

Science of Speed

There are many different factors that come together to cause a crash, but the severity of the outcome depends on speed.

Lower speed limits dramatically reduce the likelihood of death or serious injury.

Introducing safe and appropriate speed limits is one of the most effective ways to save lives and prevent serious injuries. Speed limits should be set to reflect the hazards and safety features on each road and minimise harm in the event of a crash.

Survivable impact speeds

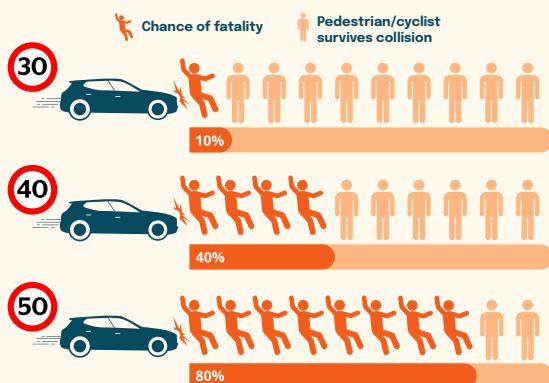
The human body is fragile and can only tolerate a certain amount of force. During a crash, the survival of drivers, passengers, pedestrians or riders depends on how much kinetic energy is transferred into their bodies, which is directly impacted by how fast a vehicle is travelling.

Research indicates¹:

- the risk of a pedestrian being killed in a crash with a vehicle rapidly increases at impact speeds above 30km/h and doubles from 40km/h to 50km/h.
- the chances of a vehicle occupant being killed in a crash when colliding with another vehicle significantly increases for side impact collisions above 50km/h and for head-on collisions above 70km/h.

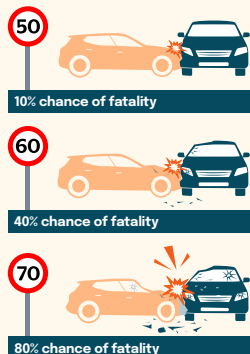
Speed limits should reflect a road's safety features to minimise the risk of crashes occurring at impact speeds that are not survivable.

Survival chances for pedestrians and cyclists at different speeds

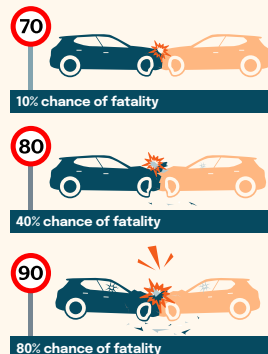


Survival chances in high-speed crashes at different speeds

Side on collision



Head on collision

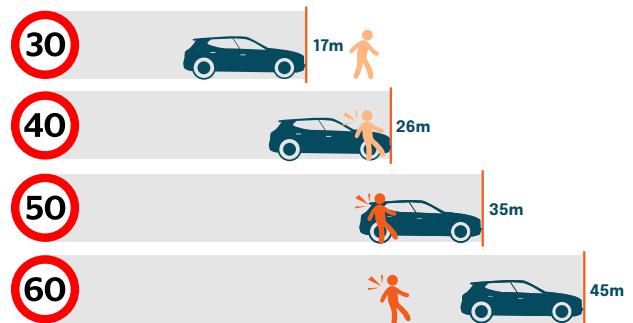


Safe speed limits help you to avoid hazards

When a driver is faced with a hazard or potential collision, they need to stop as quickly as possible. The distance a vehicle travels during this time depends on driver reaction time, speed, condition of vehicle and road conditions.

A slower travelling speed makes a vehicle easier to control and results in a substantially shorter stopping distance, which can be the difference between a crash and a near-miss or between a high-speed crash and a low-speed crash.

The faster you go, the longer it takes to stop



Safe speed limits save lives

There is a strong relationship between average speed and road safety, supported by research across many countries, road types and time periods. A 10 per cent reduction in speed can result in a 30 per cent reduction in crashes that result in a death or serious injury².

Even if not everyone complies with a 10km/h speed limit reduction, analysis in 2022 by the Centre for Accident Research & Road Safety Queensland (CARRSQ) indicates that deaths and serious injuries are still likely to reduce by about 20 per cent.

Speed limit reductions have successfully been shown to reduce crashes, injuries and deaths, in both metropolitan and rural areas.

In 2001, the default urban speed limit in WA was reduced from 60km/h to 50km/h – preventing 65 deaths and 711 serious injuries in the first two years alone.

And in 2019, speed limits on 33 rural roads on the Mornington Peninsula in Victoria were reduced to 80km/h, leading to a reduction in annual crashes from 19 per year to 9 per year and from 6 deaths in 2019 to none during the two-year trial.

1. According to the Wramborg Model.

2. According to the Nilsson's Power Model.