



**BICYCLE
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BIKE RIDER FATALITY REPORT 2001-2020

MARCH 2021

This report is dedicated to the 744 people who lost their lives riding a bike on Australian roads from 2001 to 2020.

We know your family and friends miss you every day. While we can't fix the tragic loss of life, our aim in compiling this report is to try and prevent further loss.

Executive summary

Despite the drastic changes to the way we moved around in 2020, there was no change in the number of bike riders killed on our roads. Fatality records from the Australian Road Deaths Database (ARDD) reveals that 42 fatalities were recorded across Australia last year, a value no different from the 20 year average.

In order to better understand the contributing factors of rider fatalities in Australia, Bicycle Network has analysed the ARDD data for 2020. We found that:

- The majority of these cases occurred in New South Wales (33%), followed by Victoria (31%) and Queensland (16.7%).
- 83.3% of cases involved male riders.
- 52% of cases involved riders aged between 40-64 years old.
- The majority of cases (57.1%) occurred on weekdays during the day.
- The majority of cases (30%) occurred on roads with $\leq 50\text{km/h}$ speed limits.

We also highlight five key insights from the last 20 years of fatality data:

- More older riders (and less younger riders) are being killed each year
- The majority of rural riders are being killed on high speed roads
- On average, 1 in 5 fatal crashes each year involves a heavy vehicle
- Over 50% of fatal crashes during the week occur at peak periods
- Nearly 50% of fatal crashes during the weekend occur during the morning.

Every person that dies while riding a bike is one too many. Bicycle Network anticipates that the findings and recommendations presented here will better inform policy and practice, and support the safety and wellbeing of riders into the future.

Recommendations summary

1. Expand the ARDD by making fatal crash characteristics available as open data.
2. Develop a nationally consistent public database for road crashes involving serious injuries (AIS3+)
3. Invest in infrastructure that separates people riding bikes from moving and stationary motor vehicles.
4. Prioritise rider safety on high-speed regional roads through targeted infrastructure improvements.
5. Recognise the circumstances where fatality risks are elevated for riders, and develop strategic behaviour change campaigns.
6. Lower speed limits in built up areas and cycling corridors with mid-block infrastructure.
7. Target and prevent distracted driving.

20 years of bike riding fatality data

This report comprises analyses of national data from the Australian Road Deaths Database (ARDD). In Australia, road fatalities are reported by police to the State and Territory road safety authorities and are subsequently catalogued in the ARDD by the Bureau of Infrastructure, Transport and Regional Economics (BITRE)¹.

The database comprises basic details of road fatalities, including when the fatal crash happened, in which state or territory the crash occurred, the posted speed limit of the road, whether the crash involved another vehicle, and demographic information of the victim.

This report focusses on ARDD data involving bike rider fatalities between January 2001 and December 2020.

Bicycle Network believes that the ARDD would be enhanced for public use with the inclusion of additional open datasets such as:

- the infrastructure characteristics at the site of the fatality (e.g. road architecture);
- the characteristics of the vehicles associated with fatalities (e.g. make, model, year of manufacture), and whether these satisfied the Australasian New Car Assessment Program (ANCAP) safety ratings;
- if a fault was determined and with whom;
- if safety devices (seat belts, helmets) were used.

The public would also benefit from a database of crashes where serious injuries were sustained. A classification system such as the abbreviated injury scale (AIS) would allow records to be streamlined by injuries categorised as 'serious' (rank: 3) or above. Such a database would offer the public a wider understanding of the precursors and determinants associated with road crashes.

Recommendation 1

Expand the ARDD by making fatal crash characteristics available as open data

Recommendation 2

Develop a nationally consistent public database for road crashes involving serious injuries (AIS3+)

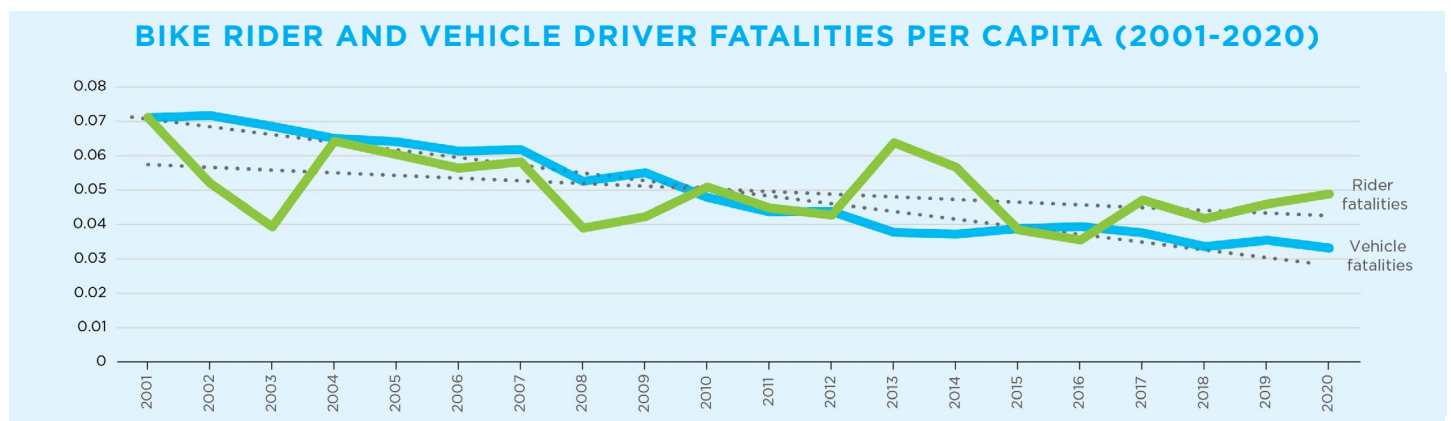
2020 summary

No change in the number of bike rider deaths

In 2020, a total of **42** fatalities were recorded across Australia, which comprised **4 per cent** of all road fatalities. This is no different to the yearly average for the 20 year period (2001-2020: 37), and has resulted in no net growth or decline over the long term (below).

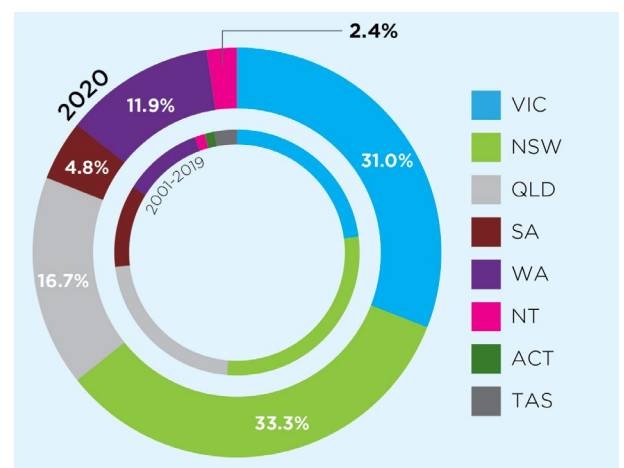


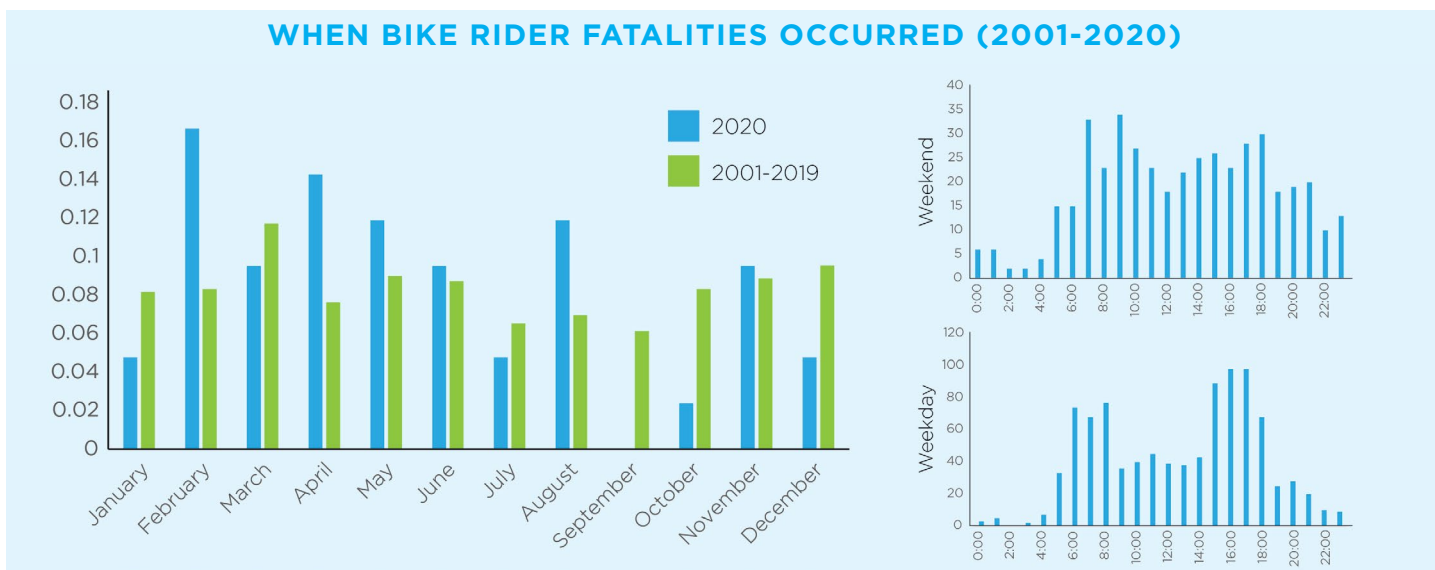
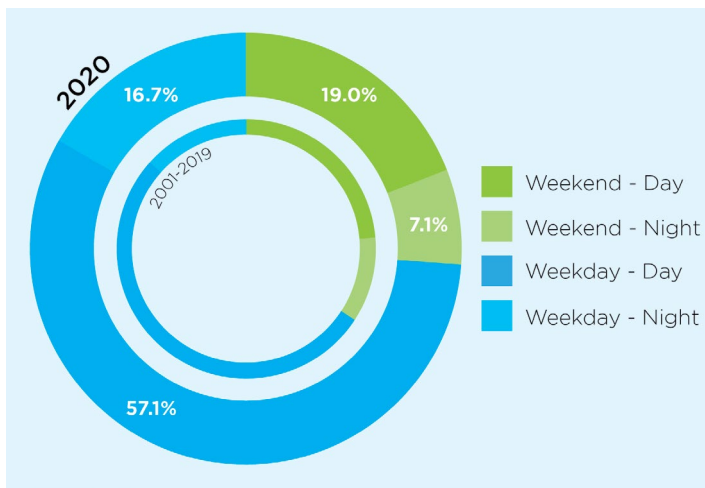
When adjusted for population growth (plotted as fatalities per million people; below), the data suggest marginal decreases in fatalities per capita. However, when compared with vehicle fatalities, which comprise ~70 per cent of annual road fatalities on average, their decline rate is more substantial (note that data has been normalised for comparison). This suggests that there are disproportionate efforts to curb fatalities between these groups.



Where did the fatalities occur?

The majority of fatalities in 2020 occurred in New South Wales (**14 cases**), followed by Victoria (**13 cases**) and Queensland (**7 cases**). This is reasonably consistent with the 20 years preceding 2020 (refer inner ring in plot, right), however we noted there were uncharacteristically less cases in South Australia this year, and no cases recorded in the Australian Capital Territory.

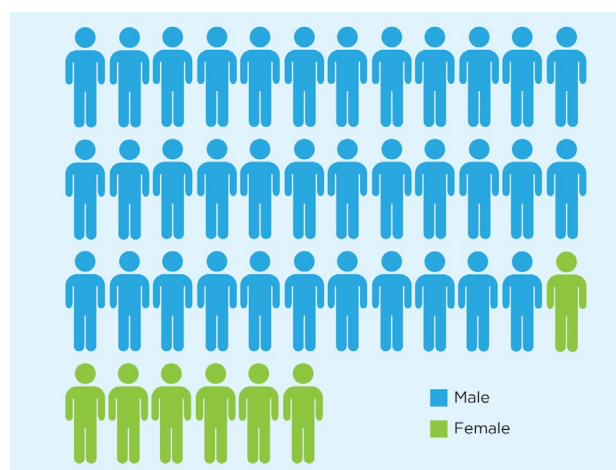
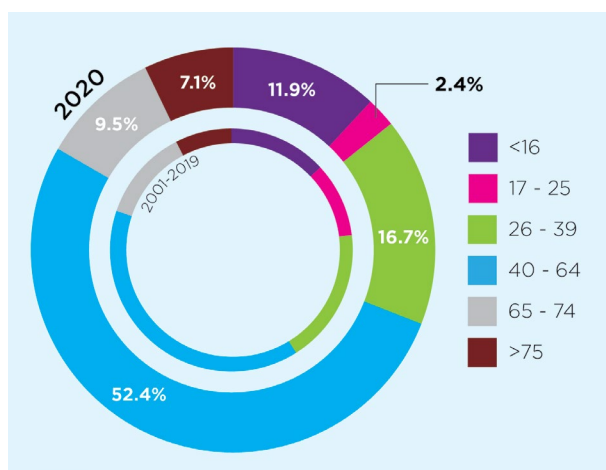




Demographic characteristics

As with previous years, the majority of fatalities in 2020 involved male riders (**35** in total; **83 per cent**; below right). This statistic is likely related to more males participating in bike riding in Australia, compared to females².

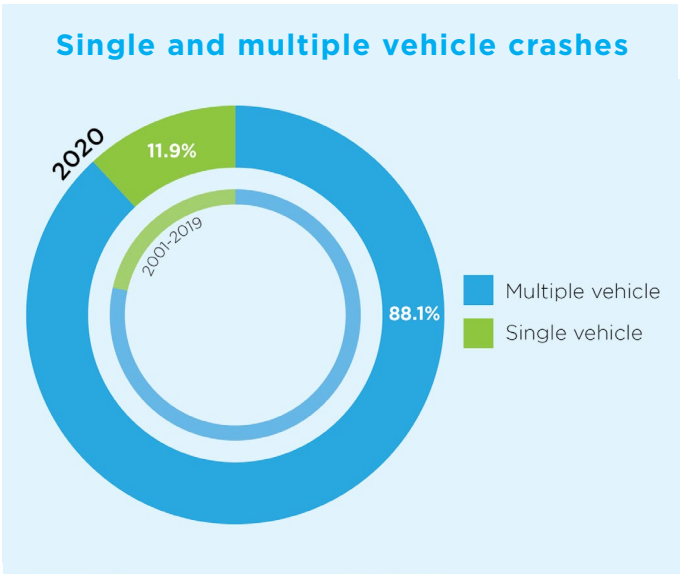
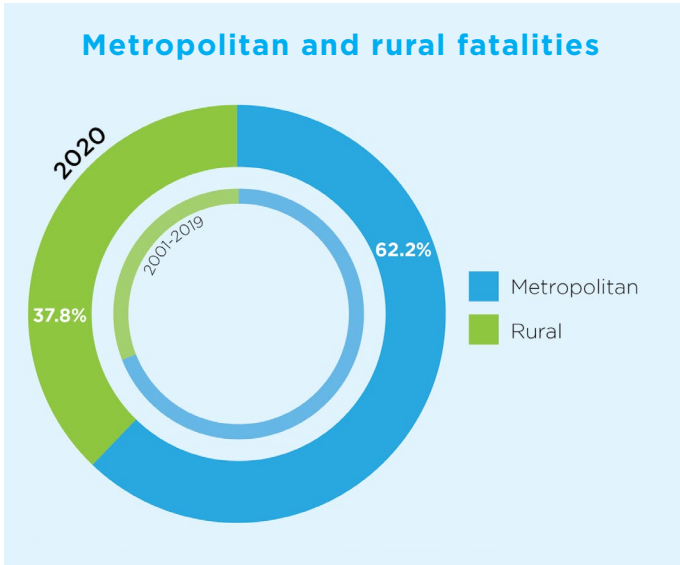
Approximately **52 per cent** of cases involved riders aged between 40-64 years old (below left). This age group is under-represented in previous National Cycling Participation surveys³ and suggests they have a higher fatality risk than other age groups. In 2020, there were less fatalities in the 17-25 year bracket.



Other important characteristics

Over a third of fatalities in 2020 occurred on rural roads (**37.8 per cent**; bottom left), which is consistent with the 20-year average preceding it (41.2 per cent).

Similarly, the proportion of fatal crashes involving other vehicles (**88.1 per cent**) was consistent with the 20-year average (81.7 per cent; bottom right). Single-vehicle fatal crashes, where only the rider was involved, comprised **five** cases, or **11 per cent** of the total.



Recommendation 3

Invest in infrastructure that separates people riding bikes from moving and stationary motor vehicles

Recommendation 4

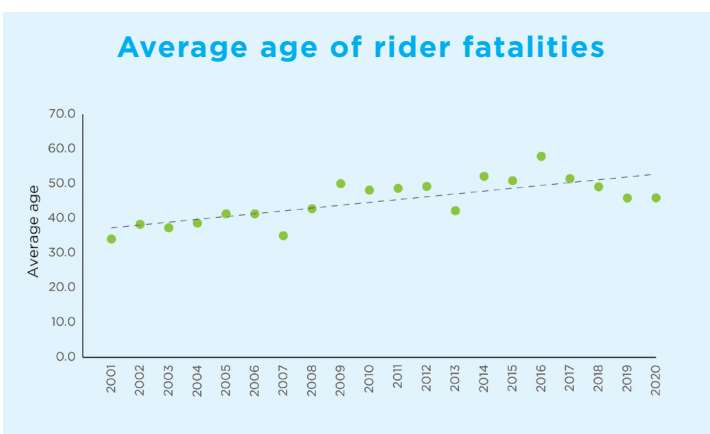
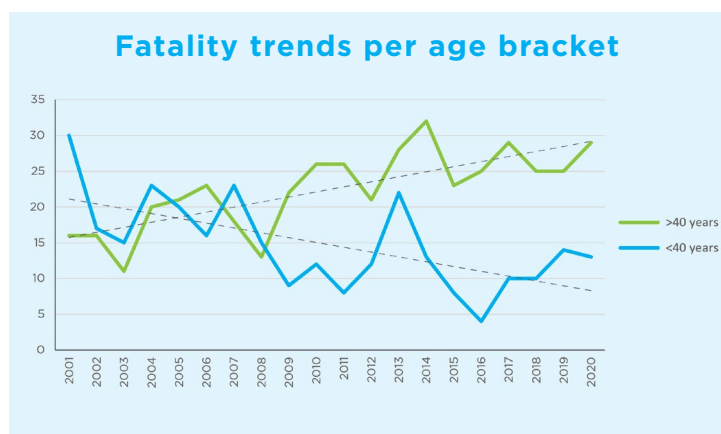
Prioritise rider safety on high-speed regional roads through targetted infrastructure improvements (e.g. safety bollards, designated lanes with painted surfaces)

Five key insights from 20 years of rider fatality data

Given that the year-on-year fatality count has been reasonably similar for two decades, there is an opportunity to investigate common characteristics, longitudinal variations and possible contributing factors. In this section, we present five key insights from the last 20 years of fatality data.

1. More older riders (and less younger riders) are being killed each year

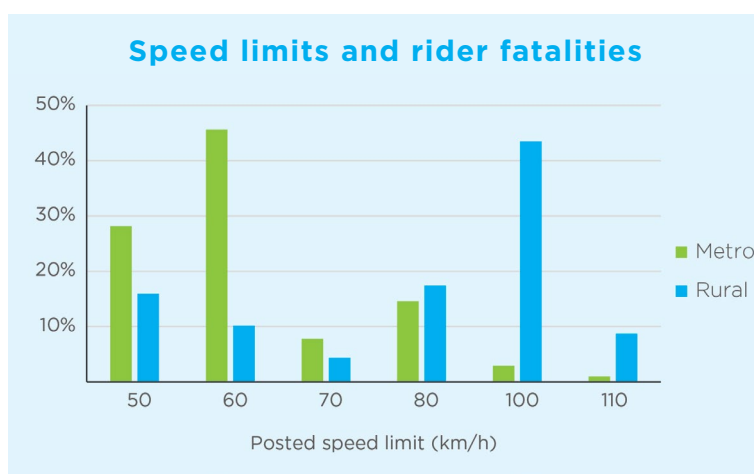
The number of rider fatalities in the older age brackets (>40 years) is increasing with time (bottom left). This observation is also clear in the average age of riders involved in a road fatality, which is systematically increasing each year (bottom right).



2. The majority of rural riders are being killed on high speed roads

The majority of rider fatalities within capital cities (**73.8 per cent**) occur on roads with posted speed limits of 60km/h or less. This is the opposite in rural areas; just over **60 per cent** of rider fatalities occur on roads with posted speed limits between 80-100km/h*.

The data highlights the need to target rural high-speed roads with more tailored infrastructural safety interventions.



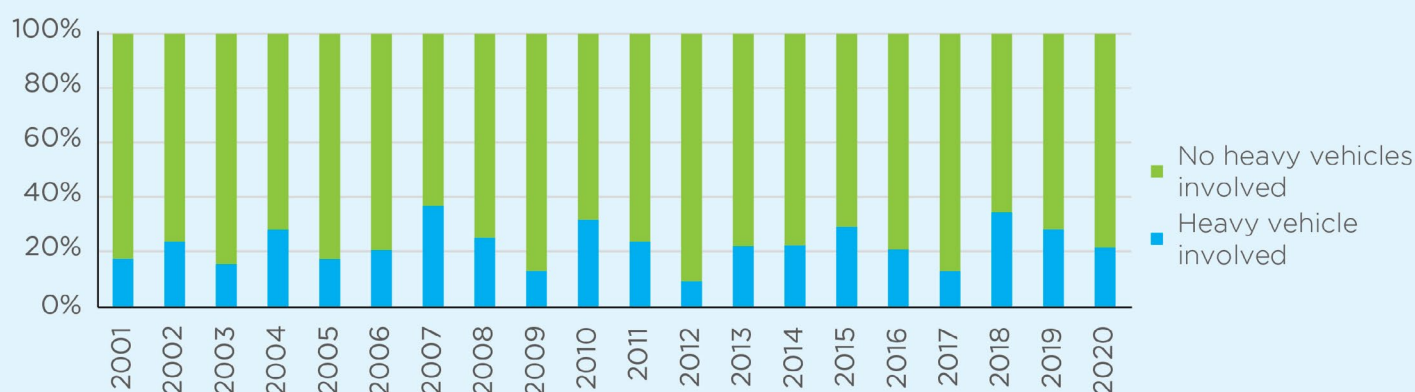
* Data is based on the ARDD's 'National Remoteness Areas' classification, which is made available by BITRE since 2014

3. On average, 1 in 5 fatal crashes each year involves a heavy vehicle

For simplicity, ‘heavy vehicles’ is used here as a collective term to denote buses, heavy rigid trucks and articulated trucks. The ARDD records whether heavy vehicles were involved in a given case, which offers an opportunity to investigate the involvement of these vehicle types in rider fatalities.

On average, **23 per cent** of rider fatalities each year involve a heavy vehicle. The net growth in heavy vehicle related fatalities is marginal (3 per cent across 20 years). However, the lack of variation over the time period suggests that there are insufficient policies and interventions improving rider safety around heavy vehicles.

The proportion of rider fatalities that involved a heavy vehicle



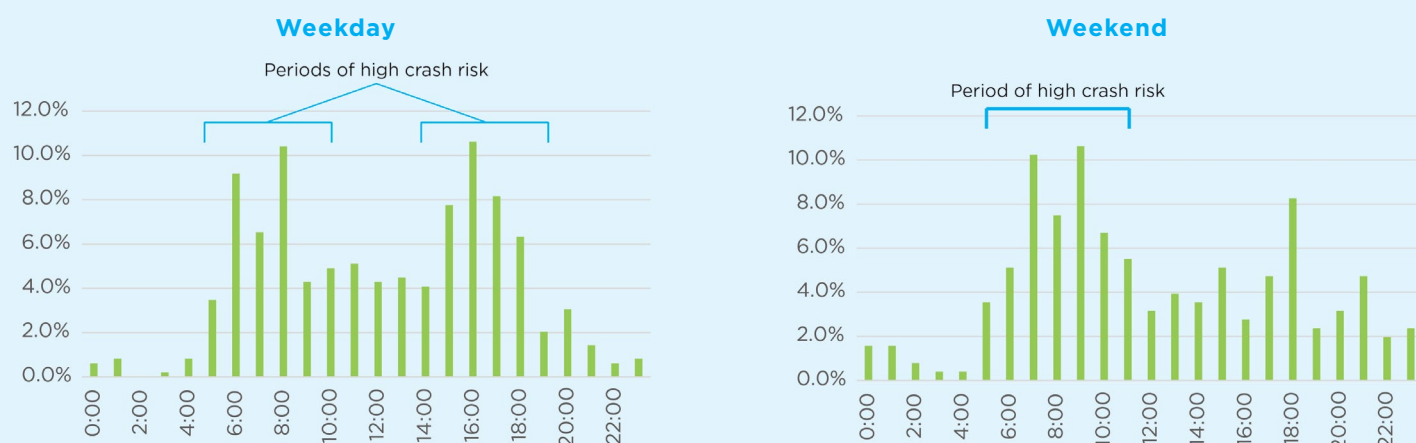
4. Over 50% of fatal crashes during the week occur at peak periods

Unsurprisingly, weekday peak periods pose the highest fatality risks for riders. Over the past 20 years, the morning (6-9am) and evening (4-7pm) peak periods have accounted for **51.2 per cent** of rider fatalities during the week.

5. Nearly 50% of fatal crashes during the weekend occur during the morning.

The wider morning period (5am-12pm) accounts for **49.2 per cent** of rider fatalities that occurred on the weekend. This is also unsurprising, given the popularity of recreational rides during the morning.

Rider fatalities by hour



Was 2020 different to previous years?

2020 was not a typical year. In addition to lockdown restrictions in response to COVID-19, there were significant increases in bike activity on Australia's roads, trails and shared paths. In April 2020, Bicycle Network found that riding had increased by **270 per cent** on some shared paths⁴, and that this increased riding activity continued through to November⁵. Researchers at the University of Canberra last year found that two thirds of respondents had increased their bike riding activity during lockdown, and a sixth of these respondents had bought new bikes⁶.

Given the boost in bike riding activity observed in many states during 2020, an interesting topic for inquiry, therefore, is whether last year's fatality figures were unique compared to previous years.

Overall, many 2020 statistics were reasonably similar to their corresponding 20-year average:

- **The total number of cases.** Last year's figures were similar to the 20 years preceding it (2020; 42; 20-year avg: 36).
- **The bike rider proportion of total road fatalities.** In 2020, bike riders comprised 3.8% of all road fatalities, reasonably consistent with the 20-year average of 2.6%.
- **The proportion of fatal crashes involving females.** 16.7% of fatalities in 2020 involved female riders, consistent with the 20-year average of 12.8%.
- **The time of the incident.** As with previous years, the majority of fatalities in 2020 (57.1%) occurred during the day on weekdays. This is similar to the 20-year average (52.3%).
- **Proportion of fatalities per state.** Victoria, New South Wales, and Queensland held the majority of rider fatalities, as per previous years.

However, in 2020 there were some notable deviations from the norm:

- **The speed limit where the crash took place.** In 2020, the majority of cases (30.9%) occurred on roads with ≤ 50 km/h speed limits, whereas in the 20-year average data, the majority of cases (31.2%) occurred on roads with 60km/h speed limits. In other words, more cases occurred at lower speed zones than usual.
- **The day of the week.** In 2020, many cases occurred on Tuesdays (21.4%) and Wednesdays (26.2%), whereas cases over the last 20 years reasonably spread across all days (average: 14.2%).
- **The age of the rider.** There were notably more cases in the 40-64 age cohort in 2020 (52.4%) than previously (39.1%). There were also notably fewer cases in the 17-25 age cohort in 2020 (2.4%) than in the last 20 years (10.0%).
- **The time of year.** There is a notable trough in the number of cases between August and November whereas over the last 20 years, the number of cases per month has been reasonably similar (45-60 cases).

The bottom line

The lives of people riding bikes is as important as the drivers of vehicles

No one should have to die on our roads. While Australia has undertaken considerable effort in reducing the vehicle road toll, not enough is being done to protect bike riders, who are much more vulnerable on the road. It is time to deliver our preventative efforts in equal measure.

While it is difficult to determine the fatality risk for people riding bikes compared to other road users, we can estimate the risk by comparing their respective fatality data with the estimated number of total road users in each cohort.

The National Cycling Participation Survey³ reveals that between 13-35 per cent of Australians rode a bike in 2019. Taking into account the population of Australia at the time (25.36 million), this translates to a bike riding population comprising 3-8 million people.

The number of driver license holders in 2019 can provide a crude approximation of vehicle drivers across Australia. In the most recent dataset prepared by BITRE⁷, 18.2 million license holders were predicted by state for 2019.

Using these bike and vehicle populations, we can approximate their respective fatality rate per 250,000 people. In 2019, there were 570 fatalities involving vehicle drivers, or 8 fatalities per 250,000 drivers. There were 39 fatalities involving people riding bikes, which translates to between 1-3 fatalities per 250,000 riders.

However, the likelihood of serious crashes involving bike riders could be even higher than this. [Data from the Transport Accident Commission](#) in Victoria suggests that riders are 34 times more likely to be seriously injured than vehicle occupants, and 4.5 times more likely to be killed in a crash.

The message here is simple: we must take appropriate action on reducing the bike rider fatalities as we do with vehicle drivers. The national road toll is falling, but there remains a fatality risk looming over the head of every rider. And to date, our national efforts in curbing this risk have been insufficient.

There is no 'one-size-fits-all' preventative measure

It is important to recognise the circumstances where fatality risks are elevated for riders. These circumstances range from spatial (e.g. metropolitan versus rural), and temporal (e.g. weekday peak periods and weekend mornings). There are also demographic data in the ARDD that suggest some groups are more at risk than others, such as riders over 40 years old. A range of additional factors have been identified in other studies and datasets, including helmet use and intoxication^{8,9}.

To adequately curb rider fatalities, we must develop safety measures, infrastructure and behaviour change interventions that are strategic and well-targeted to address these areas of high risk.

Infrastructure, legislation and driver behaviour change

We recognise that it is difficult to draw conclusions about driver behaviours without a full understanding of the crash specifics in each case, including the attribution of fault. However, we should recognise the wealth of literature that details common problematic

behaviours amongst drivers^{10,11}, which can play a role in vehicle-rider crashes¹⁰.

Separated infrastructure (bike lanes that are physically separated from the road space) offers a solution to reducing rider crashes involving other vehicles¹². High-bicycling-mode-share cities have been shown to have better road safety outcomes, which is intimately related to infrastructure such as separated pathways¹²⁻¹⁴.

We must also reexamine our road speed limits. While the data is skewed towards roads with lower speed limits, particularly in 2020, it is also reasonable to suggest that, in popular bike corridors where bike-vehicle crash risks are elevated, a lower vehicle speed may also save the life of a vulnerable rider during a crash.

Finally, distracted driving is a recognised contributor to on-road fatalities¹⁵. While there is no data available to quantify the role of distracted driving in the ARDD dataset, it is not unreasonable to consider its potential role in the rider fatality records.

A step in the right direction

In recent years, there has been increased investment in road infrastructure that separates people riding bikes from moving and stationary motor vehicles. As well as protecting vulnerable riders, separation infrastructure has the added benefit of improving perceived bike riding safety, which may boost the confidence of people in our communities that are interested in riding but concerned about sharing the road space.

'Street-calming' measures, such as speed reductions, are becoming more common. Speed reductions were trialled Victoria's Yarra¹⁶ and Melbourne¹⁷ local government areas, which both lead to a permanent change in the local speed limit.

Victoria recently announced that a minimum passing distance law will be implemented across the state¹⁸, which makes it mandatory for motorists to give bike riders a one metre clearance when overtaking on roads with speed limits up to 60km/h (1.5 metres on roads with speed limits above 60km/h). Victoria joins all other Australian states in passing this legislation.

These are positive changes. However, there is more to be done. Bicycle Network is recommending a more concentrated and strategic effort by our federal and state governments to protect people who bike rides, and to ensure that these vulnerable road users can travel safely and without risk.

Recommendation 5

Recognise the circumstances where fatality risks are elevated for riders, and develop strategic behaviour change campaigns

Recommendation 6

Lower speed limits in built up areas and cycling corridors with mid-block infrastructure

Recommendation 7

Target and prevent distracted driving

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