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 2009, 75 fatalities (or 22.7%) were identified as being a result of speeding drivers or riders. 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
- 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. 1,8,9,10

Speed and injury risk

- 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

Speed and the transfer of energy 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: 11
  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.

- 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. 12
- 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. 13 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. 13
- 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.
How fast is too fast?
- 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 crash where someone is injured or killed.
  - 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.
- A critical factor in the relationship between speed and crashes is stopping distance. There are two components to stopping distance:
  1. The distance travelled by the vehicle during the time it takes for the driver to react; and
  2. The distance travelled once the brakes have been applied.

The following graph demonstrates the combined effects of reaction and braking times on overall stopping distance:

For example, after perception time or realisation of the requirement to stop, 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.

- 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 at risk compared to motorists travelling excessively faster than the average traffic speed.
- Vehicles travelling at excessively fast or slow speeds, relative to the mean traffic flow, can cause other road users to make errors in judgement leading to conflict situations.

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.
- We know that certain groups of road users are over-represented in the statistics relating to speeding offences and speed-related fatalities. For example, younger drivers, particularly younger men, are at a higher risk of committing a speeding offence and of being repeat speeding offenders and males are generally over-represented in speed-related fatality statistics.
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. New in-vehicle technology, such as intelligent speed adaptation (ISA) devices, are providing us with trip data to demonstrate that keeping to the speed limit, particularly for commuter journeys on urban roads, does not add to your travel time. Indeed, keeping to the speed limit may actually assist with reducing traffic congestion by improving the smoothness of traffic flow through reductions in speed variation and improved vehicle headway.

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 on 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). 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/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.

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.

CARRS-Q’S WORK IN THIS AREA

• 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.
• Innovative research to compare the impact of ‘intermittent reinforcement scheduling’ and ‘fixed reinforcement’ programs on speeding behaviour.
• Investigation of the relationship between driver perceptions toward actual and hypothetical police speed enforcement practices and self-reported speeding behaviour and intentions to speed.
• Exploratory research on the influence of social, personal and legal factors on self-reported speeding among drivers in Queensland and China.
• Research comparing attitudes towards speeding and other risky driving behaviours such as drink driving. 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 in October 2001 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 Action Plan 2011-2020 focuses on implementing best practice speed management by:

• Develop national risk-based speed limit guidelines for different road categories/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.
• Review speed limits on high-risk sections of the road network or where engineering solutions are not feasible or cost-effective and reduce speed limits at high-risk intersections.
• Work 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.
• Increase compliance with speed limits, particularly on highly trafficked and/or higher-risk sections of the road network, by adopting best practice enforcement (including a combination of automated and manual approaches and covert and overt approaches).
• Increase the use of point-to-point speed cameras in appropriate locations to encourage compliance among all vehicles.
• Identify options for enhanced speed enforcement of motorcycles and heavy vehicles (e.g. speed limiter offences).
• Improve the application of chain of responsibility legislation to prosecute heavy vehicle speeding offences and facilitate cross-border enforcement.
• Improve the use of sanctions to more effectively deter people from speeding.
• Facilitate 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.
• Develop 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 2009-2010 continues:

• Conducting research on the key elements behind the extensive shift in attitudes to drink driving in Australia.
as a guide to changing other behaviours such as speeding.

- Establishing a best practice model for the rehabilitation of repeat speeding offenders.
- Improving road infrastructure.
- Conducting further research to examine the links between lower speeds and the reduction in environmental impact and vehicle operating costs.
- Monitoring industry compliance with the Federal Chamber of Automotive Industries (FCAI) Voluntary Code of Practice for Motor Vehicle Advertising, which prohibits the depiction of speeding and other unsafe driving behaviours in advertisements.

REFERENCES