Speeding

• Speeding is a major factor in serious and fatal traffic crashes.

• Speeds just over 5km/h above the speed limit in urban areas, and 10km/h above the speed limit in rural areas, are sufficient to double the risk of a casualty crash. This is roughly equivalent to the increase in risk associated with a blood alcohol concentration of 0.05.¹

Image source: Queensland Police Service

State of the Road A Fact Sheet of the Centre for Accident Research & Road Safety - Queensland (CARRS-Q)

THE FACTS

• Speeding is not just driving faster than the posted speed limit. It is also driving too fast for the prevailing weather, light, traffic and road conditions without full regard for the vehicle condition and driver skills and experience.²

• It is difficult to determine the exact cause of every crash. It is also difficult to identify a single cause, because sometimes more than one factor can contribute to a crash. This means that the role of speed in crashes is likely to be underestimated.³ Even though speed may not be identified as the primary causal factor in a crash, it does play a critical role in the severity of many crashes because of the transfer of kinetic energy when things collide.⁴

• In Queensland in 2013, 47 people died as a result of crashes involving speed. This figure represents more than 1 in 5 deaths and 20.3% of the state’s road toll.⁵ Importantly, many more people were injured because of speeding on our roads.

• Australia has some of the highest speed limits in the world.⁶ The Australian Transport Council asserts that the incidence of serious casualty crashes could be significantly reduced by decreasing vehicle speeds. The data indicate that if vehicle speeds decreased by 5km/h on arterial roads with a speed limit of 60km/h, there would be an 11.9% reduction in all serious crashes. Reducing vehicle speeds by a further 5km/h (i.e. by 10km/hr) would result in a 17.3% reduction in all serious crashes.⁷

• Unrestricted speeds on motorways, especially on roads such as Germany’s autobahns, have previously been thought to be safe. However, based on crash data showing that the number of deaths per kilometre of motorway was 30% lower on sections of German motorways that have speed limits compared to sections with no limits, the European Transport Safety Council has recommended that a speed limit be introduced on all motorways in that country.⁸

• Past improvements to enforcement and reductions in average speeds (even by 1 or 2%) have resulted in substantial reductions in deaths and injuries in many jurisdictions.⁹,¹⁰,¹¹

Even small decreases in travel speed can reduce crash and injury severity and save lives.

Speed and energy transfer in a crash

The severity of injuries resulting from a crash, regardless of its cause, is directly related to the pre-crash speed of the vehicle. When a vehicle crashes there are three collisions that occur:¹²

1. The first is the vehicle’s collision with the object, be it a pole or tree, another vehicle or person. As the vehicle crashes on impact, it will absorb some of the kinetic energy released but not all;

2. The second is the human’s collision with the inside of the vehicle. At the moment of impact, occupants in the car are still travelling at the vehicle’s pre-crash speed. When the car comes to a complete stop, the passengers continue to move forward until they come into contact with some part of the vehicle; and

3. The third is the “internal” collision of the organs within the human body. Even after the human occupant has come to a complete stop within the vehicle, the internal organs are still moving, colliding with other organs and the skeletal system.

Speed and injury risk

• There are strong direct relationships between the speed at which we drive or ride, the risk of crash involvement and the injuries sustained if a crash results.¹³

• The probability of injury and the severity of those injuries increases, not linearly, but exponentially with vehicle speed. Even small increases in travel and impact speeds result in a large increase in the forces experienced by the vehicle occupants or other road users.² Put simply, the faster you drive/ride, the harder you hit and the more severe the injuries you or someone else are likely to suffer.¹⁴

• The chances of surviving a crash decrease rapidly above certain impact speeds, depending on the nature of the collision:¹

  ° Car/pedestrian: 20-30 km/h.
  ° Car/motorcyclist: 20-30 km/h.
  ° Car/tree or pole: 30-40 km/h.
  ° Car/car (side impact): 50 km/h.
  ° Car/car (head-on): 70 km/h.

What is the problem with speeding?

• Speeding increases the risk of being involved in a fatal or serious injury crash.

  ° You travel further in the time it takes you to notice and then react to hazards (e.g. a child running onto the road in front of you).

  ° You are more likely to lose control of your vehicle (e.g. on a curve).

  ° Other road users may misjudge your speed (i.e. they may think you are travelling at the speed limit) and make a mistake.

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The graph below demonstrates the combined effects of reaction and braking times on overall stopping distance.

### Impact speed in dry conditions

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- **A critical factor in the relationship between speed and crashes is stopping distance.** There are two components to stopping distance:
  - The distance travelled by the vehicle during the time it takes for the driver to react; and
  - The distance travelled once the brakes have been applied.

- **For example, after realising the need to stop because you see a hazard on the road, with normal reaction time and optimal conditions, such as a dry sealed road and a vehicle with good braking capabilities, your vehicle travelling at 60 km/h would come to an almost complete stop in approximately 45 metres.** However, if your vehicle was travelling at 65 km/h you would travel approximately 52 metres before you stop. This difference of approximately 7 metres could mean the difference between stopping in time to avoid hitting the hazard or colliding with it.

- **The 2014 Queensland Government Road Safety Campaign provides some additional information about how fast your vehicle would still be travelling when it collides with the hazard on the road:** see http://tmr.qld.gov.au/Safety/Driver-guide/Speeding/Stopping-distances.aspx

- **There is evidence to support an increased risk of crashing when speeding, even by small amounts.** For example, the evidence suggests that if you:
  - Travel at 5 km/h over the speed limit in a 60 km/h zone, you’re twice as likely to have a serious crash.
  - Travel at 10 km/h over in a 60 km/h zone, you’re four times as likely to have a serious crash.
  - Travel at 20 km/h over in a 60 km/h zone, you’re 32 times as likely to have a serious crash.
  - Travel 10 km/h faster than the average speed of other traffic, you’re twice as likely to have a serious crash.

- **Speed variation between vehicles also increases crash risk.** The research suggests a J-curve relationship, such that slower drivers, while at increased crash risk compared to motorists travelling at the mean traffic flow speed, are not as at-risk compared to motorists travelling excessively faster than the average traffic speed.

- **Who speeds?**
  - Many of us might inadvertently speed because we are not sure what the speed limit is for a particular stretch of road or because we are not always aware of our exact travel speed.
  - Some people speed because of the perception that they are immune from being caught by police if they travel within a certain amount above the posted limit. Such perceptions relate to enforcement tolerance thresholds applied by police to speed detection equipment to allow for slight variation in speed measurement.
  - However, it is illegal to drive at any speed above the posted limit and, in Queensland, the enforcement tolerance level used by the police is not published. This means that drivers/riders are likely to be making incorrect assumptions about how fast they can drive without being detected by police.

- **More speed = faster travel time?**
  - On most trips, speeding will save you very little time. For example, on a 10km journey, you would only save 46 seconds by increasing your average speed from 60km/h to 65km/h. When travelling faster you use more fuel and your vehicle emits more of the gases that contribute to air pollution.

- **TIPS FOR STAYING SAFE**

  - **Monitor your speed.** It is possible that many people travel above the speed limit because they are unaware of exactly how fast they are driving/riding.
  - **Always stay within the speed limit posted in a particular stretch of road.**
  - **If the weather, traffic or road conditions are poor, you may need to travel at a speed lower than the posted speed limit.**
  - **If you are slowing down from a high speed, check your speedometer** – it can be hard to judge speed especially after travelling at a high speed for a period of time.
  - **When travelling at higher speeds, increase the distance between your car and the vehicle ahead (minimum 2-4 seconds gap).** If the vehicle in front has to slow down or stop, you will have enough time to react and brake to avoid a rear end collision.
• Don’t cut in front of trucks and buses because these vehicles need longer stopping distances.
• Remember that even small decreases in your speed can reduce the number and severity of traffic crashes on our roads.
• You are in control of how fast you drive. Don’t let others influence you to drive faster than you wish to.

Penalties for speeding
• The consequences of speeding include not only a fine and loss of licence, but also the potential loss of insurance cover and WorkCover. In addition, prosecutions can be commenced as a result of breaches of the Workplace Health and Safety Act for any worker who has been found negligent in his/her duties.

Remember the posted speed limit is the maximum speed you can legally drive. In poor weather, light or traffic conditions, you may need to travel below the limit.

CARRS-Q’S WORK IN THIS AREA
• An international review of strategies that have been used to promote public demand for safer speeds on the road for Austroads. This review will help guide future anti-speeding campaigns (https://eprints.qut.edu.au/93003/).
• An international review of point-to-point speed enforcement for Austroads, including the development of recommendations for better practice in the Australian and New Zealand context (https://eprints.qut.edu.au/66855/).
• A pilot study to examine the characteristics of drivers who speed.
• Profiling repeat speeding offenders and examining the effects of increased legal penalties on speeding in Queensland (https://eprints.qut.edu.au/56160/).
• Investigation of the relationship between driver perceptions toward actual and hypothetical police speed enforcement practices and self-reported speeding behaviour and intentions to speed (https://eprints.qut.edu.au/29382/).
• Exploratory research on the influence of social, personal and legal factors on self-reported speeding among drivers in Queensland and China (https://eprints.qut.edu.au/28848/).
• Research to examine how cultural differences and learning to drive in another country can impact upon driving speeds and responses to enforcement in Australia.
• Research comparing attitudes towards speeding and other risky driving behaviours such as drink driving (https://eprints.qut.edu.au/70280/). The study aimed to uncover differences in how speeding and drink driving are viewed in order to develop more targeted road safety countermeasures.
• Involvement in the School Transport Safety Taskforce. Based on a 6-month review of current policy and practice, extensive community and expert practitioner consultation, the Taskforce provided recommendations to government to improve state school transport safety. The recommendations targeted four deliverables including speed reductions for safe school zones.
• A study to investigate the influence of visible traffic enforcement on the incidence of other crime: Implications for intelligence-driven crime prevention.

FUTURE DIRECTIONS
The National Road Safety Strategy 2011-2020 is focused on implementing best practice speed management by:
• Developing national risk-based speed limit guidelines for different road categories and functions, aimed at achieving both safety and mobility, consistency across the road network, minimising multiple speed zones over short distances, and factoring in the inherent risk of the road and roadside environment.
• Reviewing speed limits on high-risk sections of the road network or where engineering solutions are not feasible or cost-effective.
• Working with local governments to identify safe speed limits for road lengths with particular characteristics, such as narrow lanes; roadside hazards; high number of intersections or entrances; winding or undulating roads; and, areas with high pedestrian and cycling activity.
• Increasing compliance with speed limits, particularly on highly trafficked and higher-risk sections of the road network, by adopting best practice enforcement (combining automated and manual approaches and covert and overt approaches).
• Increasing the use of point-to-point speed cameras in appropriate locations to encourage compliance among all vehicles.
• Identifying options for enhanced speed enforcement of motorcycles and heavy vehicles (e.g. speed limiter offences).
• Improving the application of chain of responsibility legislation to prosecute heavy vehicle speeding offences and facilitate cross-border enforcement.
• Improving the use of sanctions to more effectively deter people from speeding.
• Facilitating the implementation of Intelligent Speed Adaptation (ISA) systems by enhancing the development of digital speed limit maps; encouraging the requirement for advisory ISA in all government fleets; enacting mandatory speed limiting ISA for recidivist speeders; and, encouraging insurers to offer lower premiums associated with voluntary fitting of ISA, especially for young drivers.
• Developing a national public information campaign about the community safety benefits of complying with speed limits.

In addition, focus on the following best practice speed management strategies highlighted in the National Road Safety Action Plan 2015-2017 continues:

• Strengthening of speed compliance provisions in the Heavy Vehicle National Law.
• Implementing programmes to build community understanding and support for effective speed management measures.
• Extending the application of lower speed limits in areas with high pedestrian and cyclist usage.
• Strengthening national police enforcement operations to improve road safety compliance.

REFERENCES


STATE OF THE ROAD is CARRS-Q’s series of Fact Sheets on a range of road safety and injury prevention issues. They are provided as a community service and feature information drawn from CARRS-Q’s research and external sources. See the reference list for content authors.

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