

Can Mobility Management Deliver the Next Step-change Towards Safe System

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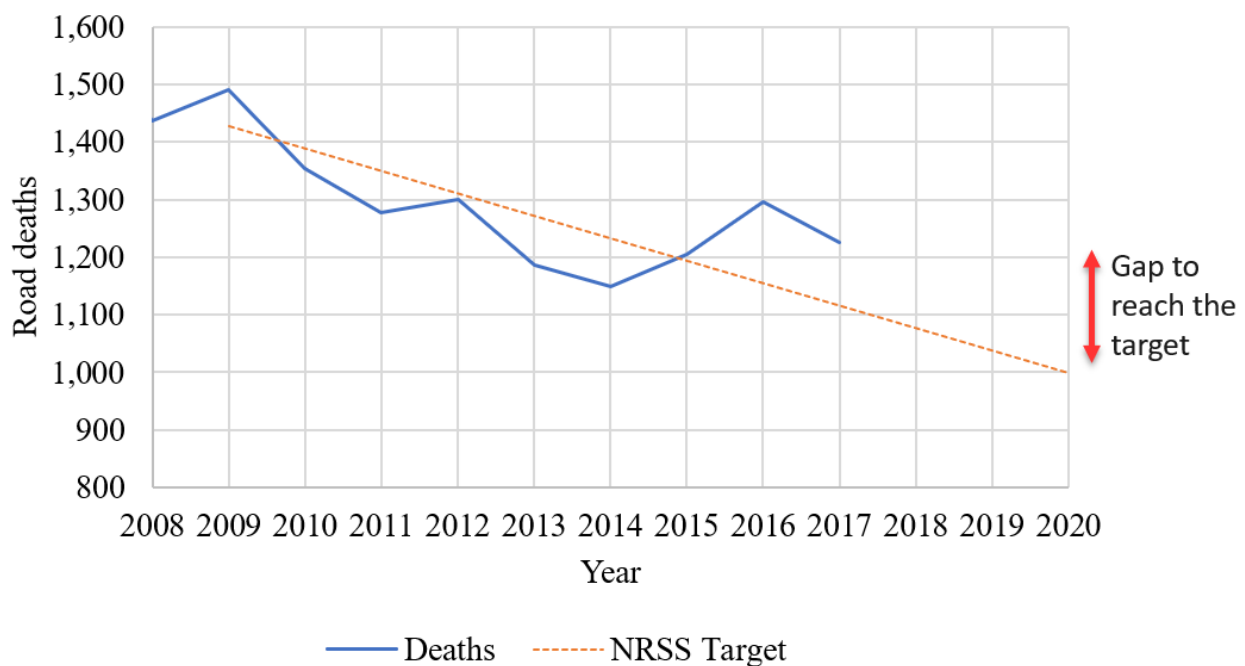
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Abstract

Progression towards Safe System goals of zero death and serious injury has stalled in Australia. Historical downward step-changes in road toll were associated with systemic and cultural shifts driven by government regulation (e.g. drink driving, seat belts). The goals of the current National Road Safety Strategy (NRSS) are not likely to be met by 2020, but significant opportunities lay beyond if more systemic approach to road safety strategies can be adopted. This paper discusses potential strategic contributions of Mobility Management (travel demand management, road pricing, urban planning, Mobility as a Service) to the next NRSS goals and points out the evidence necessary for detailed estimation of the next step-change in road toll.

Background

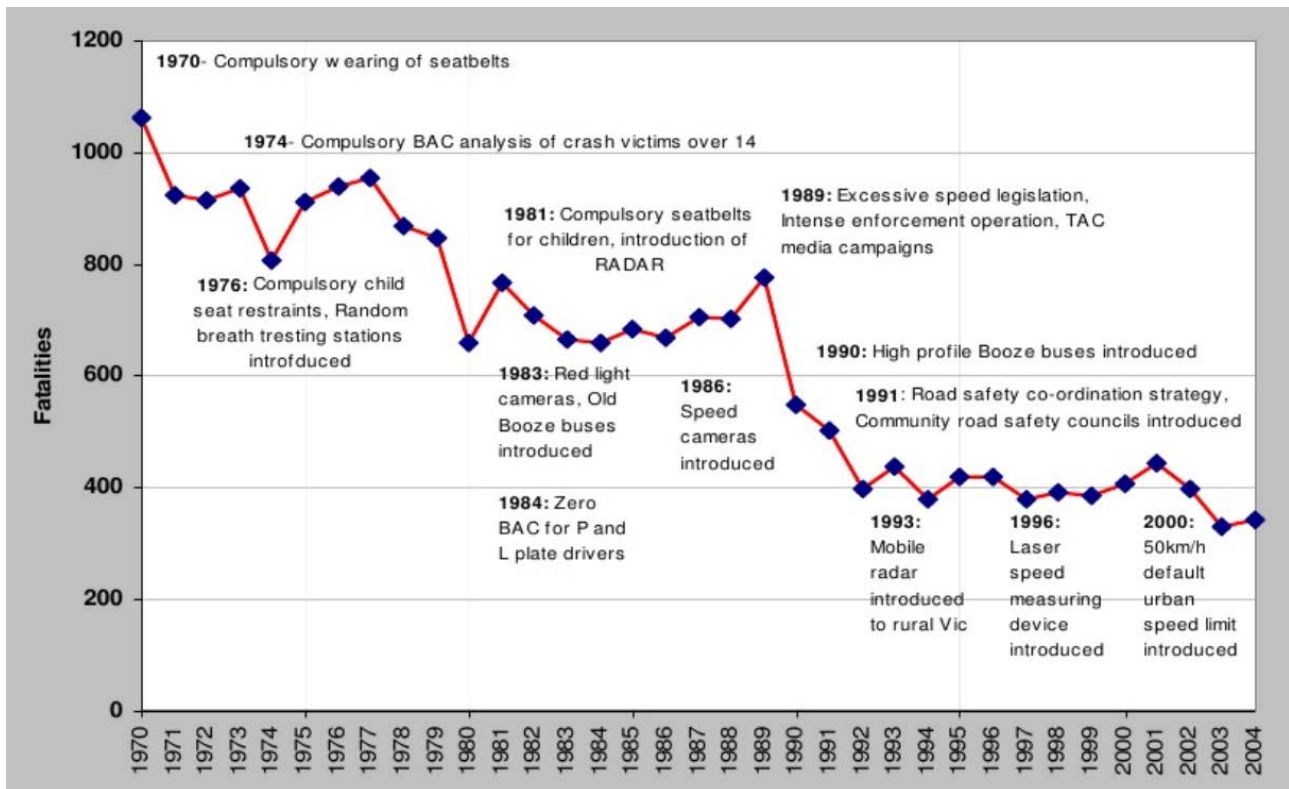
Australia’s road safety performance has stagnated despite well-thought out and successful road safety programs targeting high-risk roads and road users (Figure 1).



Source: based on (BITRE, 2018)

Figure 1. Australian road toll vs. NRSS objective

Historically, there have been downward step-changes in road toll when systemic and cultural shifts have been achieved often driven by government regulation. These include seat belt requirements, lower blood alcohol content limits and increased efforts in speed limit enforcement. Figure 2 shows some of these initiatives since 1971.



Source: Ogden (2009)

Figure 2. Historical downward step-changes in road toll

The goals of the current National Road Safety Strategy (NRSS) are not likely to be met by 2020, but significant opportunities lay beyond if more systemic approach to road safety strategies can be adopted. Recent policy research suggests that new road safety ‘actors’ and trends need to be recognized and accounted for in future strategies (Salmon and Lenné, 2015; Hughes et al., 2016; Litman and Fitzroy, 2017).

One group of ‘actors’ can be described as Mobility Management policies. These include such travel demand management policies as mode shift towards public transport and safe active transport, congestion pricing, Mobility as a Service (MaaS), integrated land use management, transport pricing and taxation (Litman and Fitzroy, 2017). Socio-economic changes and policies beyond transport also need to be recognized as influences on the road toll. These changes include economic activity, demographic shifts (ageing), broader drug use patterns, overuse of medication, and workplace changes (Salmon and Lenné, 2015; Hughes et al., 2016).

One of the factors linking these diverse group of ‘actors’ is the amount of travel done by car and other travel modes. Litman and Fitzroy (2017) showed how high vehicle-kilometres travelled (VKT) per capita is linked to poor fatality outcomes. These and other authors were able to draw on multiple international research sources to show that greater proportion of urban travel by public transport is linked to lower fatality rates per 100,000 population. Figure 3 shows a conceptual model of the link between Mobility Management and safety.

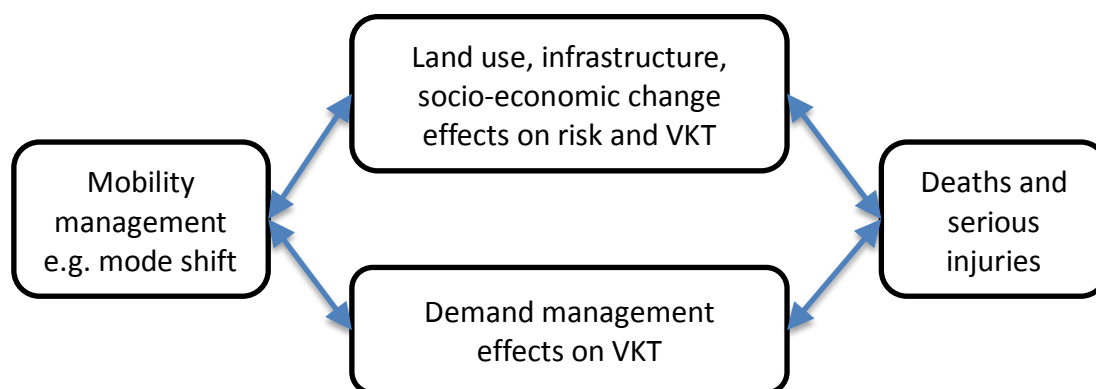


Figure 3. Conceptual representation of Mobility Management effects of road toll

Most of Mobility Management policies are not new to Australia, and in fact are vigorously pursued by parallel transport policies. The socio-economic trends are already studied by relevant disciplines. This paper proposes that greater effort be placed on understanding and accounting for effects of these policies and trends on Australian road toll.

Table 1 shows broad estimates on fatality outcomes expected from mobility changes, based on available overseas evidence. The net effect of these policies could provide a significant step-change in the national road toll. Implementation would require more systemic, one-government, approach than in the past. Especially, collaboration between non-traditional partners would be required under the next NRSS. Engagement with public transport and health sectors would be of greater importance than in the past.

Table 1. Broad estimates of some Mobility Management policies on safety

Mobility Management Policies	Estimated benefits	Methods	Source
Shifting car travel to public transport	One percentage point increase in the share of travel to work by public transport would reduce fatalities by more than 9%	Crash prediction based on data of above 30 cities	(Moeinaddini et al., 2015)
Congestion charge	12% reduction in injury crashes in London’s charging zone	Before-after analysis with controls	(Duduta et al.; Green et al., 2016)
Increasing fuel price	20% increase in fuel price was predicted to reduce injury crashes by 2.8% in in Flanders, Belgium	Macroscopic crash prediction	(Pirdavani et al., 2013)
Teleworking	A teleworking scenario is predicted to reduce crashes by 2.6% in Flanders, Belgium	Macroscopic crash prediction	(Pirdavani et al., 2014)
Shifting short car trips to cycling trips	Shifting short car trips to cycling trips had no effect on fatalities in Dutch municipalities	Crash prediction	(Schepers and Heinen, 2013)

Breadth and local applicability of the international evidence is poor due to specific mix and interactions of these policies in each country. To give this field due consideration in the next NRSS, it is proposed that more research be directed to better understanding of the identified ‘actors’ on modal shift and safety outcomes. Such new research could be applied to provide more robust estimates of

reductions in road toll due to Mobility Management in Australia, and provide inputs into the next strategy.

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