

FEMALE CAR DRIVERS AND RISK

It has long been recognised that male drivers are at a greater risk of being killed in a road crash than female drivers. High risk behaviours such as drink driving and speeding play a major role in such crashes. Male drivers are much more likely than female drivers to participate in high risk behaviours. However, what is less well known is the high risk for female drivers of being seriously injured in a road crash. This monograph investigates recent trends in female driver fatalities and the risk of serious injury in a road crash.

In 1995, female drivers of cars were 17 per cent more likely than male car drivers to be seriously injured in a road crash for every kilometre travelled. Female driver fatalities also rose in 1995. During 1995, there were 209 female drivers of cars killed on Australia's roads. This represented a substantial increase over the number killed in the previous year (177) and was the highest since 1991 (219). Generally, road crash fatalities have been declining since 1989, so this marked increase in female driver fatalities evident in 1995 was a disturbing trend.

A similar trend has been noted in the United States of America. The US Department of Transportation's National Highway Traffic Safety Administration released a report in 1994 which found that the risk of being fatally injured has been increasing for female drivers.

The analysis conducted for this report includes all drivers of passenger vehicles either killed or seriously injured in a road crash in 1991 and 1995 in Australia according to police records, excluding the State of South Australia. Data pertaining to drivers seriously injured in a road crash in South Australia in 1995 was not available at the time of publication. To explore the issue of risk associated with travel, the number of passenger vehicle kilometres travelled by male and female

Table 1: Total passenger vehicle kilometres travelled, number of car drivers killed and seriously injured, and risk by sex in 1995*

	Total distance travelled (100 million kilometres)	Number killed	Number seriously injured	Risk of death per distance travelled	Risk of serious injury per distance travelled
Males	684.68	506	4957	0.74	7.24
Females	449.09	209	3804	0.47	8.47

*South Australia excluded

drivers was based on the Australian Bureau of Statistics *Survey of Motor Vehicle Use* conducted in 1991 and 1995.

For the purposes of counting the national road toll, a road crash fatality is defined as a person who dies within 30 days of the crash as a direct result of the injuries sustained. Serious injury is that requiring admission to hospital for a minimum of one night.

Involvement in a casualty crash

The most direct measure of the risk associated with road travel is the number of fatalities or serious injuries which occur for every 100 million kilometres travelled. One possible explanation for the increase in female driver casualties relates to the amount of travel undertaken by female drivers. The probability of being killed or seriously injured on the road increases the more a person travels on the road. Total distance travelled and the risk of being seriously injured or killed is reported in Table 1.

Table 1 shows that in 1995, male car drivers drove further and were killed or seriously injured more than female car drivers. Male car drivers were at greater risk of being killed per distance travelled, with 0.74 deaths per 100 million passenger vehicle kilometres travelled, than female car drivers (0.47 deaths). On the other hand, female car drivers had a greater probability of being seriously

injured, with 8.47 serious injuries per 100 million passenger vehicle kilometres travelled than male car drivers (7.24 serious injuries).

There may be other factors related to gender which should be considered in interpreting these results. High risk behaviours and vulnerability are two such factors.

One possible factor on which female and male car drivers differ is high risk behaviours. As noted earlier, high risk behaviours such as drink driving have been identified as major contributors to male car driver fatalities. Many countermeasures, such as Random Breath Testing, have been targeted at what have been identified as primarily male driving behaviours (eg drink driving).

Another important consideration is the relative physical robustness of men and women. Female drivers are more likely to be killed or seriously injured than male drivers in crashes of equivalent severity. Thus some of the apparent levels of risk may relate to their vulnerability rather than their actual driving behaviours.

In the USA, Evans has suggested that between the ages of 15 and 45, women are 25 per cent more likely to be killed than men when subjected to the same physical impact. Evans also cited Foret-Bruno who compared injury outcomes for similar severity crashes, finding that women were around 20 per cent more likely to be injured than men.

Table 2 reports the risk of death and serious injury adjusted for alcohol involvement and vulnerability. For alcohol involvement, car drivers known to have a blood alcohol concentration (BAC) in excess of 0.05 g/ml were excluded from the calculation of risk. For vulnerability, the number of female drivers killed or seriously injured were adjusted to the equivalent likely injury levels for male drivers using the rates suggested by Evans and Foret-Bruno.

When alcohol involvement is removed from the analysis, the rate of death per distance travelled for male car drivers (0.48) comes nearer to that of female car drivers (0.40). However, if a further adjustment is made for the greater physical vulnerability of women, the risk for male car drivers of being killed in a crash not involving alcohol is 50 per cent higher than the adjusted risk for female drivers.

The situation for serious injury crashes is very much different. The rate of serious injury for female car drivers is higher than that for male car drivers after adjustment for alcohol involvement and even after adjustment for both alcohol and vulnerability.

The risk of male and female car driver involvement in fatal and serious injury crashes has remained relatively constant over time. Table 3 reports total distance travelled and the risk of being seriously injured or killed in 1991. This is equivalent to the information given in Table 1 and the pattern is the same. Male car drivers are at greater risk of being killed, while female drivers have a greater risk of being seriously injured.

Table 2: Number of car drivers killed and seriously injured per 100 million passenger vehicle kilometres travelled in 1995, by sex, adjusting for alcohol and for vulnerability.*

	Killed		Seriously injured	
	Females	Males	Females	Males
Actual	0.47	0.74	8.47	7.24
Adjusted for alcohol	0.40	0.48	8.00	5.98
Adjusted for vulnerability	0.38	-	7.06	-
Adjusted for both alcohol and vulnerability	0.32	0.48	6.67	5.98

*South Australia excluded

In fact, in terms of reduction in risk per distance travelled, female car drivers have performed better than their male counterparts, although females still remain at greater risk of serious injury in a road crash.

The main concern in recent trends is that female car drivers have increased their exposure on the road far more than their male counterparts. The number of passenger vehicle kilometres travelled by female drivers has increased by 22.3% from 1991 to 1995. Male drivers increased by only 1.3% over this period.

This is part of a longer term trend. Since 1985, the number of passenger vehicle kilometres travelled by female drivers has increased by 43.2 per cent, while the number of male driver passenger vehicle kilometres travelled has increased by 6.7 per cent.

If the amount of travel by female car drivers continues to increase, the number of female drivers killed or seriously injured will also continue to rise.

Conclusion

On the basis of this research it appears that female drivers are at greater risk of being seriously injured in a road crash than male drivers. Given the increase in travel by female drivers, the number seriously injured may be expected to rise.

Certainly vulnerability is an issue for female drivers. Female drivers are more likely to be injured in the same severity crash than male drivers. Female drivers would be advised to consider the safety features of vehicles when purchasing a car. Vulnerability, however, does not fully explain the observed higher rate of serious injury for female car drivers.

Given the increasing involvement of female drivers in crashes resulting in serious injury there is a need now to investigate the causes of such crashes and possible countermeasures in greater detail. Such research is being undertaken overseas and the Federal Office of Road Safety is planning a study in Australia to be undertaken in 1997. The results of this study will be reported in a later issue of this series.

References

- Evans L. Traffic safety and the driver, New York: Van Nostrand Reinhold Company, 1991.
- US Department of Transport NHTSA Technical Report: Female drivers in fatal crashes: Recent Trends. January 1994.

Table 3: Total passenger vehicle kilometres travelled, number of car drivers killed and seriously injured, and risk by sex in 1991*

	Total distance travelled (100 million kilometres)	Number killed	Number seriously injured	Risk of death per distance travelled	Risk of serious injury per distance travelled
Males	675.70	531	4459	0.79	6.60
Females	367.34	219	3278	0.60	8.92

*South Australia excluded