

The impact of lower speed limits on reducing road trauma in WA

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Looking back over the last couple of decades, progress in road safety in WA has been inexcusably slow and an unforgivably high number of people continue to be killed and seriously injured (KSI) every day on WA's roads.

The WA Government has set a target to reduce KSIs by 50-70 per cent by 2030 compared with a 2015-2019 baseline. RAC set more ambitious targets to halve the rate of KSIs on our roads by 2025, from a 2020 base. We have been exploring which road safety countermeasures should be prioritised in order to meet these targets, and this bulletin explores the potential role of speed limit reductions.

The role of speed in crash severity

The speed at which you impact another car, or object, is a product of travel speed and is arguably the most influential factor determining crash outcome. According to Wramborg's model (Figure 1), if you have a head-on collision with another car while travelling at 70km/h, your chances of a fatality are 10 per cent, but this chance increases to nearly 100 per cent at 100km/h. If you collide with a pedestrian or cyclist, you only need to be travelling at 60km/h for a near 100 per cent chance of fatality. This highlights the potential for lower speed limits to save lives.

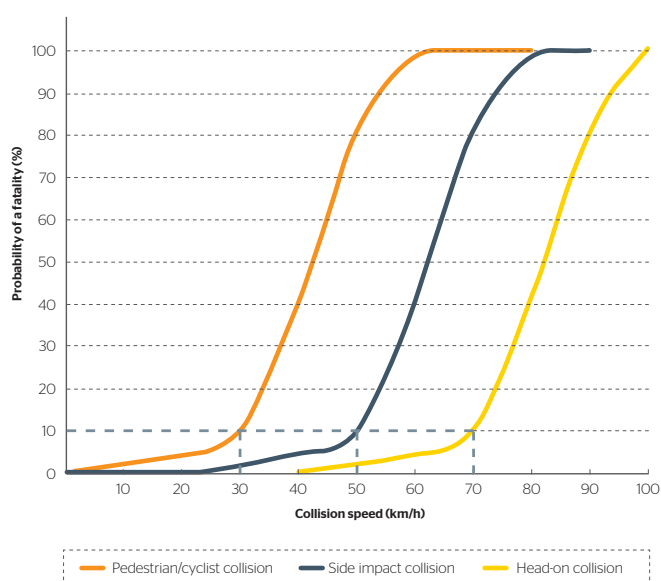


Figure 1: Wramborg's model for fatality probability vs. vehicle collision speeds.

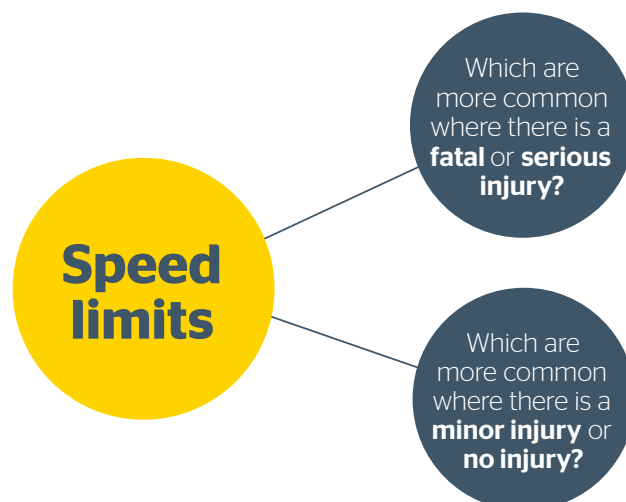
Modelling the impact of speed limit reductions in WA

In 2022, RAC commissioned the Centre for Accident Research and Road Safety - Queensland (CARRS-Q) to identify and analyse the road safety countermeasures that would have a significant impact on reducing the number of KSIs on Western Australian roads within the next 5-10 years, with a focus on speed limit reductions.

Analysing the WA crash data

Following a literature review looking at the effectiveness of past speed limit reductions, WA crashes were analysed to understand which speed limits were associated more strongly with fatal or serious injury and which were associated more strongly with minor injury or no injury.

Speed limits from the WA crash data were able to be matched to potential speed limit reductions, which were identified in the literature. From this, the percentage reduction in KSIs resulting from the speed limit reductions (Figure 2), and how many KSIs could be prevented from 2022 to 2025, and from 2022 to 2030, were able to be calculated. In addition, evaluations of previous real world speed limit reductions were used to provide an alternative estimate of the percentage reduction in KSIs.



What were the findings?

How does the speed limit impact risk of a fatal or serious injury?

The literature review found that there is a well-proven, consistent relationship between travel speed reductions and reductions in the likelihood and severity of crashes. However, the actual level of travel speed reduction resulting from a speed limit reduction can vary depending on the extent of supporting infrastructure (e.g. traffic calming treatments), education and enforcement, and these can greatly increase implementation costs. Nevertheless, substantial drops in fatal and serious injury crashes are still observed in evaluations of speed limit reductions – a 10km/h speed limit reduction typically reduces KSIs by 20 per cent.

When compared to crashes on roads with a 60km/h posted speed limit, the crash data modelling found that the risk of a fatal or serious injury to motor vehicle occupants noticeably increased as the speed limit increased, while the risk decreased as the speed limit decreased.

Policy actions to save lives

Overall, the most effective speed limit change was reducing all speed limits above 40km/h by 10km/h. The single most effective speed limit change was reducing all 60km/h speed limits to 50km/h. Table 1 shows a breakdown of the predicted KSI savings for each speed limit change from 2022 to 2025, and from 2022 to 2030.

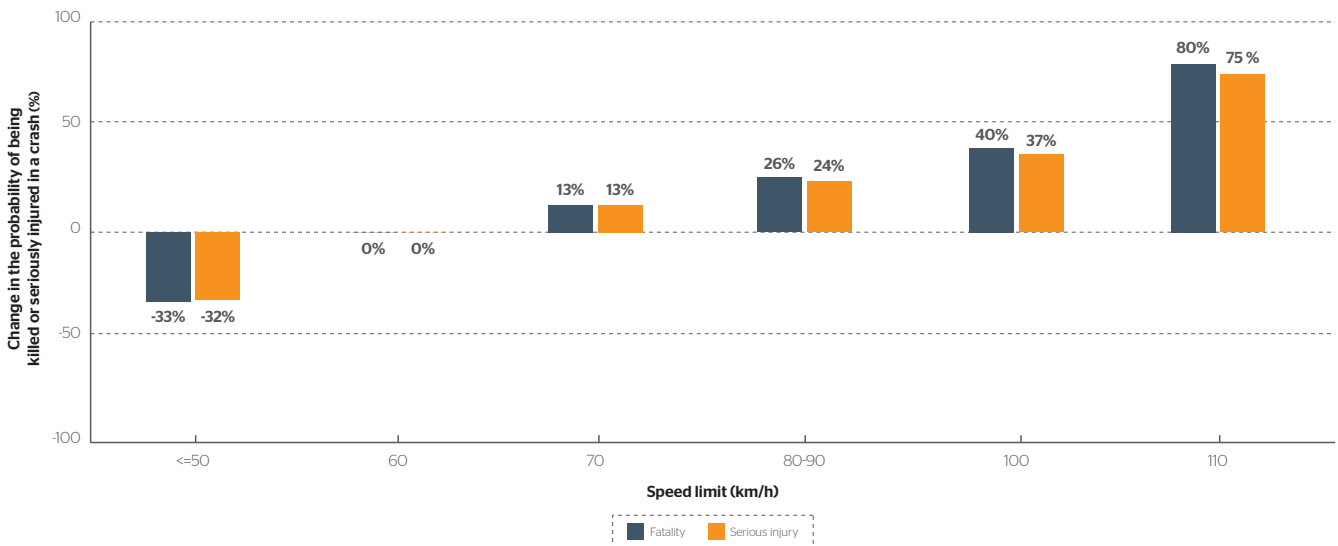


Figure 2: Percentage change in the probability of a motor vehicle occupant being killed or seriously injured in a crash by speed limit (compared with a 60km/h speed limit).

Table 1: Predicted KSI savings for each speed limit change from 2022 to 2025 and 2022 to 2030.

Rank	Speed limit change	Predicted KSI savings (2022 to 2025)	Predicted KSI savings (2022 to 2030)
1	Reducing all speed limits above 40km/h by 10km/h	2,469 people	4,065 people
2	60km/h to 50km/h	675-698 people	1,109-1,424 people
3	50km/h to 40km/h	321 people	528 people
4	70km/h to 60km/h	152-363 people	328-597 people
5	110km/h to 100km/h	113-347 people	248-569 people
6	90km/h to 80km/h and 80km/h to 70km/h at intersections	175 people	288 people

Speed limit reductions in action: Safer Speeds Trial in the South West

In June 2022, RAC entered into a Heads of Agreement with the Shire of Augusta Margaret River (the Shire) to collaborate on a Safer Speeds Trial project across the local government area. The trial would:

- » take a holistic and coordinated approach to planning and rolling out appropriate speed limit reductions to encourage safer speeds across this region of the South West; and
- » accelerate action to save lives and reduce serious injuries on these roads, lessening the devastating and often life-long impacts of road trauma that ripple through local communities.

Over the past two and a half years, the Shire and RAC have been working to develop the trial, with support from Main Roads WA. The trial is due to commence in 2025.



Where we stand

To reduce the unacceptable impact of road trauma in WA, RAC advocates and supports the Safe System approach, which seeks safe road users, safe speeds, safe vehicles, safe roads, and post-crash care.

RAC's Vision 2030 sets ambitious targets for reducing the rate of fatalities and serious injuries on WA roads and looks to a future where all parts of the Safe System approach have been strengthened.

This project has improved our understanding of the speed limit reductions predicted to have the most impact on RAC's current road safety target for a 50 per cent reduction in the road trauma rate over the five years to 2025. With this knowledge, we will increase our focus on advocating for safer speed limits in WA which reflect the road environment and consider the tolerances of the human body in the event of a crash.

To learn more about how we are already **advocating change**, head to our website to read our most recent Public Policy document, Social & Community Impact Report and State and Federal Budget submissions. RAC's public policy positions reflect where we stand on issues that support our Vision and help achieve our targets. Our policies are developed based primarily on the best available evidence, including the findings from projects like this.



For more information and to contact RAC
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