

# Bicycle safety



- Bicycle riding has many health and environmental benefits<sup>2,3</sup> but safety concerns limit participation in Australia and other low-cycling countries.
- From 2010-11 to 2015-16, the number of cyclists hospitalised from road crashes per 100,000 population increased by 4.7% per year while the rate fell for motor vehicle occupants and pedestrians<sup>1</sup>.
- Each year, an average of about 36 cyclists are killed and about 7,000 are hospitalised as a result of crashes on Australian public roads<sup>1</sup>.

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

### THE FACTS

#### *Cycling participation*

- Cycling is an important form of transport and recreation for many Australians. It is accessible to a wide range of people and has significant health and environmental benefits for the community<sup>2,3</sup>.
- National<sup>4</sup> and state<sup>5</sup> cycling strategies aim to double the number of people cycling but the latest data suggests that this is unlikely to be achieved.
- More than half of the households in Australia have at least one bicycle in working order<sup>6</sup>
- According to the National Cycling Participation Survey<sup>6</sup> the percentage of Australians riding a bicycle over the past month declined from 27.1% in 2011 to 21.8% in 2017.
- However, counts of people riding in cities and on bike paths show consistent increases. For example, CARRS-Q observations showed a 52% increase in bicycle riders in the Brisbane CBD from 2010 to 2017.
- For every age group, the percentage of the population cycling is higher for males than females<sup>6</sup>.
- More people ride for recreation than for transport in Australia<sup>6</sup>.

#### *Rider fatalities and injuries*

- Cycling fatalities and injuries are counted as road crashes if they occur on roads and footpaths, but not if they occur "off road" such as on bikeways, in parks and when mountain biking. Across Australia, about 40% of cyclist hospitalisations result from off-road incidents<sup>1</sup>.
- Many road crashes involving cyclists

are not reported to police, particularly those that do not involve a motor vehicle. Therefore road crash data underestimate the number of cyclists injured and give a very different pattern of cyclist crashes than hospital data. For example, across Australia in 2013 cyclists made up 4.4% of all police-reported traffic injuries but about 15% of hospital-reported traffic injuries<sup>7</sup>.

- During 2008-2013, in Australia<sup>7</sup>:
  - About 85% of the fatalities involved a motor vehicle;
  - In two-vehicle bicycle crashes, almost a quarter of the fatal crashes involved a heavy vehicle (compared with 3% of injury crashes);
  - For injured child cyclists, crashes involving vehicles moving from the footway or the driveway were common; and
  - For adult cyclists, cross traffic, opposing direction and sideswipe crashes were more common.

### Lower traffic speeds or separation from traffic are key for the safety of riders

#### *Improving cycling safety*

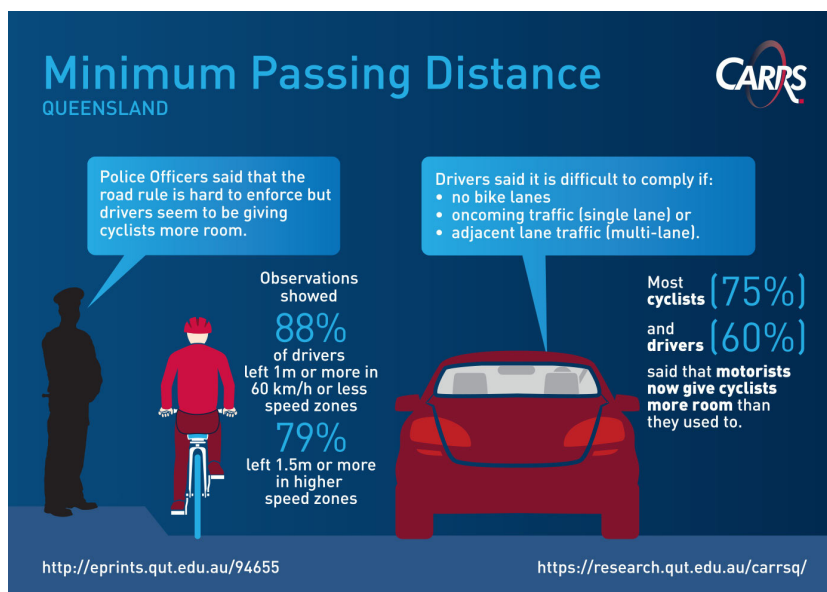
- Safe cycling fundamentally requires slow vehicle speeds to allow safe sharing of the road with motor vehicles, or provision of separated infrastructure. Shared use paths are common in Australia, but careful design is needed to minimise conflicts with pedestrians<sup>8</sup>.
- Minimum passing distance road rules have been introduced in all Australian states

and territories except Victoria. This rule requires all motorists to leave at least 1 metre between their vehicle and a bicycle when passing a bicycle rider on a road with a speed limit of 60km/h or lower, and at least 1.5m when passing a bicycle rider on a road with a speed limit more than 60km/h<sup>9</sup>. CARRS-Q research showed 88% of Queensland drivers complied with the rule in the low speed areas, compared to 79% in higher speed areas<sup>10</sup>.

- Cyclists of all ages are allowed to ride on the footpath in all jurisdictions except New South Wales and Victoria. A CARRS-Q review<sup>11</sup> concluded that many of the studies reporting concerns for cyclist safety on footpaths were based on low-severity crashes. There is little evidence that footpath cycling contributes to serious injuries to pedestrians and it provides cyclists with an option to avoid collisions with motor vehicles. It may act to encourage cycling (particularly among new cyclists) because it is perceived to be safer than riding on the road.
- Australia was the first country to introduce compulsory cycle helmet legislation in 1991. The Cochrane review of bicycle helmet effectiveness<sup>12</sup> found that helmets provide a 63-88% reduction in the risk of head, brain and severe brain injury for cyclists of all ages. Analyses of Queensland data by CARRS-Q<sup>13</sup> found reductions of 60% in the likelihood of head injury, 53% for serious head injury and 58% for head and/or facial injury associated with wearing a helmet. CARRS-Q observations of more than 27,000 cyclists<sup>14</sup> found that over 98% were wearing helmets. The lowest wearing rate (56%) was among boys on local streets in the afternoon.

## CARRS-Q'S WORK IN THE AREA

- Evaluation of the minimum passing distance road rule<sup>10,15</sup> and other laws related to cycling.
- Usage and outcomes of public bicycle schemes<sup>16</sup>.
- The role of fear and perceived risk in decisions to ride or not<sup>17,18</sup>.
- Driver attitudes and behaviours towards cyclists<sup>19,20</sup>.
- How bicycle-specific and other road infrastructure affects cycling safety.
- Cyclist warnings when passing pedestrians<sup>21,22</sup>.
- The use of intelligent transport systems (ITS) to increase safety<sup>23</sup>.
- The use of intelligent transport systems (ITS) to increase safety<sup>16</sup>.



## FUTURE DIRECTIONS

- Improved traffic engineering measures and cycle path/road networks allowing for greater coverage, linkage, separation from vehicular and pedestrian traffic, adequate lighting, vision around corners and single direction paths.
- Consideration of cycling in safety audits and black spot identification programs.
- Continuous monitoring to reduce hazards

such as surfacing irregularities and oversee road/path upgrades.

- Improved vehicle design to reduce cyclist injury in the event of a crash with a motor vehicle. 4WD's with their raised height and increased weight cause greater injury to pedestrians, cyclists and motorcyclists.
- The development of best practice safe cycling education interventions for drivers and cyclists.

- Improved reporting of bicycle injuries. Official statistics on cyclist injury crashes in Queensland are based on hospital data and police crash reports which, while accurately report fatalities, are known to under-report non-fatal injury crashes<sup>24</sup>.
- Safety of e-bikes and other e-mobility devices such as e-scooters and segways.
- ITS solutions to increase safety<sup>25</sup>.

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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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