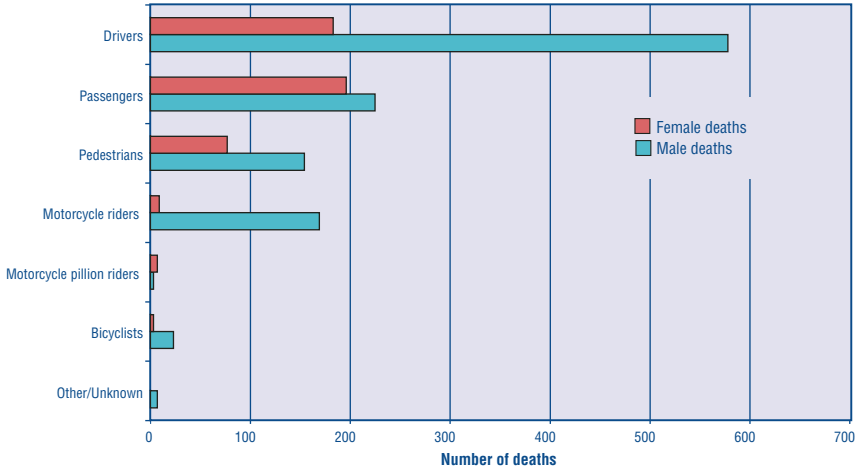
The death rate for females remains mostly below the national average until about 70 years of age. The female peak at 20 years of age is similar to the male death rate at 60 years; that is, during a period when the death rate for males of driving age is at its lowest.

FIGURE 18:
Road crash death rate per 100 000 males/females by gender and age, 2003



Source: Australian Transport Safety Bureau

FIGURE 19:
Road crash deaths by road user and gender, 2003



Source: Australian Transport Safety Bureau

Half the male road crash deaths in 2003 were vehicle drivers.

In 2003, half the male deaths were vehicle drivers, and male drivers represented 35 per cent of total male and female deaths. Thirty-nine per cent of female deaths were vehicle drivers, and female drivers represented 11 per cent of total deaths.

A comparison of male and female road crash deaths within the different road user categories (figure 19) shows that:

- three times more male than female drivers were killed
- male pedestrians killed were twice the number of female pedestrians killed
- nineteen times more male than female motorcycle riders were killed
- eight times more male than female bicyclists were killed.

Passenger numbers killed were very similar for both genders, and female motorcycle pillion passenger deaths exceeded their male counterparts by a factor of two. The Other/Unknown category includes road users such as wheelchair users and skateboard riders.

The road crash death rate for 18 year old males is 37.8 per 100 000 males in that age group – over four and a half times the Australian average rate of 8.2.

8 what's different about the Christmas holiday period?

Road deaths during the Christmas/New Year holiday period

The Christmas/New Year holiday period has traditionally been associated with a public perception of increased danger on Australian roads. Police enforcement and road safety education are heightened and fatal road crashes are usually given increased attention by the media.

Each year between 58 and 77 people die on the roads during the Christmas/New Year Holiday period (table 5). Deaths during the five Christmas/New Year holiday periods to 2003–04 averaged 4.2 per cent of total annual deaths.

Figure 20 shows that fatal crashes occur at much the same rate throughout the year. From 1999 to 2003, an average of 4.8 people died each day during the holiday period and an average of 4.7 people died each day during the non-holiday period.

Table 5:
Road deaths during the Christmas/New Year holiday period, 1999–2000 to 2003–2004

Year	*NSW*	*VIC*	*QLD*	*SA*	*WA*	*TAS*	*NT*	*ACT*	*Australia*
1999/00	23	19	14	5	5	2	3	4	75
2000/01	38	12	9	5	5	5	0	1	75
2001/02	22	15	10	4	4	0	3	0	58
2002/03	16	20	11	12	6	1	1	0	67
2003/04	22	17	19	8	4	4	3	0	77

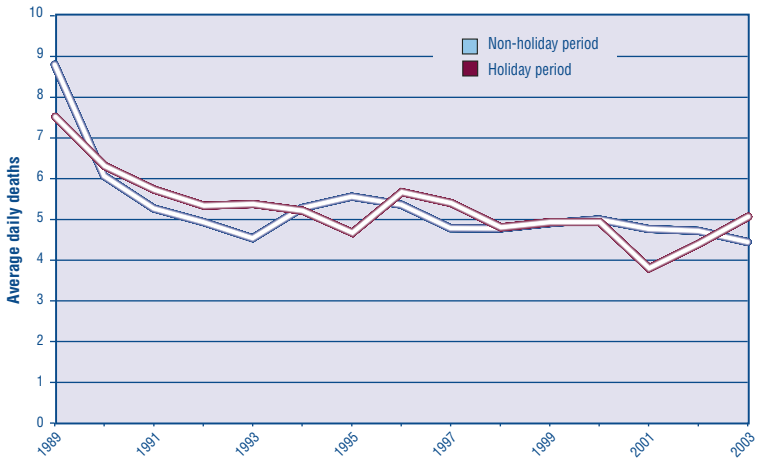
Source: Australian Transport Safety Bureau

What is the official holiday period?

The official Christmas/New Year holiday road crash reporting period lasts for 15 days.

It extends from 00:01 am on the Friday before 25 December to 11:59 pm on the Friday after (or on) 1 January. This reporting period is accepted by all policing jurisdictions.

FIGURE 20:
Average daily road deaths during the Christmas/New Year holiday period and the remainder of the year, 1989 to 2003



Source: Australian Transport Safety Bureau

The average number of people who die on the roads each day during the Christmas/New Year holiday period is the same as at other times of the year.

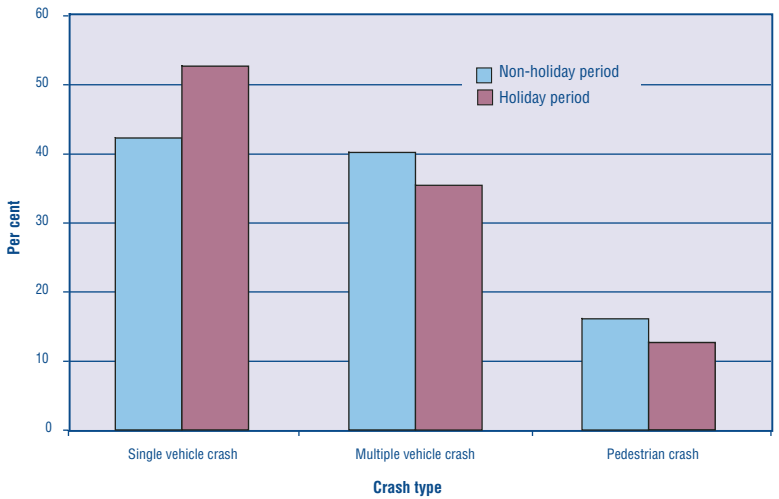
Crash characteristics

Crash type

Figure 21 shows that during the holiday period, compared with the non-holiday period:

- there was a higher proportion of single vehicle crashes (52 per cent compared with 43 per cent)
- there was a slightly lower proportion of multiple vehicle crashes (35 per cent compared with 40 per cent)
- there were fewer pedestrian crashes (13 per cent compared with 17 per cent).

FIGURE 21:
Percentage of fatal crashes by crash type, combined 2001–02, 2002–03 and 2003–04 holiday periods and remainder of the 2001, 2002 and 2003 calendar years



Source: Australian Transport Safety Bureau

Speed limit at crash zone

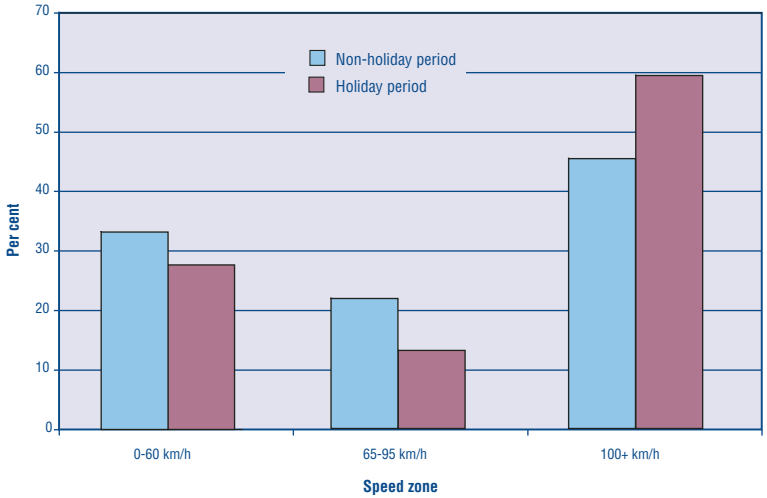
Figure 22 shows that during the holiday period, compared with the non-holiday period:

- a higher proportion of crashes occurred on roads with speed limits of 100 km/h and above (59 per cent compared with 45 per cent)
- fewer crashes occurred in speed zones up to 60 km/h (28 per cent compared with 33 per cent).

Location of crashes

More fatal crashes occur outside urban areas during the Christmas/New Year holiday period. As figure 23 shows, 60 per cent of fatal crashes in New South Wales and Queensland during the combined 2000–01, 2001–02 and 2002–03 holiday periods occurred in rural areas, compared with 43 per cent during the non-holiday period.

FIGURE 22:
Per cent of fatal crashes by speed limit at crash zone, combined 2001–02, 2002–03 and 2003–04 holiday periods and remainder of the 2001, 2002 and 2003 calendar years

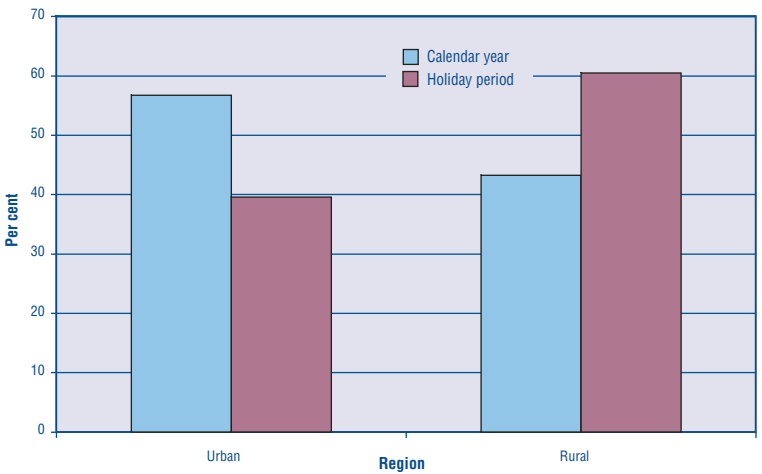


Source: Australian Transport Safety Bureau

New South Wales and Queensland are used as an example due to their compatible definitions of urban and rural areas. A similar trend is evident in Victoria, where 63 per cent of crashes during the 2000–01, 2001–02 and 2002–03 holiday periods occurred outside metropolitan areas compared with 52 per cent during the 2002 calendar year. However, in Victoria this difference was not found to be statistically significant.

All remaining states and territories showed similar trends or no difference between the periods, with the exception of South Australia, where metropolitan crashes actually increased during the holiday period. The relatively low numbers of crashes in these states and territories make meaningful analysis difficult.

FIGURE 23:
Fatal crashes by region, New South Wales and Queensland, combined 2000–01, 2001–02 and 2002–03 holiday periods and 2002 calendar year



Source: Australian Transport Safety Bureau

Heavy truck involvement

During 2000–01, 2001–02 and 2002–03, only 4 per cent of holiday period crashes involved articulated trucks, as opposed to 11 per cent of non-holiday period crashes. State and territory data suggest a similar trend: heavy trucks (articulated trucks and heavy rigid trucks) were involved in only 8.6 per cent of holiday period crashes during the same three years as opposed to 17.4 per cent of non-holiday crashes during the 2002 calendar year. Reduced commercial traffic during the holiday period probably explains the trend.

Road user characteristics

Figure 24 shows that during the holiday periods, compared with the remainder of the calendar years:

- there were fewer pedestrian deaths (11 per cent compared with 15 per cent)
- the incidence of passenger deaths was similar (24 per cent compared with 27 per cent)
- there were no significant differences in the incidence of motorcyclist or bicyclist deaths.

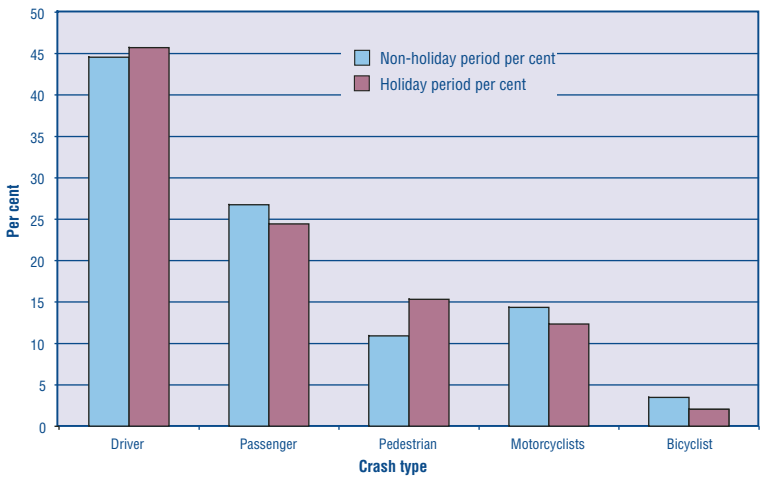
There were no significant differences in the age and gender of fatally injured road users compared with the non-holiday period and there was no evidence of different rates of seat belt use among people fatally injured in crashes between each period.

Fatal crashes in rural areas

The place of usual residence for the majority of drivers involved in fatal crashes occurring in rural areas is rural for both periods. Figure 25 shows that across most states and territories (data on drivers' usual place of residence were unavailable for Queensland), the usual place of residence for 60 per cent of drivers involved in fatal rural crashes occurring within the holiday period was outside metropolitan areas (most of this 'other' category would be rural residents), compared with about 75 per cent during the calendar year.

A greater proportion of metropolitan or urban drivers were involved in rural crashes during the holiday period. Thirty per cent of drivers involved in fatal crashes occurring in rural areas during the holiday period were from a metropolitan area, compared with 17 per cent during the non-holiday period.

Figure 24:
Road fatalities by type of road user, combined 2001–02, 2002–03 and 2004–04 holiday periods and remainder of the 2001, 2002 and 2003 calendar years



Source: Australian Transport Safety Bureau

Factors contributing to crashes

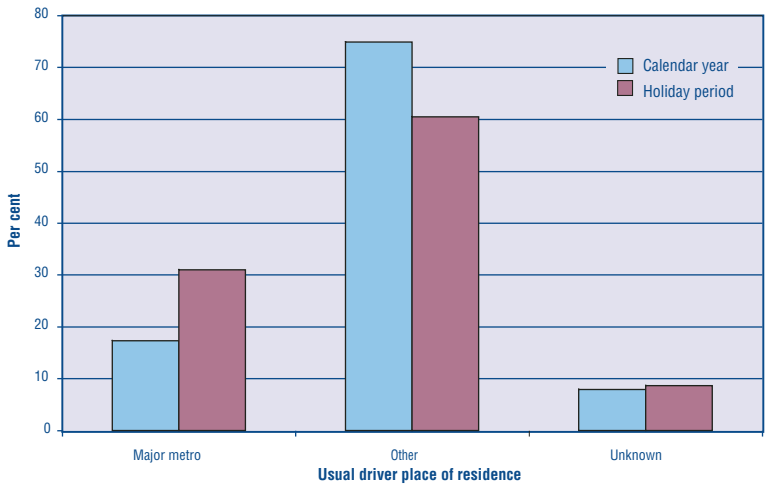
Figure 26 shows that the factors involved in fatal crashes during the holiday period are similar to those in the remainder of the year. The major difference is in the greater proportion of fatigue-related crashes during the holiday period.

Fatigue

During the holiday period fatigue was involved in 15 per cent of fatal crashes compared with 9 per cent during the non-holiday period. This difference was found to be statistically significant.

The contribution of fatigue to fatal crashes is difficult to determine. It is widely accepted that, because of lack of direct forensic evidence, crash reports underestimate fatigue as a causal factor.

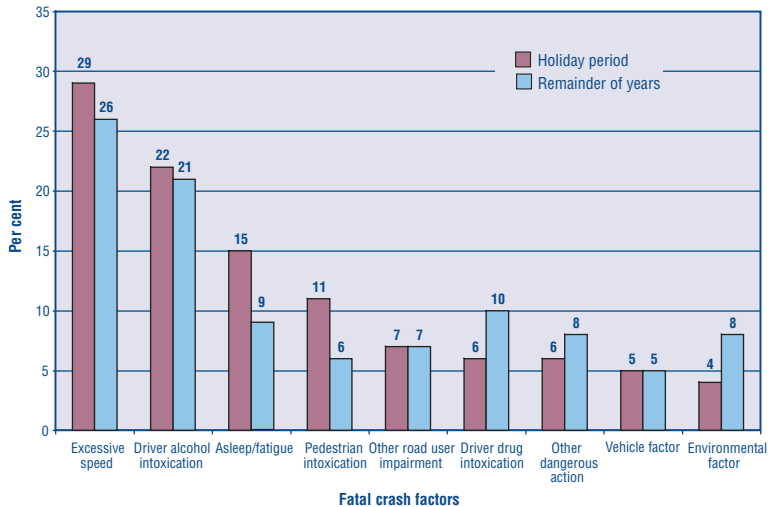
FIGURE 25:
Drivers involved in fatal rural crashes by usual place of residence, Australian states territories, excluding Queensland, Christmas/New Year holiday periods 2000 to 2003 and 2002 calendar year



The definition of 'rural' may differ among states/territories. The graph should therefore be viewed as indicative rather than as definitive. 'Other' may include some interstate and international drivers.

Source: Australian Transport Safety Bureau

FIGURE 26:
Percentage of factors involved in fatal crashes, Christmas/New Year holiday period, compared with remainder of the year, 1997 to 1999



Crashes are recorded in the ATSB database as having up to three causal factors. Categories are not mutually exclusive and the total of all factors will not equal 100 per cent.

Source: Australian Transport Safety Bureau

The numbers provided should only be used as an indicator of the differences between the two periods rather than an absolute indicator of the number of fatigue crashes. The number of fatigue-related crashes in both periods is likely to be greater than recorded.

Excessive speed

Figure 26 shows that ATSB data indicate excessive speed was a factor in around 29 per cent of fatal crashes occurring during the holiday period. This was higher than the number of speed-related crashes identified in the non-holiday period (26 per cent); however, this was not found to be statistically significant.

Due to the role of excessive speed in crash severity and the difficulty in identifying low-range speeding, data need to be interpreted carefully and treated as an indicator rather than as quantitatively accurate.

Driver/rider intoxication

Figure 26 shows an increase between the number of crashes involving driver/rider alcohol intoxication during the holiday period compared with the remainder of the year. Figure 26 also shows driver and rider drug/drug and alcohol intoxication decreased during the holiday period. Neither difference was found to be statistically significant, even though the sale of alcohol is high during the holiday period. This provides some indirect evidence of the efficacy of heightened drink driving enforcement measures over the holiday period.

Pedestrian intoxication

Crashes involving pedestrian intoxication were higher during the holiday period. Figure 26 shows that 11 per cent of crashes involved pedestrian intoxication during the holiday period compared with 6 per cent during the non-holiday period. This increase is statistically significant. This may be reflecting the fact that there is increased alcohol use during the period and road safety measures targeting pedestrians are not as heightened as those targeting other road users.

Overall assessment

There is clearly no significant difference in the daily death rate between the holiday period and the non-holiday periods. The number of deaths during the holiday period has followed a similar trend to that of the non-holiday periods. However, what cannot be known is the 'counterfactual' of how much worse the holiday death rate would be if additional enforcement and fatigue reduction measures were not implemented. The data provide some support for similar road safety measures being effective during both periods.

The data also indicate there are some differences between the characteristics of crashes occurring during the holiday period and the remainder of the year.

There was:

- an increase in the number of fatigue-related crashes, single-vehicle crashes and crashes occurring on roads with speed limits of 100 km/h and above
- a lower number of heavy trucks involved in fatal crashes, and
- a significant increase in the number of metropolitan drivers involved in fatal crashes in rural areas.

Despite these differences, the daily average fatality rates do not diverge significantly. This suggests there is likely to be a change in the pattern of road use and risk factors during the Christmas/New Year holiday period. For example, while there are increases in private travel and travel in unfamiliar surrounds during the holiday period, there is a decrease in commuter travel and heavy vehicle travel as well as a greater public awareness of enforcement.

However, too much should not be made of these different characteristics. The analysis shows that the real problem areas for road safety are essentially the same during both periods. The major causal factors of fatal crashes during both the holiday period and the remainder of the year are:

- excessive speed
- driver and rider alcohol intoxication, and
- fatigue.

How to be safer on the roads during the holiday period

Plan your trip

Planning your trip is a good way to reduce your chance of experiencing fatigue. How far will you have to drive? Where will you rest along the way? Can you do it in one day or should you stop overnight? Can you share the driving?

Make sure you are well rested

The holiday period is a time for celebration, but if you have to drive in the morning, make sure that you are well rested. Alcohol can still affect you the next day by contributing to fatigue.

When celebrating, plan how you will get home

A high proportion of fatal crashes involve drunk drivers or drunk pedestrians. If you are going to drink, make sure you get a lift home with a sober designated driver or catch a taxi.

Road crashes don't take holidays!

The major crash causal factors during the holiday period are the same as the rest of the year: speed, alcohol intoxication and fatigue.