

Pedestrian safety



- Pedestrians make up approximately 14% of the annual Australian road toll¹.
- In Queensland in 2015, over one-third of fatally injured pedestrians were alcohol impaired¹³.
- Younger pedestrians are prone to distraction from smartphones, with 1 in 3 18-30 year olds reporting texting while crossing the road in Queensland³.

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

THE FACTS

- Pedestrians still represent approximately 14% of the total national road toll, accounting for 174 fatalities in 2018¹.
- In 2017, there were 35 pedestrian fatalities in Queensland (14% of the state road toll). This represents an average decrease of 1.5% per annum since 2008⁴.
- In every year between 2008 and 2014, the pedestrian fatality rate for males was more than twice the rate for females⁵.
- People aged 75 and older had the highest pedestrian fatality rate of any age group (2.31 per 100,000 people)⁵.
- People aged 0-16 years had the lowest rate (0.34 per 100,000 people)⁵.

Why are pedestrians at risk?

Owing to the dramatic growth in the number of motor vehicles and frequency of their use, as well as the general neglect of pedestrian needs in roadway design and land-use planning, pedestrians are increasingly susceptible to road traffic injury⁶. This is further heightened in settings where traffic laws are inadequately enforced⁶. Key risk factors for pedestrian traffic injury include:

Speed

Increased vehicle speeds are associated with increased injury severity and death for pedestrians and cyclists, influencing crash risk and consequences in three ways⁶:

1. Stopping distance

- The higher the speed of a vehicle, the shorter the time a driver has to stop and avoid a crash, increasing the likelihood of impact⁷. Taking into account the time needed for the driver to react to an emergency and apply the brakes, a car travelling at 50km/h will typically require 36 metres to stop, while a car travelling at

40km/h will stop in 27 metres⁶.

2. Impact force and injury severity

- The probability that a pedestrian will be fatally injured if hit by a motor vehicle increases markedly with impact speed⁷. In a car/pedestrian collision, the chance of surviving a crash decreases rapidly above an impact speed of 20km/h depending on the collision⁷.

3. Spatial judgement

- If a car is travelling unusually fast, a pedestrian may misjudge the speed of the approaching vehicle and mistakenly assume they have time to cross the road.
- The default speed limit in urban built-up areas was reduced from 60km/h to 50km/h in the late 1990s. The new 50km/h default speed limit was linked to a 15% decrease in casualty crashes. Safety outcomes in higher-risk pedestrian and school areas were improved through the introduction of 40km/h and lower limits⁸.

Drink walking

- Like drivers, a pedestrian's risk of crash involvement increases with increasing blood alcohol content (BAC) due to the resulting impairment in judgement, reaction time, vigilance and visual acuity⁶.
- There is currently no legal BAC limit for pedestrians in Australia, however research tends to define 'drink walking' as occurring whenever a person walks in public with a BAC of 0.05mg/ml or above⁹.
- In 2015, there were 243 road crash fatalities in Queensland. Of these fatalities, 21 were pedestrians, and 8 were alcohol impaired pedestrians. Thus, more than one-third of pedestrians fatalities were alcohol impaired¹³.

Distraction by technology

- Due to the widespread use of smartphones, distraction by technology

is an emerging risk factor for pedestrians, especially among adolescents and young adults¹⁰.

- Recent research in Queensland suggested that approximately 20% of pedestrians are likely to cross the road while distracted (with a hand-held device), with 18-30 year olds being significantly more likely to experience high levels of distraction while crossing¹¹.
- Compared to pedestrians who are not distracted, those using their mobile phones are found to walk more slowly, change direction more frequently, acknowledge other road users less, spend more time looking away from the traffic, and be less likely to check for traffic before crossing¹⁰.

Inadequate visibility

Inadequate pedestrian visibility arises from:

- Inadequate, or lack of, roadway lighting;
- Vehicles and bicycles without lights;
- Child pedestrians being obscured by parked cars or other objects due to their smaller stature;
- Pedestrians not wearing reflective accessories or brightly coloured clothes, especially at night, dawn or dusk. Pedestrians tend to judge themselves as being more visible than they actually are at night¹²; and
- Pedestrians sharing road space with fast-moving vehicles.

Lack of pedestrian facilities in roadway design and land-use planning

- Infrastructure and traffic control mechanisms that separate pedestrians from motor vehicles are important mechanisms to ensure pedestrian safety⁷.

Road design

- Roadway design has generally catered for the needs of motorised traffic, neglecting

the needs of pedestrians⁷. Roadway designs in which facilities such as footpaths and signalised crossings are missing, are inadequate or in poor condition, create risk for pedestrians. Wider lanes and roads, with more traffic lanes and higher designated speed, tend to increase traffic speed and are more dangerous to cross⁷.

- Vehicle–pedestrian collisions are 1.5 to 2 times more likely to occur on roadways without footpaths⁶.

Broader land use

- The frequency of pedestrian crashes is strongly influenced by the density of the resident population and the total population exposed to risk⁷.
- Beyond design elements of the roadway itself, the design and use of the broader land for commercial, industrial, recreational, transport, conservation, agricultural, or a mix of purposes, can contribute to the occurrence of pedestrian injuries and fatalities⁷.

HOW CAN PEDESTRIAN SAFETY BE IMPROVED?

Successful interventions to protect pedestrians and promote safe walking require an understanding of the nature of risk factors for pedestrian crashes, as well as the collection and analysis of local data.

Engineering and behaviour⁴

Several engineering and behavioural interventions have proven effective in improving pedestrian safety including:

- *Reducing exposure to vehicular traffic:* provision of footpaths; installation of pedestrian signals, refuge islands and raised medians; vehicular diversion/restriction from pedestrian areas; installation of overpasses/underpasses⁶.
- *Lowering vehicle speeds:* speed limit reductions, speed management measures at intersections and high volume pedestrian areas e.g. school zones⁷. At the 2016 Australasian Road Safety Conference,

CARRS-Q led the case for local street speed limit in built-up areas to be reduced from 50km/h to 40km/h. For vulnerable road users such as pedestrians, the chance of being killed by a vehicle travelling at 50km/hr is 50-80%.

- *Improving sight distance and/or pedestrian visibility:* crossing and lighting enhancements, further research and development into clothing involving biomotion configured reflective clothing¹⁴.
- *Improving pedestrian and motorist safety awareness and behaviour:* provision of education and training¹²; enforcement of traffic laws.
- *Improving care for injured pedestrians:* organisation of pre-hospital trauma care systems and early rehabilitation services.

Impairment from alcohol

- In the attempt to reduce potential harm to intoxicated pedestrians, improvements have been made to roadsides around licensed premises (i.e. pedestrian fencing and signalised crossings) and legislative changes for the responsible service of alcohol¹⁰.
- Countermeasures such as slower vehicle speeds and changing timings of traffic signals at high alcohol consumption times and locations have been implemented in Australia, but not yet evaluated for effectiveness¹⁰.

Distraction by technology^{10,11}

- Countermeasures should target young people (under 31 years old) because distracted walking is most common in this group of pedestrians.
- Signs should be posted in high pedestrian volume areas (e.g. CBD and intersections) to reach as many pedestrians as possible.
- Road safety education targeting adolescents and young adults should be designed to influence attitudes and perceptions of risk associated with distraction by technology (e.g. smartphone use) while engaging in the tasks required

of a pedestrian to stay safe.

Vehicle design

- There is an increasing effort to include vehicle design elements that reduce the likelihood of pedestrian collision and/or reduce the severity of pedestrian injury, including⁶:
 - ‘Brake Assist’ - now fitted as standard to most new cars; and
 - Autonomous Emergency Braking (AEB).

CARRS-Q'S WORK IN THE AREA

- The effectiveness of biomotion configured reflective clothing, where retro-reflective materials are applied on moveable joints.
- Queensland-wide campaign “[Watch your Pace when Sharing Space](#)”:
- Distraction and attitudes towards safe pedestrian behaviour.
- Personality factors affecting pedestrian crossing behaviours.
- Examination of the related behaviour and attitudes of young people in Queensland; and the factors which influence drink walking intentions.
- Understanding pedestrian behaviour on railway crossings.
- Investigation of older pedestrians’ road crossing strategies.
- Trends in cycling patterns and interactions with pedestrians.
- Acoustic hazard detection for pedestrians with impaired hearing.
- Examination of driver, cyclist, motorcyclist and pedestrian situation awareness at intersections.

Be seen: wear light, bright clothing & add reflective materials to backpacks and clothing if walking in low light.

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