

Motorcycle rider age and risk of fatal injury

The relatively high risk to motorcycle riders of serious and fatal injury, compared with other road users, is a significant road safety issue. Trends in motorcycle fatalities over the decade to 2001 suggest improvement in the safety of motorcyclists has been lagging that of other road users. Motorcycle rider fatalities only decreased by 6 per cent between 1991 and 2001 compared with an 18 per cent reduction in the overall road toll, from 2113 to 1736.

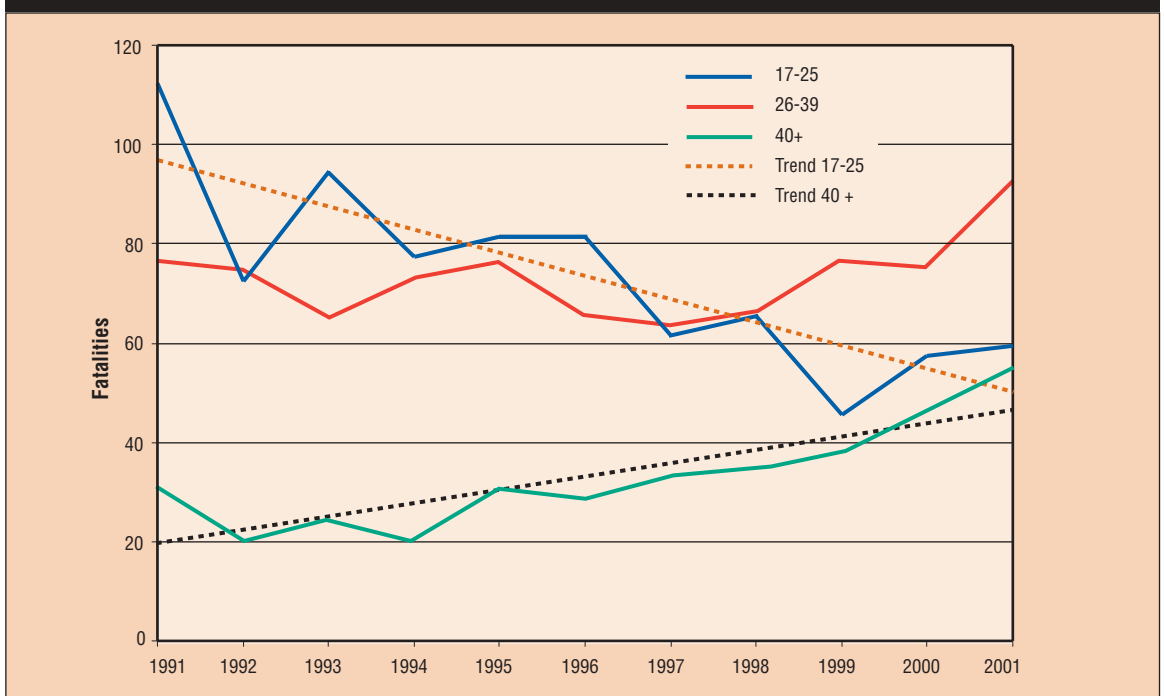
Australia's motorcycle safety record compares relatively poorly with other OECD nations as a whole. In 2000, the latest year for which data are available, there were 5.7 deaths per 10 000 registered motorcycles, compared with an OECD median of 5.1¹. This is significant considering Australia ranks favourably in its overall road safety record. In 2000, there were 1.5 fatalities per 10 000 registered vehicles compared with the OECD median of 1.9.

This report examines the trends associated with motorcycle rider fatalities and compares the risk of fatal injury to motorcycle riders among different age groups, particularly older riders. The report only uses data relating to motorcycle operator (rider) fatalities where the rider is aged 17 years and over and where the fatal injury occurred on a public road or related area. It excludes motorcycle passenger fatalities and cases where age is unknown.

Key Findings

- ▶ Fatalities among riders aged 17 and over decreased by around 6 per cent between 1991 and 2001 while over the same period fatalities among riders 40 years and over increased by 77 per cent.
- ▶ Fatalities among riders 40 years and over as a proportion of all rider fatalities, increased from 14 per cent in 1991 to 27 per cent in 2001.

Figure 1: Motorcycle rider fatalities by age group, Australia 1991 to 2001



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¹ Calculated by the Australian Transport Safety Bureau using data from the International Road Traffic Accident Database.

- ▶ The popularity of motorcycling appears to be increasing significantly among the 40 years and over age group.
- ▶ Despite the significant increase in older rider fatalities, the risk of fatal injury to motorcycle riders per distance travelled is still significantly higher among younger riders.
- ▶ Motorcycle riders are around 29 times more likely to be fatally injured than operators of other vehicles travelling the same distance.

Trends in motorcycle rider fatalities, 1991 to 2001

Table 1 shows fatalities among motorcycle riders aged 17 years and over decreased by around 6 per cent between 1991 and 2001. In 1991 there were 219 motorcycle rider fatalities, while in 2001 there were 207. It is worth noting that there was a significant increase in rider fatalities in 2000 and 2001.

The overwhelming majority of motorcycle rider fatalities in Australia are male. In 2001, there were 3 female motorcycle rider fatalities compared with 204 male fatalities.

In 2001, there were 59 fatalities (or 28.5 per cent) among riders 17 to 25 years, 93 fatalities

(or 44.9 per cent) among riders 26 to 39 years and 55 fatalities (or 26.6 per cent) among riders 40 years and over.

Fatalities among riders 17 to 25 years decreased significantly over the period, from 112 in 1991 to 59 in 2001².

Fatalities among riders 26 to 39 years rose (from 76 in 1991 to 93 in 2001), however no statistically significant trend was found. As table 1 shows, most of this increase occurred in 2001, when fatalities increased by 24 per cent compared with 2000.

Figure 1 shows a significant upward trend in fatalities among riders 40 years and over. Fatalities among this older rider group increased from 31 in 1991 to 55 in 2001, a rise of 77 per cent³ (see Table 1).

Although the older rider group (40 years and over) comprised a lower absolute number of fatalities compared with other reported age groups, fatalities among older riders have almost doubled as a proportion of all rider fatalities between 1991 and 2001. In 1991, older rider fatalities comprised 14 per cent of all motorcycle rider fatalities, while in 2001 this had risen to 27 per cent.

Table 1: Motorcycle rider fatalities by age, Australia 1991 to 2001

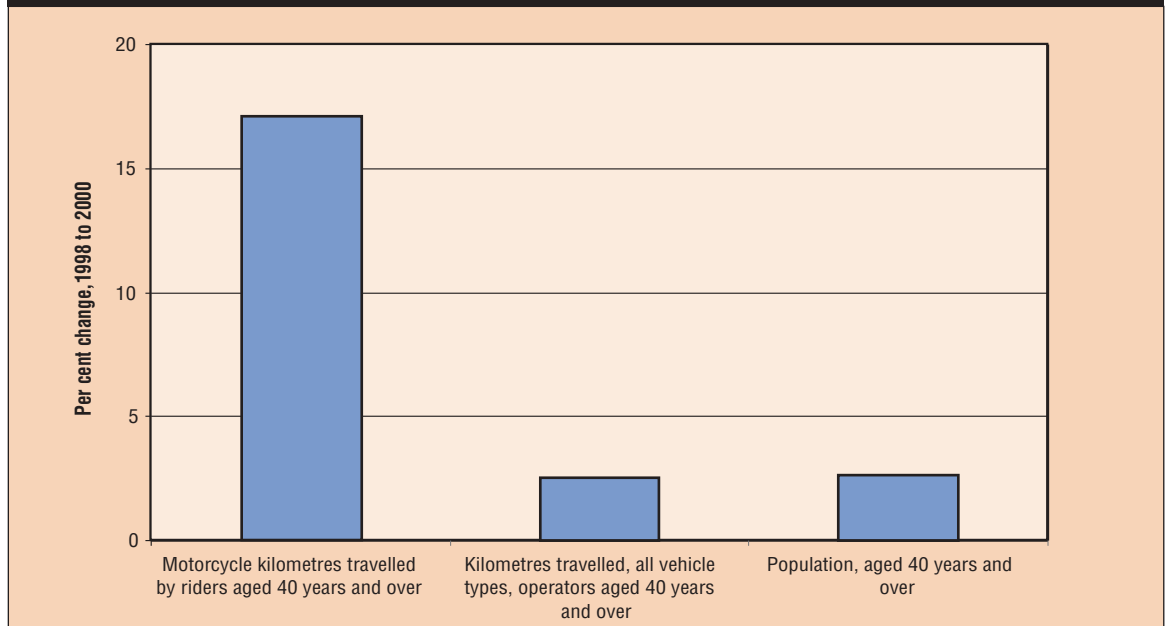
Year	17-25	26-39	40+	Total ⁴
1991	112	76	31	219
1992	72	74	20	166
1993	94	65	24	183
1994	77	73	20	170
1995	81	76	30	187
1996	81	65	28	174
1997	61	63	33	157
1998	65	66	34	165
1999	45	76	38	159
2000	57	75	46	178
2001	59	93	55	207

² Statistically significantly at 5 per cent level of significance.

³ Statistically significantly at 5 per cent level of significance.

⁴ Total excludes riders of unknown age and riders aged below 17 years.

Figure 2: Per cent change in motorcycle kilometres travelled, vehicle kilometres travelled and population, aged 40 years and over, 1998 to 2000, Australia



Increasing motorcycle use amongst the older population

After a decrease in the late 1980s and early 1990s, the popularity of motorcycle riding appears to be increasing. The number of registered motorcycles Australia-wide increased from 284 177 in 1991 to 350 930 in 2001 a 23.5 per cent rise⁵.

Data from the Australian Bureau of Statistics indicate this increase in motorcycle riding is strongest among the 40 years and over age group⁶, while motorcycle use is decreasing in the younger generations. Figure 2 shows that the number of motorcycle kilometres travelled by riders 40 years and over increased by 17 per cent (from 474 million in 1998 to 555 million in 2000). Over the same period and among the same age group, total kilometres travelled in all vehicles increased by around 3 per cent and the number of people 40 years and over increased by 3 per cent.

These figures suggest that the increase in motorcycle kilometres travelled among the 40 years and over group is not just a product of the ageing population but that the popularity of motorcycle riding is growing.

Motorcycle use among younger motorcycle riders decreased over the same period. The number of motorcycle kilometres travelled by riders 17 to 25 years decreased from 165 million in 1998 to 104 million in 2000, a decrease of 37 per cent. The number of motorcycle kilometres travelled by riders 26 to 39 years decreased from 659 million in 1998 to 476 million in 2000, a decrease of 28 per cent.

Is the safety of motorcycle riders decreasing?

Table 2 shows the rate of motorcycle rider fatalities per 100 million kilometres travelled increased from 7.2 in 1998 to 8.3 in 2000. Motorcycle rider fatality rates increased among all rider age groups between 1998 and 2000.

⁵ Australian Bureau of Statistics, *Motor Vehicle Census Australia, 30 September 1991 and Motor Vehicles Census Australia, 31 March 2001*.

⁶ Australian Bureau of Statistics, *Survey of Motor Vehicle Use, 31 July 1998 and Survey of Motor Vehicle Use, 31 October 2000*. Suitable kilometres travelled data are only available for 1998, 1999 and 2000.

Table 2: Motorcycle rider fatalities per 100 million motorcycle kilometres travelled by age, Australia, 1998 to 2000

	17-25 years	26-39 years	40 years and over
1998	39.4	10.0	7.2
1999	52.0	21.1	7.7
2000	54.9	15.7	8.3
Per cent change 1998 to 2000	39	57	15

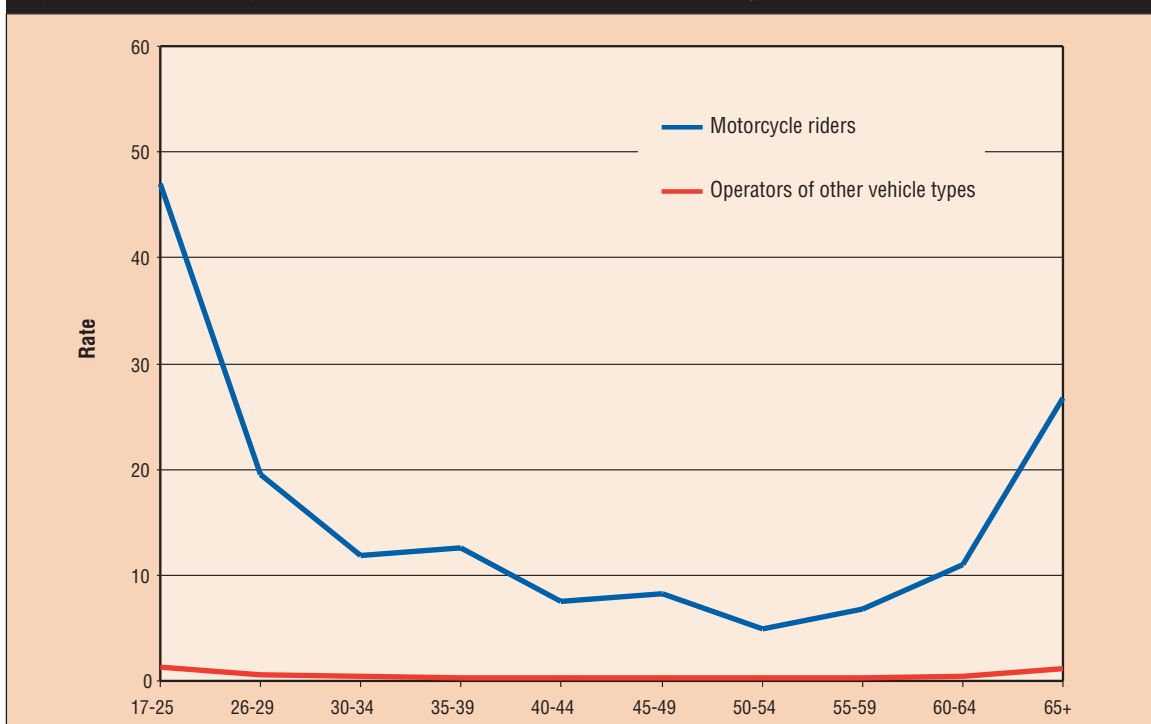
The greatest increase occurred among the 26 to 39 year age group, where the fatality rate per 100 million kilometres travelled increased by 57 per cent. The fatality rate per 100 million motorcycle kilometres travelled among 17 to 25 years increased by 39 per cent. The smallest increase was among older riders (15 per cent).

These figures suggest the safety of motorcycle riders among all rider age groups is decreasing. As rates for only three years can be calculated, further work is needed to verify these trends as data become available.

Relative risk of older riders compared with younger riders

Figure 3 illustrates the relative risk of fatal injury to motorcycle riders of different age groups calculated using 1998, 1999 and 2000 data. The highest rate was for riders 17 to 25 years, who recorded 47.0 fatalities per 100 million motorcycle kilometres travelled. This age group was found to have a risk of fatal injury 9 times higher than the lowest risk group comprising riders aged 50 to 54, who had a rate of 4.9.

Figure 3: Fatalities per 100 million vehicle kilometres travelled by age, 1998 to 2000



There is a significant increase in fatality rates above the 55 to 59 year group. In terms of fatalities per 100 million kilometres travelled, motorcycle riders 60 to 64 years recorded a rate of 11.0 and motorcycle riders 65 years and over recorded a rate of 26.8. This increase in risk of the oldest motorcycle riders is likely to be due, at least in part, to an increase in their vulnerability to serious injury in the event of a crash. Some chance variations in the data are also likely due to the relatively small number of motorcycle riders in these age groups.

Relative safety compared with other vehicle operators

Motorcycle rider fatalities make up around 17 per cent of all vehicle operator fatalities each year. Figure 3 illustrates the significant difference in risk between motorcycle riders and operators of other vehicle types. Table 3 indicates that between 1998 and 2000, for every 100 million kilometres travelled by motorcycle riders, there were 14.9 motorcycle rider fatalities. This is 29 times the number recorded by operators of other vehicle types, who recorded 0.5 fatalities per 100 million kilometres travelled.

Table 3 shows this ratio is reduced for older riders. On a per kilometre travelled basis, motorcycle riders aged 40 years and over are nearly 20 times more likely to be killed than operators of the same age driving other motor vehicles. The rate of fatalities per 100 million motorcycle kilometres travelled, for both the 17 to 25 year age group and the 26 to 39 year age group, is 36 times that of other vehicle operators of the same age.

Conclusion

The data presented suggest two key motorcycle safety issues. One is the issue of increasing fatalities among older motorcycle riders. While older riders have the lowest fatality rates based on kilometres ridden, the rate of increase in fatalities among this age group is the highest. Older rider fatalities are becoming a steadily increasing proportion of motorcycle fatalities.

Part of this increase in fatalities is due to an increase in motorcycle riding among the 40 years and over age group. This is most likely a result of the combination of an increase in the general population of people 40 years and over and an increase in the popularity of motorcycles among this age group.

Even when increased exposure is taken into account, the rate of older rider fatalities is rising at a greater rate than might be expected. If the number of people 40 years and over taking up motorcycle riding continues to rise, the problem of motorcycle safety among this age group is likely to become an increasingly important issue.

The second issue is the continuing poor record of younger riders. Younger riders are still at significantly higher risk of fatal injury than older riders. Although the overall number of fatalities has decreased among riders between 17 and 25 years, their rates are still significantly higher than older riders. Rates among the 26 to 39 year group are also significantly higher than older riders. There is also evidence suggesting that, fatality rates per vehicle kilometres travelled among these ages are actually increasing.

Table 3: Rider and other vehicle operator fatalities per 100 million vehicle kilometres travelled, between 1998 and 2000⁷

<i>Age of operators (years)</i>	<i>17-25</i>	<i>26-39</i>	<i>40+</i>	<i>All ages⁸</i>
Motorcycle riders	47.0	14.5	7.7	14.9
Other vehicle operators	1.3	0.4	0.4	0.5

⁷ The sum of fatalities occurring between 1998 and 2000, divided by the sum of kilometres travelled between 1998 and 2000.

⁸ Excludes riders of unknown age and riders aged below 17 years.

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