

Motorcycle safety



- In Australia, while the overall road toll decreased by 18% from 2000-2009¹, the number of motorcyclist fatalities increased by 17%.² Australia's rate of motorcycling deaths per registered motorcycle is above the international OECD median.³
- In 2010, 1 in 5 road fatalities in Queensland were motorcyclists.⁴
- Motorcycle riders in Australia are 30 times more likely to be killed in a road crash than car occupants.³

State of the Road A Fact Sheet of the Centre for Accident Research & Road Safety - Queensland (CARRS-Q)

THE FACTS

Injuries to motorcyclists can occur from crashes on-road or off-road. The information provided in this fact sheet relates to on-road crashes only, however CARRS-Q acknowledge the importance of protecting off-road riders and are also conducting research in this area. Motorcycle riders and their pillion passengers represent a significant proportion of the road toll, even though motorcycles make up only a small percentage of registered vehicles.

The Australian context

- In 2010, 224 fatalities were motorcyclists.¹
- Motorcycles account for 4.5% of all Australian passenger vehicle registrations and 1.1% of vehicle kilometres travelled. However, motorcycle riders and pillions account for approximately 15% of all road crash deaths and an even higher proportion of serious injuries. Per distance travelled, the Australian rate of motorcyclist deaths is approximately 30 times the rate for car occupants. The corresponding rate for a serious injury is approximately 41 times higher. Similar elevated rates are also found in other developed countries.^{2,3}

The Queensland context

Motorcycle registrations more than doubled between 2001-2010. In comparison, car registrations rose by 35% over the same period.⁶

- In the 12 month period from July 2008 to June 2009, 942 motorcyclists were hospitalised in police reported road crashes.⁴

- During 2010,
 - 50 fatalities were motorcyclists. This represents a 16.7% decrease compared to the previous year's toll, and a 24% decrease from the previous five year average.⁴ This is encouraging following the sharp increase in fatalities for motorcyclists seen in previous years.
 - Motorcycles account for only 4.6% of Queensland vehicle registrations, yet motorcyclists accounted for 20% of the state road toll.^{4,5}

Despite motorcycles accounting for only 4.5% of all Australian passenger vehicle registrations, riders and pillions account for approximately 15% of all road fatalities.

The growth in motorcycling

There have been two major changes that have contributed to the growth in motorcycling: more older riders, and the growth in popularity of mopeds and scooters. While older riders have a lower crash rate than younger riders, the huge growth in the numbers of older riders has increased the number of crashes involving this group.⁷

- Evidence suggests that increasing congestion, the availability of parking, and travel costs are encouraging the purchase of mopeds (up to 50cc) and scooters (over 50cc) for transport. There was a 15-fold increase in moped registrations

in Queensland between 2001 and 2009⁸. Targeted research for mopeds and scooters has found:

- Use of mopeds and scooters increased at faster rate than motorcycles over the last 10 years. They now comprise about 10% of Queensland's powered-two-wheelers.
- The number of reported crashes for mopeds and scooters doubled (from 86 to 177) in Queensland between the 2003/2004 and 2008/2009 financial year.
- Moped riders involved in crashes are more likely to be female than other motorcycle riders (36.3% -v- 7.1%), younger, and hold an interstate (10.8% -v- 1.3%) or overseas licence (7.8% -v- 0.7%).
- Mopeds and scooters have a step-through rather than step-over design, smaller wheels, and while most are small-capacity automatic low speed machines, there are also very large capacity touring scooters.
- Moped crashes more often involve loss of control on a straight road and are more likely to occur in tourist areas, on weekdays and in low speed zones compared to motorcycles.
- Riders of larger (over 50cc) scooters require a motorcycle licence, while mopeds (up to 50cc) can legally be ridden with a car or motorcycle licence in Queensland. Skills and knowledge among moped riders could be improved through training and/or educational programs (none currently required in Queensland).
- Greater use of protective clothing would reduce injury risks for many moped riders.^{8,9}



Who is crashing?

- In Queensland between 2006 and 2010:
 - Riders and pillion passengers aged 17-24 years comprised 24% of motorcyclist fatalities, while those aged 30-39 years comprised 28%, and those aged 40-49 years comprised 19%.
 - The vast majority of motorcycling fatalities were male (96%).
- Younger riders (both new and fully-licensed) have more crashes per kilometre travelled than older riders, indicating that age, as well as experience, is an important factor in motorcycle crashes.

When are they crashing?

- For the period 2006-2010, 43% of motorcyclist fatalities in Queensland occurred on a weekend.⁴
- Fatal motorcycle crashes are more likely to occur between 2-6pm, with a peak on weekends.^{1,3} These facts suggest that a significant proportion of fatal motorcycle crashes are associated with recreational riding.

How are they crashing?

- In Australia, 58% of fatal motorcycle crashes involve another vehicle.
- In multi-vehicle motorcycle crashes, the other vehicle is most often at fault. Commonly, this involves violations of the motorcyclist's right of way, highlighting the importance defensive riding skills and active risk management for riders.
- Single vehicle fatal crashes for motorcyclists are more likely than fatal crashes for other road users to involve running off the road on a corner (57% -v- 39%).³

Why are motorcyclists crashing and being injured?

- Risk-taking is a common factor in fatal motorcycle crashes, but less common in non-fatal crashes.
- Queensland data show that alcohol involvement is more than 3 times more likely in riders involved in fatal crashes than among riders involved in injury crashes.⁴
- Between 2006-2010, 7% of motorcyclist fatalities in Queensland involved not wearing a helmet, 39% of riders involved in fatal crashes were speeding, and 30% were affected by alcohol or drugs.⁴
- Alcohol and speeding are stronger contributors to single vehicle crashes than to multi-vehicle crashes.³
- Not wearing a helmet is commonly associated with other risky behaviours such as alcohol and unlicensed riding.¹⁰
- The severity of injuries faced by motorcyclists is higher than for other road user groups. The most critical injuries to motorcyclists in crashes are head injuries, followed by upper torso injuries.³

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Why are motorcyclists at greater risk?

1. Lack of protection

Compared to vehicle occupants, motorcycle riders and their passengers are relatively unprotected, increasing the likelihood of serious injury or death. In addition, they can accelerate quickly and are capable of travelling at very high speeds that increase their risk in the event

of a crash. Approximately 80% of reported motorcycle crashes result in injury; a comparable figure for automobiles is about 20%.¹⁰

2. Visibility

In multiple vehicle crashes involving a motorcyclist fatality and where the other vehicle is deemed at fault, the main factor attributed is "not seeing the other roaduser".³ The speed of approaching motorcycles can be difficult for other road users to judge, suggesting that detection of a motorcycle does not always prevent other road users from violating motorcyclists' right of way.

3. Inexperience

New riders (regardless of age), like new drivers, have a higher risk of being involved in a crash because of their relative lack of experience. New riders are even more highly over-represented in crashes than new drivers.⁹ In Queensland, there are four times the number of people who hold a motorcycle licence than the number of registered motor-cycles, which indicates the potential for many returning riders to start riding again who have limited or no recent motorcycle experience.¹²

4. Unlicensed

Approximately 20% of Australian motorcycling fatalities involve riders who do not hold a valid motorcycle licence.³ For Queensland, 18.3% of riders involved in fatal crashes and 10.7% of riders involved in hospitalisation crashes from 2008-2009 were unlicensed.⁴

5. Instability and braking difficulties

Two-wheelers are less stable than four-wheelers. The difficulties in braking effectively to avoid a crash are increased by most motorcycles having separate front and rear braking systems. Front brakes provide the majority of stopping power for motorcycles and should generally be used in conjunction with the rear brake in braking manoeuvres under normal on-road riding conditions. Carrying pillion passengers may make control of the motorcycle even more difficult for inexperienced riders. In Queensland and many other jurisdictions, restrictions apply that prevent learner riders and newly licensed riders from carrying a pillion passenger.

6. Risk-taking

Given the combined vulnerability and excitement of motorcycle riding, it is not surprising that it attracts some individuals who are more prone to take risks than others. Risk-taking is likely to be reflected in the increased crash risk associated with recreational riding compared to riding for transport.⁹

7. Road surface/environmental issues

Road surface issues have a greater impact on safety for motorcyclists than for other motor vehicle drivers. The most common road factors leading to motorcycle crashes are lack of visibility or obstructions, unclear road or loose material, poor road condition or road markings, and horizontal curvature of the road.⁹

TIPS FOR STAYING SAFE

- **Wear protective gear on every trip**, no matter how short your journey is. This includes an approved helmet, boots that protect your ankles, a jacket with impact protectors, motorcycle gloves, and long pants with suitable protective qualities for you and your pillion passenger. Use protective clothing even if you expect to be travelling only at low speeds.
- **Don't let others influence you to take risks.** Enjoy your ride without being influenced to push your limits or 'bend' the road rules.
- **Understand that drivers often fail to see motorcyclists.** As a result, wear high visibility clothing, maintain awareness at all times and anticipate the likely behaviour of surrounding motorists. Avoid riding in the blind spots of drivers.
- **Riding a motorcycle is more mentally and physically demanding than driving a car.** Rest regularly on long trips.
- **Before you ride check your motorcycle and check your fitness to ride.** Don't ride if tired, emotional, under the influence of alcohol or drugs, or recovering from the night before.
- **Rider training will assist in developing your riding skills but never overestimate your skill level.** A good rider knows how to manage the motorcycle but also knows how to recognise risks and manage their own behaviour.
- **For further safety tips**, protective clothing recommendations, Queensland road rule information, and the Motorcycle Riders' Guide visit <https://www.qld.gov.au/transport/safety/road-safety/motorcycle-safety/index.html> or visit the Queensland Government's Join the Drive Motorcycles webpage <https://jointhedrive.qld.gov.au/motorcycles/motorcycle-skills>.

CARRS-Q'S WORK IN THIS AREA

- Report on the 2008 Motorbike Safety Consultation Workshops and the Report on Community Feedback to the Motorbike Safety Consultation Paper.
- Queensland Transport and Main Roads motorcycle rider safety study.
- Motorcycle rider intentions and behaviour study – an exploration of what



motorcyclists think about road safety and risk taking and an examination of the factors that contribute to both safe and risky riding intentions.

- Motorcycle training partnership with Morgan & Wacker Motorcycle Training Centre - development and evaluation of a training intervention.
- Examination of the safety and mobility impacts of the increased use of motor scooters and mopeds.
- Study of off-road motorcyclist safety in rural North-Queensland.
- Preliminary evaluation of the Q-RIDE licensing scheme (2003) and preliminary analysis of Q-RIDE and Q-SAFE rider exposure and crash risk (2007).
- Review of motorcycle safety initiatives (Queensland study complete and now extending nationwide).
- Fatigue and motorcycling.
- Motorcyclists' safety apparel observational studies.
- Development of a star rating system for motorcycle protective clothing.
- Review of motorcycle and scooter licensing and training.
- Rider Survivor – motorcycle safety awareness and education initiative.
- APEC – Compendium of best practices on motorcycle and scooter safety <http://www.carrsq.qut.edu.au/APEC/issues.html>.

FUTURE DIRECTIONS

- The National Road Safety Strategy¹¹, the Queensland Motorcycle Safety Strategy 2009-2012¹², and the Queensland Road Safety Action Plan¹³ are focussed on:
 - Reviewing options for a best practice graduated licensing system for motorcycle, scooter, and moped riders.
 - Research and development of training and education initiatives for motorcyclists.
 - The implementation of public education programs to promote safe riding practices, including the use of protective and high visibility clothing.
 - The implementation of public education programs specifically for returning riders.
 - Development and implementation of a national helmet assessment and rating program.
 - Conducting further research to develop a package of interventions for improving motorcycle safety.
 - Promoting to riders the safety advantages of ABS and linked braking systems and encouraging the motorcycle industry to increase the availability of motorcycles with these features.
 - Investigating the use of Radio Frequency Identification Devices (RFID) in motorcycle number plates for the purpose of vehicle identification to assist enforcement (eg. for speeding offences).
 - Ensuring that motorcycle specific issues are taken into account in the design and construction of new roads and improvements to existing roads, including maintenance and selection of safety treatments, particularly on popular motorcycle routes.





Riding a motorcycle is more mentally and physically demanding than driving a car. Rest regularly on long trips.

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STATE OF THE ROAD is CARRS-Q's series of Fact Sheets on a range of road safety and injury prevention issues. They are provided as a community service and feature information drawn from CARRS-Q's research and external sources. See the reference list for content authors.

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