



**INJURY MEASUREMENTS**

Refer to the information sheet "How the tests are done"

	Offset Crash Test at 64km/h		Side Impact Crash Test at 50km/h
	Driver	Passn	Driver
Head HIC	456	209	75
Acceleration (g for 3ms)	52	34.1	38.9
Neck - Shear (kN)	0.37	0.64	-
Tension (kN)	1.91	0.94	-
Extension (Nm)	24	23.13	-
Chest Accn (g for 3ms)	43	5.6	-
Compression (mm)	36.4	29.7	27.393
Viscous criterion (m/s)	0.28	0.24	0.395
Abdomen - Force (kN)	-	-	0.601
Pelvis - Force (kN)	-	-	1.19
Upper legs Force - Left (kN)	-	-	1.1
(kN) - Right	-	-	2.02
Knee displacement - Left (mm)	-	-	3.21
- Right	-	-	3.54
Lower legs Force Left (kN)	-	-	1.32
(kN) - Right	-	-	1.3
Index (Upper/Low) - Left	0.8/0.77	0.8/0.29	-
- Right	0.4/0.44	0.2/0.35	-



# Motorcycling Road Safety Strategy 2005-2010

**The South Australian Road Safety Strategy 2003-2010**





# Reducing Road Trauma for Motorcyclists ...

## SA Motorcycling Road Safety Strategy 2005 – 2010



On a per kilometre travelled basis, motorcycle riders are 30 times more likely to be killed on our roads

Nine out of ten riders killed or seriously injured are male

More than one quarter of riders who die in motorcycle crashes have blood alcohol levels greater than the legal limit

Australia's National Road Safety Strategy 2001-2010 aims to dramatically reduce death and injury on Australian roads. The National Strategy has set the target of a 40% reduction in the fatality rate by the end of 2010. The South Australian Strategic Plan reflects this target.

Motorcycle riders are especially at risk – on a per kilometre travelled basis, they are **30 times more likely to be killed** on our roads! Riders younger than 40 are at even greater risk. The trend in fatalities suggests that motorcycling safety is lagging behind improvements for other road users. And compared with overseas countries, Australia's motorcycle safety record is poor – we have nearly twice the fatality rate of other OECD countries.

The South Australian Road Safety Strategy 2003-2010, released in September 2003, outlined a series of directions for this State to achieve the national target of a reduction in fatalities and serious injuries which is expected to come from the following measures:

- **SAFER ROADS** — improving roads and roadsides and addressing issues at specific locations
- **SAFER PEOPLE** — ensuring road users have the necessary attitude and skills; ensuring compliance with legislation (in particular, speeding, drink driving and non-use of restraints); and educating all road users
- **SAFER VEHICLES** — promoting new vehicle safety standards and technology

Motorcyclists and their pillion passengers are especially vulnerable in crashes. The only protection available to motorcyclists is the helmet; as a consequence, the severity of crashes is greater.

The South Australian Motorcycling Road Safety Strategy has been developed in conjunction with the Motorcycle Task Force to provide a coordinated approach to motorcycle safety in order to reduce the incidence and severity of motorcycle crashes on our roads.

This strategy sets out the goals for improving motorcycle safety in South Australia for the period 2005 – 2010 and has assigned priorities to the various initiatives.

All motorcyclists and other road users have a vital part to play – it is only by South Australians working together that we can improve road safety and save lives.

Hon Patrick Conlon MP  
Minister for Transport

# What are the Trends in Motorcycle Crashes?

## Motorcyclists have a higher risk of death or serious injury than other road users.

Using figures from 1998 to 2000 (the latest national figures available), a study by the Australian Transport Safety Bureau (ATSB) found that, for every 100 million kilometres travelled by motorcycle riders in Australia, there were 14.9 fatalities. This is nearly 30 times the number recorded by operators of other vehicle types (0.5 fatalities per 100 million kilometres travelled).

This ratio is higher for younger riders. Motorcycle riders under 40 are 36 times more likely to be killed than operators of the same age driving other vehicles on a per kilometre basis whereas those aged 40 years and over are around 20 times more likely to be killed (see also Age of Riders, page 4).

### Is motorcycling becoming safer?

The ATSB study found that the rate of motorcycle rider fatalities per 100 million kilometres travelled had increased among all age groups:

- The largest increase in the fatality rate was in the 26–39 age group (57%)
- The smallest increase was among riders aged 40 and over (15%)

### Is the popularity of motorcycling increasing?

ATSB found that the popularity of motorcycle riding appeared to be growing, following a decrease in the late 1980s, with the number of registered motorcycles Australia-wide increasing by 24% between 1991 and 2001. However, South Australia has yet to experience this increase. In fact the number of motorcycles registered had fallen from 31 445 in 1991 to 26 320 in 2004, a 16.3% decrease. [Source: DTUP Annual Report 2003/04]

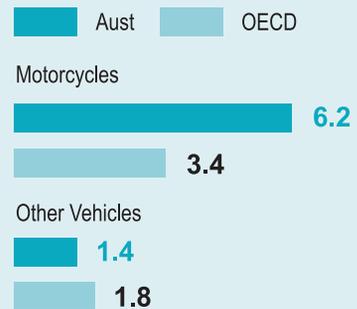
## Fatalities per 100 million vehicle kilometres travelled, 1998 – 2000

(Source – Motorcycle Safety, Monograph 12, ATSB, October 2002)

Age	Riders	Other Operators
17-25	47.0	1.3
26-39	14.5	0.4
40+	7.7	0.4
All ages	14.9	0.5

### International Comparison

#### Fatalities per 10 000 registered vehicles

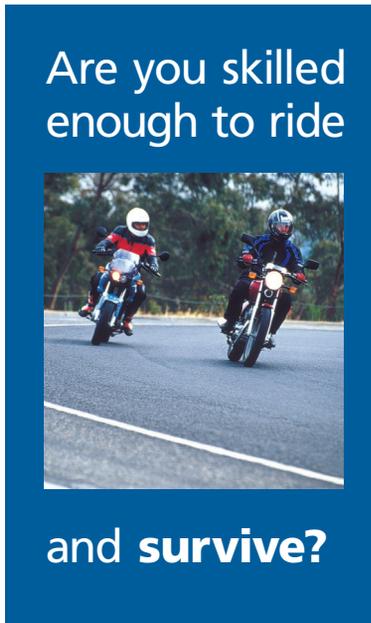


Source: ATSB Road Safety in Australia, p186

Compared to other OECD nations Australia's motorcycle fatality rate is high. In 2001 (the most recent year for which international data is available) there were 6.2 deaths per 10 000 registered motorcycles compared with an OECD median of 3.4.

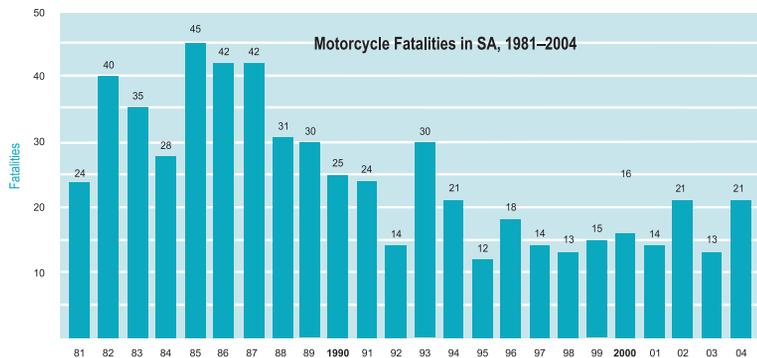
This difference is quite significant given that Australia's overall fatality rate ranks favourably when compared internationally. For example, in 2001 there were 1.4 fatalities per 10 000 registered vehicles in Australia compared with the OECD median of 1.8.

# What are the Trends in Motorcycle Crashes?



## Motorcyclist fatalities in South Australia

From 1990 to 2004, 271 motorcyclists were killed in South Australia. There was a fall in fatalities following the introduction of the RiderSafe Program in 1987 and the lowest number of annual motorcyclist fatalities recorded was 12 in 1995. The 2002 and 2004 totals of 21 fatalities each were unusually high compared to the previous five years.



While crashes involving motorcycles have generally trended downward in South Australia since the 1980s, motorcyclists remain over represented in fatal and serious casualty crashes. Australian Bureau of Statistics figures show that motorcycles account for less than 1% of all vehicle travel in South Australia but 10% of all fatalities and serious casualties are motorcycle riders or pillion passengers.

South Australia has one of the highest fatality rates compared with other states and territories; it is nearly one and half times the national average and is exceeded only by Tasmania.

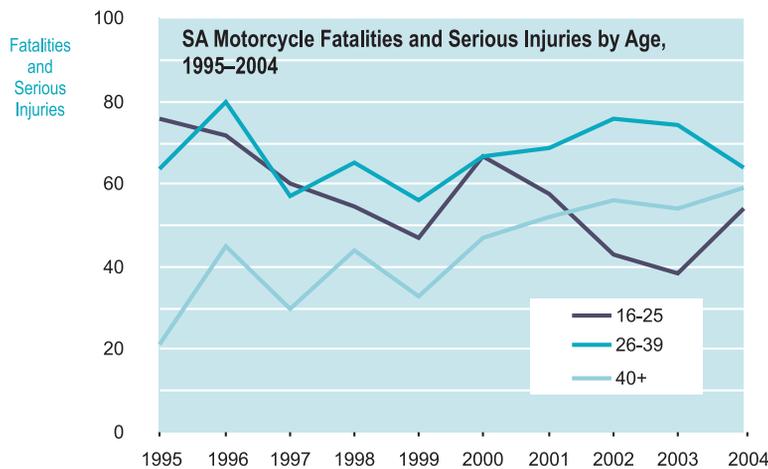


# Who's involved in Motorcycle Crashes?

## Age of riders

Between 1995 and 2004 the total number of fatalities and serious injuries among motorcycle riders in South Australia remained steady: in 1995 there were 187 fatalities and serious injuries while in 2004 there were 188. Within each age group the following trends can be seen:

- Riders 16 to 25 years showed a decrease from 76 to 54
- Riders 26 to 39 years remained steady, averaging around 67
- Riders 40 years and over showed a significant upward trend, nearly tripling from 21 to 59



The proportion of fatalities and serious injuries among motorcycle riders aged 40 years and over has grown from 13% in 1995 to 33% in 2004. ATSB suggests that part of this increase is due to the increase in motorcycle riding by people of this age, a result of both an increase in the general population of people aged 40 years and above and an increase in the popularity of motorcycle riding among this age group. This suggests that older rather than younger riders may present a greater challenge for road safety strategies.

ATSB notes that nationally there are fewer younger riders riding fewer kilometres per annum relative to riders aged over 25 years. As a result, the exposure risk of younger riders has fallen steadily over the last decade and their crash involvement has fallen proportionally. However, younger riders are still at a significantly higher risk of fatal or serious injury than older riders on a per kilometre travelled basis.

## A Snapshot of SA Motorcycle Crashes

Over the 5-year period 2000-2004 there was an average of 183 motorcyclists killed or seriously injured each year.

- **91%** were male
- **27%** of motorcyclists killed had a blood alcohol level of .05 or above when tested
- **54%** of deaths and serious injuries occurred in the metropolitan area of Adelaide
- **29%** occurred on roads sign-posted at 100 km/h or more
- **4%** of those killed and **3%** of those seriously injured had not been wearing a helmet
- **37%** of deaths and serious injuries occurred on a Saturday or a Sunday
- **24%** of deaths and serious injuries resulted from motorcyclists hitting fixed objects on roadsides

# Who's involved in Motorcycle Crashes?



**Motorcycle riders and pillion passengers as a percentage of all road fatalities by state, 2004**

South Australia	15%
Victoria	11%
NSW	11%
Queensland	15%
Western Australia	13%

An analysis of motorcycle crashes in South Australia over the five years from 2000 to 2004 reveals the following:

- **Gender of riders**

The overwhelming majority of those killed or seriously injured in motorcycle crashes are male – 91% – compared to 57% of those killed or seriously injured in car crashes.

- **Licence status**

5% of riders killed or seriously injured in road crashes held a learner's permit and 5% held a provisional licence compared to car drivers where 1% held a learner's permit and 15% held a provisional licence.

Unlicensed riders (never had a licence; licence lapsed or disqualified) accounted for 8% of all riders killed and 6% of all riders seriously injured. This is noticeably higher than for car drivers where only 1% of those killed or seriously injured were known to be unlicensed.

- **Pillion Passengers**

56% of pillion passengers killed or seriously injured are female. The ratio of fatalities to serious injuries for riders travelling alone was 1 in 32 but the ratio of fatalities to serious injuries for riders carrying a pillion passenger was 1 in 17.

The presence of a pillion passenger approximately doubled the risk of a fatality – contributing factors include:

- the potential of the passenger to distract the rider or affect machine handling
- the greater likelihood that the rider will be pinned to the motorcycle by the passenger rather than being thrown clear
- the higher centre of gravity with two people on the bike

The number of killed or injured riders carrying pillion passengers was consistent across all ages.

Currently learner riders are not permitted to carry a pillion passenger unless the passenger holds a current full motorcycle licence (which therefore excludes passengers who only hold a provisional licence). P plate riders are permitted to carry a pillion passenger.

# What do we know about Motorcycle Crashes?

Investigations and analysis have shed some light on the contribution of various factors to the likelihood and severity of crashes involving motorcyclists and has shaped the strategies which follow. Riders of motorcycles need to be highly skilled and extremely aware, and know the capabilities and limitations of their machines.

## Roads

The condition of the road surface is of greater significance for motorcyclists than other road users. Design features such as adverse camber and pavement maintenance practices can increase the risk to motorcyclists.

Motorcyclists will also benefit from other road safety initiatives such as shoulder sealing, Black Spot programs, and the removal of or protection from hazardous objects on or near the roadside.

## People

Riders were deemed by Police to be responsible for or at fault in more than two-thirds of serious crashes involving motorcycles.

### • Skills, training and licensing of motorcyclists

**45% of serious casualty crashes for motorcyclists are single vehicle crashes**

Most single vehicle motorcycle crashes appear to be caused by the rider losing control of the machine and falling off or hitting a fixed object.

### • Attitude and behaviour of motorcyclists and other road users

**55% of serious casualty crashes involve another vehicle and in 57% of these crashes the motorcyclist was not at fault**

A significant number of riders killed or seriously injured in crashes were involved in risk-taking behaviour – 27% of riders killed were over the legal BAC limit, 4% were speeding or riding too fast for the conditions, and 8% were unlicensed or inappropriately licensed.

## Vehicles

In the event of a crash, motorcyclists are significantly more vulnerable to death or serious injury than motor vehicle occupants. With the exception of a helmet, they do not have any personal protection. While this does not alter the likelihood of having a crash, it does increase the severity of the outcome.



# Safer Roads ...

## Construction, upgrading, maintenance

The aim of these strategies is to ensure that the safety of motorcycle riders is considered in the design and maintenance of roads and the implementation of traffic management plans.

The condition of the road surface is important for motorcyclists – pot-holes, crumbling pavement edges, loose gravel and even leaves can present significant problems for riders.

### **Apply the Austroads “Guide to Traffic Engineering Practice: Motorcycle Safety” (Part 15) in State and local government road designs**

- Raise awareness of road traffic engineers of the special needs of motorcycle riders in relation to road design and maintenance
- Recognise that the road surface is critical to the safety of motorcyclists and the control of their vehicles
- Recognise that roadside furniture such as pavement bars (yellow bricks) can be hazardous to motorcyclists
- Ensure that landscaping and central island treatments not block visibility to motorcyclists and that appropriate sight lines are required in road design
- Acknowledge that delineation, signing and lighting of roads are important for motorcyclists
- Continue the practice of shoulder sealing of roads to reduce run off road crashes

**Priority: High**

### **Ensure plans for new and existing road infrastructure are audited for motorcycle safety aspects**

- Continue to monitor road maintenance performance to ensure that bitumen road edge breaks, shoulder drop-offs and pot-holes do not exceed Maximum Defective Criteria
- Continue to seal shoulders on all new roads and on all existing roads where appropriate, especially on highly frequented motorcycle roads, and especially on left hand corners
- Ensure that all pavements in South Australia are safety inspected on a regular basis or when major works and upgrading are implemented
- Explore the practice for the sealing (for at least 5 metres) of unsealed roads and driveways that encroach onto highly frequented motorcycle roads to prevent the spread of gravel

**Priority: Medium**

### **Expand the use of high skid resistant water-based pavement markings on all State controlled roads to reduce the danger to motorcycle riders**

- Review the use of thermoplastic road markings which have low skid resistant properties
- Implement auditing strategies to monitor road marking contractors for compliance with minimum skid resistance standards
- Encourage Local Government authorities to be aware of these minimum skid resistance standards that also apply to Council roads
- Review crack sealing practices, especially in the Adelaide Hills

**Priority: Medium**

# Safer Roads ...

## Construction, upgrading, maintenance

### **Upgrade the investigation and reporting of sites of motorcycle fatality and serious injury crashes to identify contributing factors and ensure remedial action is taken where appropriate**

- Investigate the positioning of dangerous road side objects including trees and power poles close to the road verge
- Review the use of selected infrastructure treatments which may affect motorcyclists
- Review the use of applying painted signs and symbols on the carriageway, eg, on the approaches to school crossings
- Work with SAPOL to upgrade Police Accident Report forms to include more detailed specific information on motorcycle crashes

**Priority: Low**

### **Establish and recognise motorcycle users as a unique road user group with special needs**

- Continue to analyse crash data to identify sites with above average crash frequency for motorcycle riders and implement changes as necessary
- Ensure motorcyclists' needs are taken into account when investigating the safety of sites with an above average crash frequency for motorcyclists

**Priority: Medium**

### **Promote the 1800 018 313 telephone number for public reporting of gravel, pot-holes, slippery road surfaces (including painted surfaces), shove mounds, and oil and diesel spills on all South Australian roads**

- Ensure there is regular promotion of the 1800 number, especially to the motorcycling community, to allow for the prompt reporting of road conditions that may affect the safety of motorcyclists

**Priority: High**

### **Monitor international and national research to keep abreast of road environmental developments and potential safety impacts for motorcycle riders, including safety barriers**

- Monitor the review of the Austroads "Safety Barriers" (1987) guidelines
- Recognise the requirement for safety barriers to comply with Australian Standard AS3845 (1999)
- Explore the use of double rail W-beam safety barriers in motorcycle highly frequented areas
- Continue to work with safety barrier manufacturers to promote design improvements to enhance safety
- Explore the implementation of more "motorcycle friendly" road side barriers including barriers constructed from used tyres

**Priority: Low**

### **Upgrade roadside rest areas to be more amenable for motorcyclists**

- Provide rest areas with amenities that are motorcyclist-friendly to entice travelling motorcyclists to stop and avoid the hazards of fatigue

**Priority: Low**

# Safer People ...

## Awareness

The aim of these strategies is to raise awareness of motorcycle safety to develop a common understanding and encourage a road sharing attitude amongst all South Australian road users.

### Work with key safety partners to raise awareness of motorcycle safety for all road users

- Address the high risk factors associated with motorcycle crashes through linked public education and enforcement that target drink driving, excessive speed, helmet use, repeat offender behaviour
- Promote a motorcycle awareness campaign focusing on motorcycle safety and especially driver awareness of motorcyclists
- Investigate partnerships with Local Government to ensure a shared approach to motorcycle safety and road management
- Work with the motorcycle community to encourage positive media coverage of motorcycle issues
- Work with retailers to assist in the dissemination of information on safe riding practises
- Monitor research and trials of drug testing for drivers and riders

**Priority: High**

### Ensure the motorcycle community is informed of trends in South Australian crash data

- Ensure State Government road safety statistical publications include adequate coverage of motorcycle crash data
- Distribute the statistical ATSB publication “Road Fatalities, Monthly Bulletin” to interested members of the South Australian motorcycle community on request

**Priority: Low**

### Improve opportunities for meaningful involvement of the South Australian motorcycling community in decision making processes relating to motorcycle safety

- Invite the South Australian motorcycle community to comment on proposed educational and promotional campaigns relating to motorcycles

**Priority: Low**

## Safer People ...

### Legislation, education, enforcement

The aim of these strategies is to improve the skills, attitudes and safety of motorcycle riders.

#### Improve the motorcycle licensing system to ensure that riders are adequately skilled

- Introduce a specific motorcycle learner licence knowledge test (written)
- Require successful completion of a supervised on-road practical assessment prior to issuing a motorcycle learner permit
- Introduce a level three advanced course component to the Ridersafe program for riders coming off their 12 month restricted licence and wishing to go to a motorcycle of greater power than those allowed during the period of restriction
- Permit motorcycle licence holders who have not ridden for some time to access the Ridersafe program to upgrade their skill levels
- Introduce a power to weight ratio of 150 kilowatt per tonne combined with a maximum engine capacity of 660 cubic centimetres for novice riders
- Encourage riders who initially fail the learner requirements of the Ridersafe program to seek extra professional help for remedial action with access to a learner-approved motorcycle and an off-road area in which to practice

**Priority: High**

#### Implement an improved training model to complement the licensing system for motorcycle riders

- Consider raising the standards for the training and assessment of learner riders, including an improved and more stringent pre-learner course to ensure that learner riders are “road-ready” before riding solo on public roads
- Implement an audit process to ensure consistent training and testing standards throughout South Australia
- Provide supporting documentation in the form of learning aids and resources for learner riders to be studied before commencing the Ridersafe program
- Continue to supply, free of charge, a copy of the ATSB video or DVD “Ride On” to all Ridersafe graduates

**Priority: High**

#### Address the incidence of dormant motorcycle licences

- Provide information with all motorcycle licence renewal notices highlighting the risks associated with returning to riding after a break

**Priority: High**

#### Address the increasing crash rate of older riders

- Promote voluntary participation in refresher courses (Ridersafe and advanced off-road) for older riders
- Consider compulsory refresher training courses for licensed riders who are unable to demonstrate that they have ridden regularly within the preceding five year period (should voluntary participation in refresher training courses not have the desired impact on rider crash statistics)

**Priority: High**

# *Safer People ...*

## Legislation, education, enforcement

### **Work with key stakeholders to enhance awareness, knowledge and skill of riders as a vulnerable road user group for all road users**

- Explore partnerships with road safety stakeholders, insurers and the motorcycle community to increase driver awareness of the vulnerability of motorcycle riders

**Priority: Medium**

### **Investigate ways to reduce the number of unlicensed motorcycle riders on South Australian roads**

- Tackle the incidence of unlicensed riding on South Australian roads through targeted enforcement campaigns and conduct regular licence checks at popular motorcycle riding locations

**Priority: High**

### **Promote the wearing of high visibility protective clothing**

- Conduct an awareness campaign outlining the benefits of good protective clothing, helmets and visors
- Promote the reviewing of the appropriate Australian Standard on protective clothing, AS1698 on helmets and visors, to ensure that only articles of good quality are sold to the public
- Include information on Police Accident Report forms regarding the condition of crash victims' helmets and protective clothing, if worn

**Priority: Medium**

### **Raise motorcycle rider awareness of the Adelaide Hills environment**

- Install motorcycle-specific warning signs in areas highly frequented by motorcyclists

**Priority: High**

### **Promote an awareness campaign on the hazards of fatigue**

- Promote the idea that fatigue is the “silent killer” and explore ways to educate riders

**Priority: Low**

## *Safer Vehicles ...*

### Manufacture, maintenance, inspection

The aim of these strategies is to improve the safety of motorcycles.

#### **Encourage targeted on-road enforcement to ensure motorcycle road-worthiness (including checks on carriage of licence)**

- Work with the South Australian Police to coordinate traffic law enforcement activities on a state-wide basis
- Undertake targeted enforcement blitzes linked to an unregistered/uninsured campaign

**Priority: High**

#### **Promote safety as a key consideration when purchasing a motorcycle and associated equipment**

- Encourage partnerships between retailers and motorcycle clubs to promote safety features on motorcycles

**Priority: High**

#### **Raise awareness of the safety benefits of well maintained motorcycles**

- Investigate the use of motorcycle alcohol interlock devices for recidivist riders with a history of BAC offences
- Investigate partnership opportunities with the Motor Trade Association, the Federal Chamber of Automotive Industries and motorcycle clubs, eg, motorcycle maintenance courses

**Priority: Medium**

#### **Support national initiatives and continuous monitoring of the on-road crash performance of individual motorcycle models**

**Priority: Low**

#### **Monitor international and national research to keep abreast of developments in motorcycle technology and safety benefits for motorcycle riders**

**Priority: Low**





## **Government of South Australia**

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Department for Transport,  
Energy and Infrastructure

[www.dtei.sa.gov.au](http://www.dtei.sa.gov.au)

November 2005