

## Trends in the Burden of Serious Road Traffic Crashes in Victoria, Australia

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### Abstract

Road traffic injuries are a major cause of death and disability. We investigated temporal trends in the incidence, mortality, Disability Adjusted Life Years (DALYs) and costs of health loss of serious road traffic injury in Victoria from 2007 to 2015. We observed a reduction in disability burden in motor vehicle occupants, motorcyclists and pedestrians, which was driven by decreases in fatalities. However, there was no change in serious injury rates for these road user groups. In contrast, DALYs increased 47% in pedal cyclists from 2007 to 2015. The costs of health loss from road traffic injury totaled over A\$13 billion.

### Background

In Australia, road traffic injuries are the second leading cause of hospitalised injury and injury-related deaths (Henley and Harrison 2015). As the likelihood of surviving serious injury increases, greater emphasis needs to be placed on reducing the burden of non-fatal injury (Cameron *et al.* 2006, Gabbe *et al.* 2010, Polinder *et al.* 2012). The aim of this study was to investigate the burden of road traffic injury in major trauma patients and fatalities in Victoria, Australia, from 2007 to 2015.

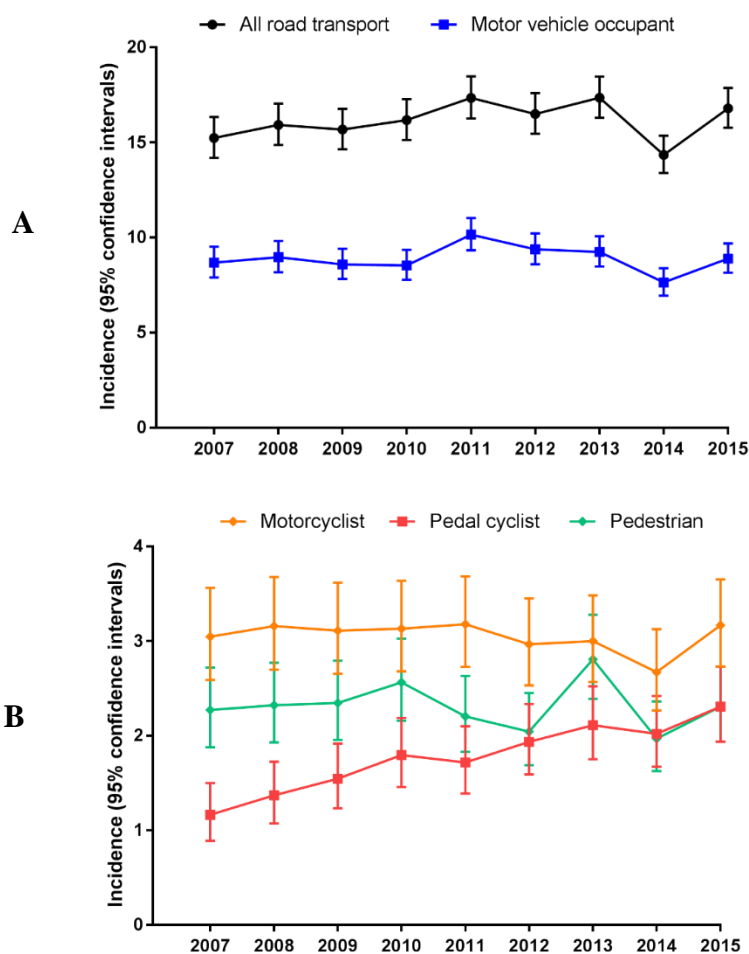
### Methods

We performed a retrospective review of road traffic deaths (prehospital and in-hospital) and major trauma patients (injury severity score >12) using data from the population-based Victorian State Trauma Registry and the National Coronial Information System from 2007 to 2015. Disability-adjusted life years (DALYs) were used to measure disease burden and combined years of life lost (YLLs) and years lived with disability (YLD). Disability weights were calculated from the EQ-5D-3L responses of 10,954 adult VSTR cases with an ISS >12. Poisson regression was used to determine whether the incidence rate increased or decreased over the 9-year period.

### Results

There were 10,092 road traffic fatalities and major trauma cases in Victoria over the 9-year study period; 2,026 prehospital deaths and 8066 hospitalised major trauma cases (of which 562 died in-hospital). There was no change in the incidence of hospitalised major trauma for motor vehicle occupants (IRR=1.00, 95% CI: 0.99, 1.01; P=0.70), motorcyclists (IRR=0.99, 95% CI: 0.97, 1.01; P=0.45) and pedestrians (IRR=1.00, 95% CI: 0.97, 1.02; P=0.73) (Figure 1). However, the incidence of hospitalised major trauma for pedal cyclists increased 8% per year (IRR=1.08, 95%

CI: 1.05, 1.10;  $P < 0.001$ ). The incidence of all road traffic deaths declined 4% per year (IRR=0.96, 95% CI: 0.94, 0.97;  $P < 0.001$ ).



**Figure 1. Incidence per 100,000 population (with 95% confidence intervals) over the period of 2007 to 2015 for all hospitalised road traffic major trauma patients and motor vehicle occupants (A) and for motorcyclists, pedal cyclists and pedestrians (B)**

For all road traffic cases, there was a 14% reduction in DALYs from 2007 to 2015. Reductions in DALYs over time were also observed in motor vehicle occupants (14%), motorcyclists (34%) and pedestrians (6%). In contrast, there was a 47% increase in DALYs in pedal cyclists from 2007 to 2015. The total costs of health loss for major trauma and deaths over the study period were A\$8,572 million for motor vehicle occupants, A\$2,115 million for motorcyclists, A\$608 million for pedal cyclists and A\$1,757 million for pedestrians.

**Conclusions**

Over a 9-year study period in Victoria, Australia, the total cost of health loss from road traffic injury exceeded A\$13 billion. We observed a reduction in disability burden in motor vehicle occupants, motorcyclists and pedestrians, which was driven by decreases in fatalities. However, there was no change in the incidence of hospitalised major trauma for these road user groups. Furthermore, temporal increases were observed in the incidence of hospitalised major trauma and DALYs in pedal cyclists. Given these findings, it is likely that current road safety targets, such as those set by the World Health Organisation and the Victorian State Government, will be difficult to

meet. There is a need for greater attention on serious injury and further investment in road safety, particularly in pedal cyclists.

## References

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