

IMPACT OF COVID-19 ON ROAD CRASHES IN AUSTRALIA



John Catchpole and Dr Farhana Naznin
Australian Road Research Board

October 2020

CONTENT

EXECUTIVE SUMMARY	3
Fatal Crashes in Australia	4
Fatal Crashes in Queensland	4
Fatal Bicycle Crashes	5
Comparison of changes in exposure and fatal crashes	5
National petrol sales	5
SA Department for Infrastructure and Transport Data	5
Victorian SCATS data	5
University of Sydney travel survey	6
Transurban report on urban mobility	6
Conclusion	6
References	7

EXECUTIVE SUMMARY

This paper examines the impact on road crashes and fatalities across Australia as a result of the initial stages of the COVID-19 lockdown, when national restrictions were imposed. This analysis provides insights into the pattern of fatal crashes during the period of March to August 2020 and compares this to the same period from 2017 to 2019.

At the time of writing this report, vehicle-kilometre-travelled data were not available across Australia from the Australian Bureau of Statistics. Petrol volume sales, traffic counts and other available data were used as proxy indicators of the change in driving exposure.

The reported 20% to 30% reduction in traffic using the network across Australia was not accompanied by a commensurate reduction in fatal crashes and fatalities across the network.

The analysis revealed that while petrol sales declined by 21% nationally, the number of fatal crashes declined by only 10%. In Queensland, where petrol sales declined by over 17%, there was an increase in fatal crashes.

Fatalities among drivers (-5%), passengers (-11%), pedestrians (-20%) and motorcycle riders (-12%) decreased during the COVID lockdown, but pedal cyclist fatalities across Australia increased by 29%.

Due to the small numbers of crashes and short period of analysis, many of the changes reported may not be statistically significant, but the investigation does provide valid insights into apparent changes in the profile of risk during the COVID lockdown period, including an increased risk to pedal cyclists and a non-linear relationship of fatal crash risk with proxy measures of driving exposure.

The insights gathered from this investigation highlight that lower traffic volumes alone do not lead to commensurate road safety outcomes.

Fatal Crashes in Australia

Data on fatal crashes during the COVID period and earlier years were obtained from the Australian Road Deaths Database, maintained by the Bureau of Infrastructure, Transport and Regional Economics (BITRE 2020).

Fatal crashes during March–August 2020 were compared with the same months averaged across the previous three years (2017–2019).

Table 1 shows that the fatal crash count for the whole of Australia was down 10% during the COVID period. Table 2 shows that fatalities across Australia were down 8% for the same period. Two-tailed binomial tests revealed that the decrease in fatal crashes was statistically significant ($p=0.044$), but the decrease in fatalities was not ($p=0.102$).

Every jurisdiction recorded decreases except Queensland, where there was an 11% increase in fatal crashes.

Table 1. Change in fatal crash counts during the COVID period by jurisdiction

State/territory	Ave. 2017–2019	2020	Change
ACT	2.7	2	–25%
NSW	168.0	136	–19%
NT	17.0	14	–18%
Qld	111.0	123	+11%
SA	48.7	44	–10%
Tas	15.3	13	–15%
Vic	111.7	98	–12%
WA	76.0	66	–13%
Australia total	550.3	496	–10%

Table 2. Change in fatality count during the COVID period by road user type

Road user type	Ave. 2017–2019	2020	Change
Driver	276.7	262	–5%
Passenger	108.7	97	–11%
Pedestrian	86.0	69	–20%
Motorcycle rider	96.7	85	–12%
Pedal cyclist	21.0	27	+29%
Other*	5.0	8	+60%
Total	594.0	548	–8%

* 'Other' includes motorcycle pillion passengers, any other road user types and unknown road user type.

Table 2 shows that fatalities decreased for drivers, motorcycle riders, passengers and pedestrians during the COVID period, but increased for pedal cyclists.

“Fatal crashes for the whole of Australia were down 10% during the peak COVID period”

Fatal Crashes in Queensland

The only state or territory to experience an increase in fatal crashes during the COVID period was Queensland (from an average of 111 in 2017–2019 to 123 in 2020).

Comparison of Queensland fatal crashes and fatalities from 2017–2019 with those in 2020 revealed that:

1. Queensland experienced a 30% increase in night-time fatal crashes but no change in daytime crashes.
2. The fatal crash increase was evenly distributed across weekdays and weekends.
3. The crash increase was confined to 50–80 km/h speed zones.
4. The number of fatalities increased for passengers, pedestrians and pedal cyclists but not for drivers.
5. Fatalities increased for most age groups.
6. The fatality increase was greater for females (39%) than for males (7%).

Australian Bureau of Statistics (ABS) remoteness codes were not available in the Australian Road Deaths Database for crashes in 2017. Comparison of remoteness codes for fatal crashes in 2018–2019 with those in 2020 revealed that the increase in fatal crashes in Queensland was confined to Major Cities of Australia (i.e. Brisbane, Gold Coast, Sunshine Coast and surrounds) (+32%), with little change in the remainder of Queensland (–1%).

It is worth remembering that the numbers of crashes and fatalities are small, so many the changes during the COVID period may not be statistically significant.

Fatal Bicycle Crashes

The only road user group to experience an increase in fatalities nationally during the COVID period was pedal cyclists (from an average of 21 in 2017–2019 to 27 in 2020). Anecdotal accounts suggest there was a substantial increase in cycling during the COVID period, which is likely to have contributed to the increase in cyclist fatalities. The distribution of cycling across roads versus off-road paths is not known.

Examination of cyclist fatalities in the BITRE data reveals that:

1. The increase in cyclist fatalities was confined to cyclists in multi-vehicle crashes (+44%). There was a very slight decrease in cyclist fatalities in single vehicle crashes.
2. The increase was confined to crashes NOT involving a bus, rigid truck or articulated truck.
3. We have no information about the types of light vehicles involved in the crashes.
4. The increase in cyclist fatalities was confined to Queensland and Victoria. There was little change in other jurisdictions.
5. The increase was confined to weekdays (+40%), with no change on weekends.
6. The increase was mainly in major cities and in 50–80 km/h speed zones.
7. The increase was confined to cyclists aged 0–16 and 40–64. There were no increases in other age groups.

Comparison of changes in exposure and fatal crashes

Exposure data for 2020 are not available from the ABS Survey of Motor Vehicle Use, nor from the International Traffic Safety Data and Analysis Group, both of which have published exposure data only up to 2018. The following other indicators of changes in exposure were drawn upon as a proxy for these data.

National petrol sales

Australian petroleum sales data were obtained from Department of Industry, Science, Energy and Resources (2020).

Table 3 summarises the decrease in petrol sales during March–July 2020 compared with the same

period averaged across 2017–2019. (Data for August 2020 were not yet available.)

The data include sales of regular, premium and ethanol-blended petrol. Diesel sales were excluded because available data did not separate automotive diesel fuel from marine and industrial diesel fuel and biodiesel blends. In any event, 73% of registered vehicles in Australia are fuelled by petrol and only 26% by diesel, with 1% using other fuels (ABS 2020).

Nationally, the reduction in petrol sales from March to July 2020 was 21%, with the biggest reductions occurring in Victoria and Tasmania. If data had been available for August 2020, when Stage 4 restrictions applied in Victoria, we would probably have seen a larger decrease in petrol sales Victoria.

Table 3 Change in petrol sales from March–July 2017–2019 to March–July 2020, by state or territory

State/territory	% change
NSW + ACT	-22.5%
NT	-2.6%
Qld	-17.4%
SA	-16.6%
Tas	-26.1%
Vic	-26.3%
WA	-16.9%
Australia total	-21.4%

SA Department for Infrastructure and Transport Data

At ARRB's request, South Australia's Department for Infrastructure and Transport (DIT) undertook an analysis of available data from permanent traffic counting stations in Adelaide and rural South Australia. The Department's analysis concluded that the maximum impact of the pandemic on traffic volumes was seen in early April 2020, when traffic counts were down 30–35% compared with the corresponding period in 2019. By mid-September 2020, traffic volumes had fully recovered to the same level as in 2019.

Victorian SCATS data

SCATS detector counts for Victoria for 2019 and 2020 are not vehicle counts, since each vehicle may have been detected more than once at the same intersection, but changes in the detector counts are indicative of changes in traffic volumes on urban

major and minor arterials (where traffic signals are generally located).

The ABS divides Victoria into Greater Melbourne and the Rest of Victoria. Table 4 shows the change in SCATS detector counts and the change in fatal crash counts during the COVID period (March–August 2020) for these two regions compared with the same period in 2019.

For Victoria as a whole, the reduction in SCATS counts (27%) was greater than the reduction in fatal crashes (18%). However, the outcomes differ markedly between Melbourne and the remainder of the state:

1. In Greater Melbourne, the drop in fatal crashes (34%) was greater than the drop in vehicle detections by SCATS (28%).
2. In the Rest of Victoria, the number of fatal crashes increased by 4%, despite a drop of 19% in vehicle detections by SCATS.

The Australian Road Deaths Database classifies crashes as single vehicle (including pedestrian crashes) or multi-vehicle. Despite the reduced proportion of Victorian fatal crashes occurring in Greater Melbourne during the COVID period, the proportions of Victorian fatal crashes classified as single vehicle (57%) and multi-vehicle (43%) did not differ between the pre-COVID period (March–August 2017–2019) and the COVID period (March–August 2020).

Table 4 Change in SCATS detector count and fatal crash count from March–August 2019 to March–August 2020, by region of Victoria

ABS Region	SCATS count change	Fatal crash change
Greater Melbourne	–28%	–34%
Rest of Victoria	–19%	+4%
Whole of Victoria	–27%	–18%

University of Sydney travel survey

The first wave of a household travel survey by the University of Sydney (Beck & Hensher 2020), conducted in early April at the height of the first wave of COVID-19 around Australia, investigated the number of trips undertaken, rather than the distance travelled.

All 1073 respondents were aged 18 or more and three-quarters were from NSW, ACT, Victoria and Queensland.

Respondents reported that the number of trips (all travel modes) made by households per week in early April was 54% lower than in early March (before the major impact of the pandemic). The number of car trips was down 53%. Active transport (walking and cycling) trips were also down in absolute terms but up as a percentage of all trips. Food shopping trips were down less than trips for other purposes, and hence comprised a higher proportion of all trips.

Transurban report on urban mobility

A report released by Transurban in August (Transurban 2020) addresses the impact of the pandemic on urban travel. The report states (on page 4) "In April 2020 with stage three government restrictions mandated in most Australian states, trips made by road and active transport had more than halved compared with pre-COVID-19 figures". Although it is not entirely clear from the report, this statement possibly refers to the results of an online survey conducted in late July across Sydney, Melbourne, Brisbane, Greater Washington Area (USA) and Montreal (Canada). The report also cites findings in relation to congestion and requests for driving directions, but contains no data on distance driven.

Conclusion

The national reduction in driving exposure during the COVID period cannot be accurately quantified using presently available data, but is very likely to be greater than the 10% reduction in fatal crashes observed during the same period.

Proxy data for exposure, including petrol sales across Australia, South Australian traffic volume data, vehicles detected at signalised intersections in Victoria and driving trips reported in online surveys indicate that driving exposure was reduced between 20% and 30% during the COVID period.

Anecdotal evidence suggests a substantial increase in cycling during the COVID period, which may explain the observed increase in cyclist fatalities.

A key limitation is that complete data on serious injury crashes during the COVID period (March to August 2020) will not be available until 2021 at the earliest. Analyses for this investigation were therefore limited to fatal crashes. In addition, exposure data (vehicle-kilometres travelled) were not available, necessitating the use of proxy measures, such as petrol sales, vehicle counts and self-reported number of trips taken.

Based on data available at the time of the study, it appears the decline in fatal crashes during the COVID period has been substantially smaller than the decline in vehicle use.

The increased number of deaths of pedal cyclists at a time of reduced fatalities among other road user groups warrants further investigation. Possible contributing factors include an increase in on-road cycling, particularly among inexperienced cyclists.

Typical measures likely to yield further reductions in fatal crashes include improved infrastructure on urban and regional roads; enforcement technologies that can be deployed as a deterrents at all times; and mandating driver warning systems in vehicles that can prevent speeding, drink driving, non seat belt wearing and rear end crashes, all of which are readily available on vehicles sold today.

References

Australian Bureau of Statistics [ABS] 2020, Motor vehicle census, Australia, <https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/latest-release>, viewed 29/10/2020.

Beck M and Hensher D 2020, Insights into the impact of Covid-19 on household travel, working, activities and shopping in Australia – the early days under restrictions, working paper ITLS-WP-20-09, Institute of Transport and Logistic Studies, University of Sydney Business School, Sydney, Australia.

Bureau of Infrastructure, Transport and Regional Economics [BITRE] 2020, Australian road deaths database, https://www.bitre.gov.au/statistics/safety/fatal_road_crash_database, downloaded 18/9/2020.

Dept of Industry, Science, Energy and Resources 2020, Australian petroleum statistics 2020, <https://www.energy.gov.au/publications/australian-petroleum-statistics-2020>.

Transurban 2020, Urban mobility trends from COVID-19, industry report, August 2020, <https://www.transurban.com/content/dam/transurban-pdfs/03/Urban-Mobility-Trends-from-COVID-19.pdf>,



**Australia &
New Zealand
Driverless Vehicle
Initiative**

CONTACT

Level 2, 36 – 42
Chippen Street, Chippendale,
Sydney 2008, New South Wales

T: +61 2 9282 4405
E: info@advi.org.au