

A Journey Towards Safer Roads: An Historical Review of Road Safety

1990-2022

August 11, 2023

Macro Trends

Road Fatalities from 1990 - 2022

This Briefing Paper strives to summarise multiple quality sources of Australian road safety information into a useful summary, harvesting key findings across the measurement period 1990 to 2022. Sources are ABS, BITRE, and OECD. Some useful data summary tables as well as reference sources for more information are attached to this Briefing document.

Across the 33 years from 1990 to 2022, annual road fatalities have fallen 48.7%, from 2,331 (1990) to 1,195 (2022). Add to this macro-trend, that today we have more than double the number vehicles on our roads (109% more). Viewed through the lens of total Kms driven, this reduction of fatalities is actually 68.8% down from 1990, and a strong result for the nation against pre-mature and avoidable deaths.

One interesting international comparison: Adjusted for Kms driven, we are nearly 4 times more likely to die on the roads in the United States than in Australia.

Road Fatalities by User Group							
Road User Group	1990	2000	2010	2020	2022	Change 1990 to 2022	Change 2010 to 2022
Driver	1,569	1,302	722	524	557	-64.5%	-22.9%
Passenger	-	6	194	203	189		-2.6%
Pedestrian	420	287	172	136	163	-61.2%	-5.2%
Motorcyclist	262	191	224	190	246	-6.1%	9.8%
Cyclist	80	31	38	41	40	-50.0%	5.3%
Totals	2,331	1,817	1,350	1,094	1,195	-48.7%	-11.5%
Urban Roads			636	391			
Rural Roads			709	700			
Deaths/100k Pop	13.7	9.5	6.1	4.3	4.7	-65.5%	-22.6%
Deaths/B-kms	14.4	9.8	5.9	4.5	4.5	-68.8%	-23.7%
Reg Vehicles ('000)	10,081	12,373	16,061	19,805	21,100	109.3%	31.4%

Sources:
 Bureau of Infrastructure and Transport Research Economics Australian Road Deaths Database, 14 April 2023.
 International Transport Forum (OECD), Report March 2021

Strong Progress 1990 to 2010

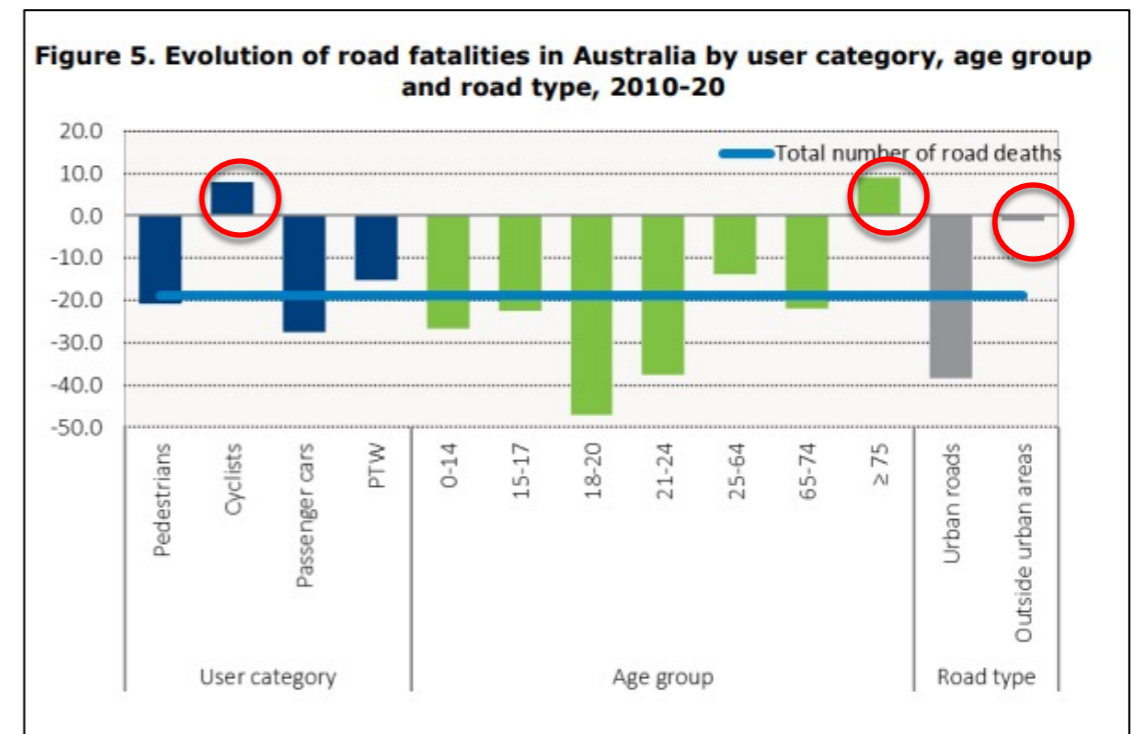
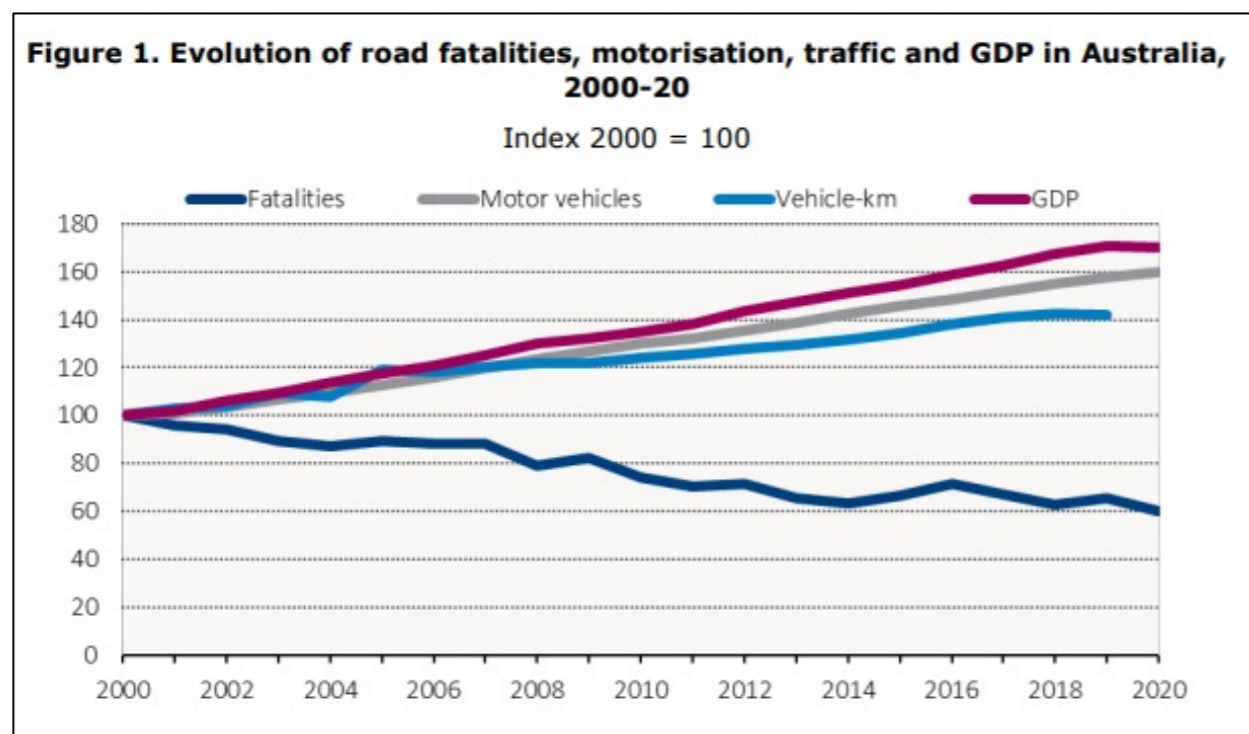
The greatest improvements in road deaths occurred from 1990 to 2010, with the pace slowing since then. The reasons for these improvements are many, but experts say this is broadly attributable to:

- better vehicle designs (ABS braking, seatbelts, air bags, impact crumple zones)
- better road construction (divided roads, overpasses and lighting)
- reduced drink driving

Other segments are more mixed, with deaths from cyclists, older drivers (75+) and on rural roads bucking the improvement trends.

In 2010, Australia formed a National Road Safety Strategy based on “Smart System” principles. A target for reducing road deaths of 30% for the decade ending 2020 was agreed. Over the next 10 years, deaths were in fact reduced by 19%. A similar Road Safety review in 2021 has formed a new goal for 2030 with a 50% reduction of road deaths target.

Looking across the various sources of improvement and regression, these can be visually summarised:



More Recent Trends

2010 - 2022

Across the period 2010-22, registered vehicles grew by 31%, while Km-driven adjusted deaths declined by 24%.

Whilst overall road deaths were reduced 19% across the 2010-20 decade, pockets of regression and lack of improvement include:

- Aged Drivers (75+) Deaths grew by 10% across the period, yet all other age groups fell
- Cyclists Cycling deaths grew by 8%, while all other groups fell
- Rural Roads Declined by only 2%, while Urban Road deaths fell nearly 40%
- Pedestrians Has been increasing in the last few years for a combination of reasons

Under the banner of avoidable deaths, it is noteworthy that the presence of drugs (16.3%) is now greater than alcohol (12.7%) as factors in fatal accidents. Of particular alarm is the high and growing prevalence of drugs in motorcycle fatalities.

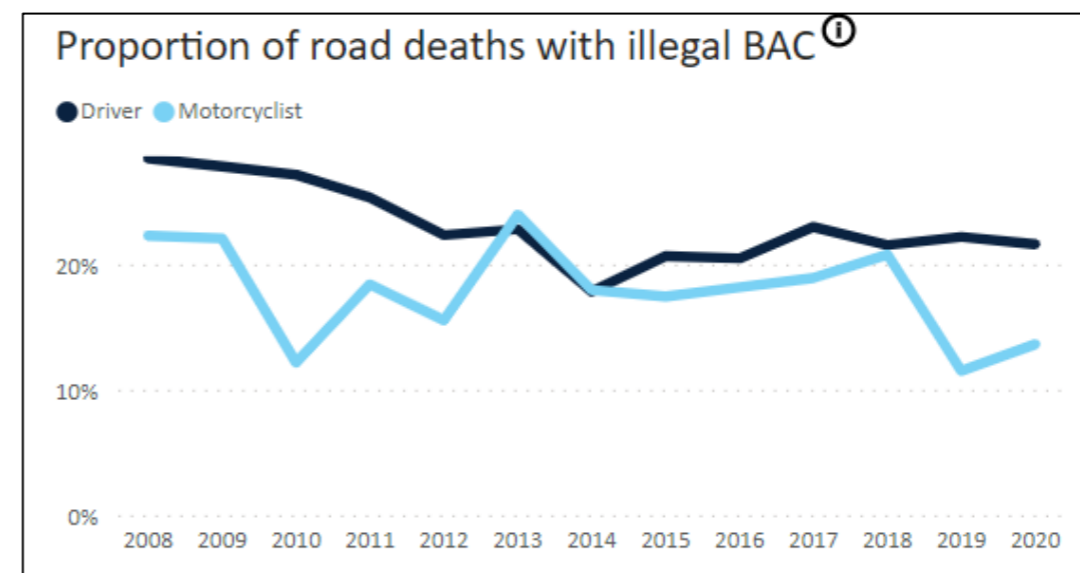
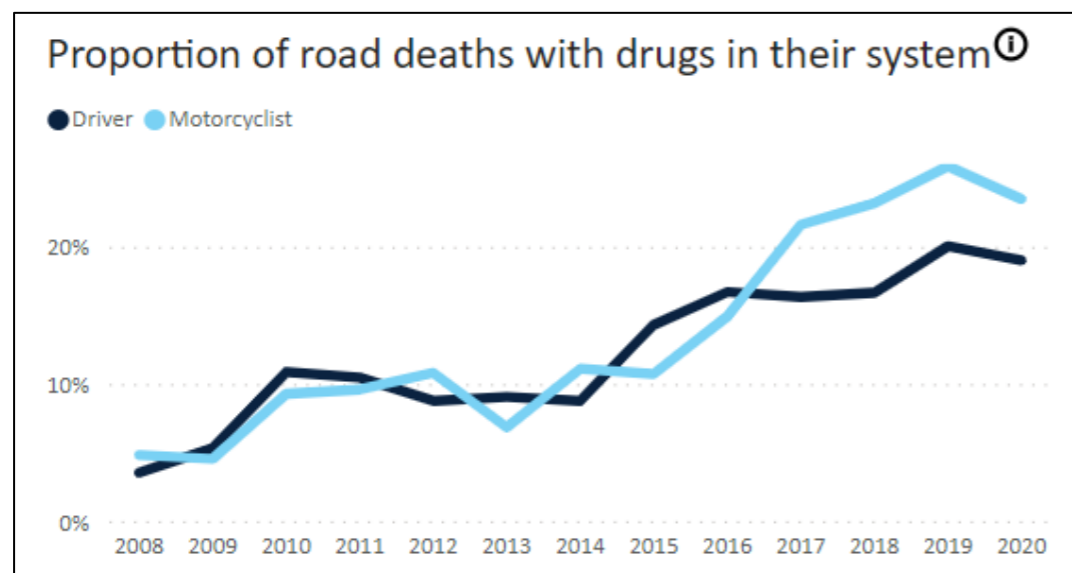
Motorcyclists and bicyclists have experienced more deaths over the period 2010 to 2022, largely arising from strong growth in those vehicle categories on our roads.

Avoidable Cause of Deaths (2020)		
Alcohol (BAC)	139	12.7%
Drugs	178	16.3%
No Seatbelt	154	14.1%
Deaths	1094	43.1%

Drugs & Alcohol Trends

Recent data is capturing factors such as alcohol and drugs present at fatal crash scenes. As of 2020, drugs or alcohol were present at 29% of fatal crashes. A further 14% arose from a failure to wear seat belts. Combined, these causes are present in 43% of road fatalities.

Whilst BAC levels are declining moderately, the trend line is upwards for drug use in fatal accidents. The data suggests that drug use is a larger contributing factor to fatal accidents than excessive alcohol use.



As we seek to understand road deaths, another 14% are pedestrians.

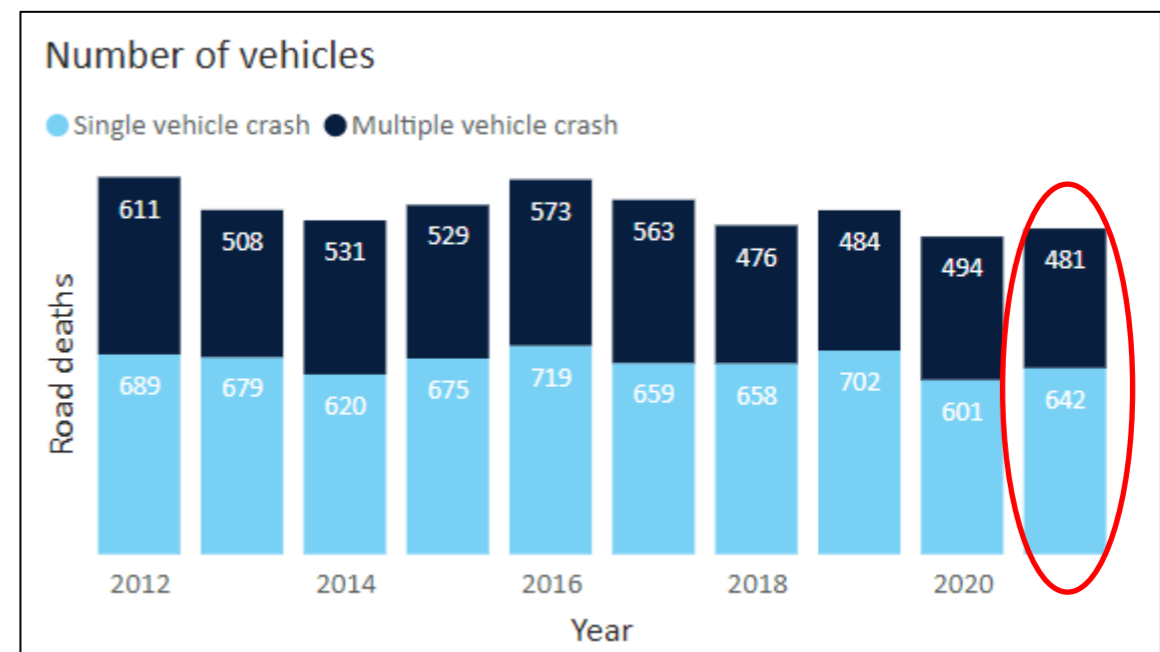
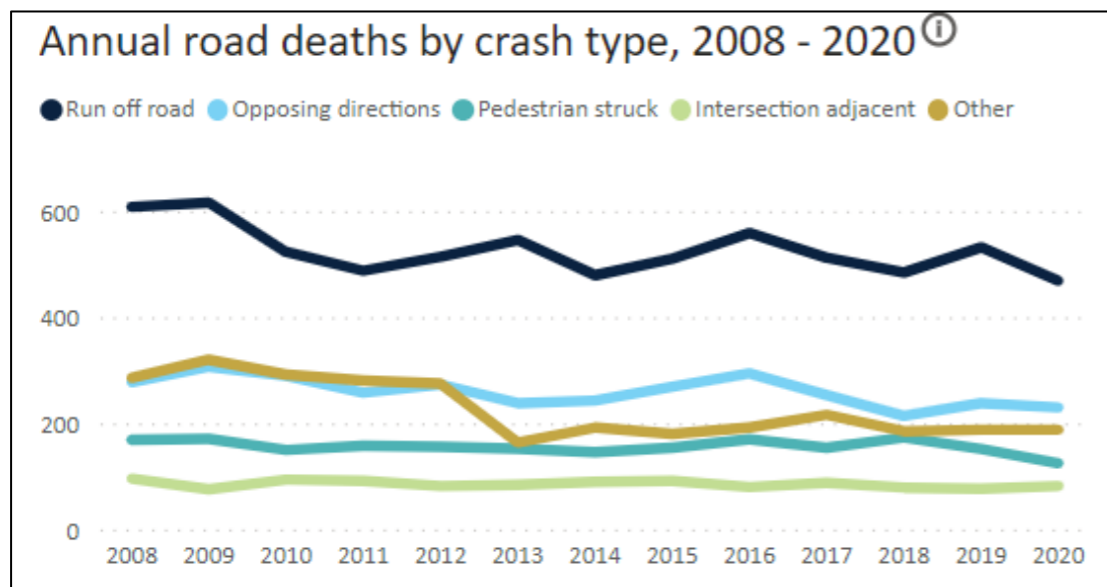
Anecdotal evidence suggests pedestrian fatalities may be related to aged individuals misjudging road crossings, children, distracted adults, or those with alcohol present. Detailed information is currently not publicly made available.

Location of Fatalities

In 2020 fatal road crashes were single vehicle crashes 57% of the time, frequently running off the road in rural areas.

Consistent with these stats, 64% of fatalities are in regional Australia, and only 36% are in Urban areas.

More research is needed with better standardised reporting from all states to gain greater insight.



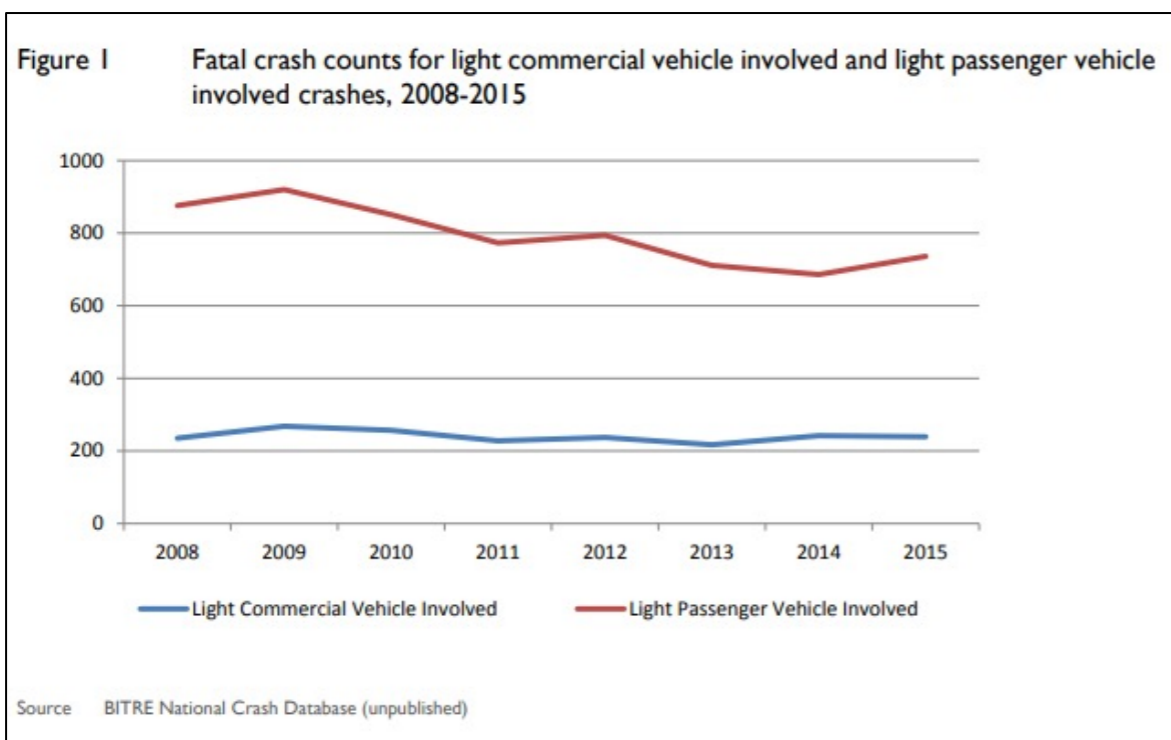
Light Commercial vs Passenger Vehicles

The Motor Vehicle Registry census from the ABS, breaks down our 20 million vehicles in Australia into multiple categories. Light Commercial Vehicles (LCVs) have grown at the fastest rate of any category of registered vehicle, and by nearly 20% between 2016 to 2021, to 3.7 million LCVs in 2021.

Further, LCVs have also experienced strong growth in Kms driven per vehicle, with 23% growth over the period 2008 to 2015, versus 5% for passenger vehicles. Hence, total Kms driven by LCVs has grown substantially more than any other vehicle category.

BITRE last updated their Light Commercial Vehicle report in 2017, with data up to 2015. At that time, fatal crashes were significantly more frequent with LCVs than Passenger Vehicles. Over the period 2008 to 2015:

- 48% higher per light commercial vehicles compared to light passenger vehicles (0.94 fatal crashes per 10,000 registered vehicles compared to 0.63 fatal crashes for light passenger vehicles).
- 17% higher per Billion Km driven than for passenger vehicles (5.53 compared with 4.70)



Overall, road fatalities for passenger and LCVs have trended lower, with most improvement arising with passenger vehicles.

However, when there is an accident, fatalities are much more likely for passenger vehicles, than LCVs. Surviving an accident is more probable in a larger vehicle, than a smaller passenger vehicle.

Insurance Industry Research

Euclidic Systems is working with Fuse Insurance (underwritten by IAG), to identify primary causes of driver behaviour contributing to vehicle claims. This can be considered a proxy for road safety. Using micro-pattern Artificial Intelligence, measurements are captured every 10 seconds, and analytics then can identify driving patterns which are linked to accidents (and claims).

Pattern recognition AI generates a crash probability scoring for:

- Frontal crashes
- Parking Accidents
- All other incidents

Driving behavioural interventions that can reduce risk seek to develop better:

1. Focus – limiting distractions, weaving and pumping (side to side, front to back)
2. Anticipation – planning ahead, braking, acceleration, cornering skills
3. Speed Control – speed management with surrounding cars

Interventions include installing telematics equipment and tracking/reporting services to:

- **M**easure performance
- **R**eport back to Drivers & Supervisors
- **A**ctions where necessary

Govt Interventions

Based on current evidence, it is requested that Governments consider a more focused series of road safety interventions, and less “broad spectrum” actions. Broad, “wishful” goals serve to fragment attention and reduce Govt credibility.

Road Infrastructure

- Dividing more roadways, especially in rural areas
- Safety Barriers on the outside edge of bending or downhill road segments
- Improve lighting & road surfaces, especially at blind junction points
- Increase shoulder space to create safe room for cyclists, and reduce lane contention

Research

- Standardise on accident reporting, and release crash data to enable stronger analysis (state level)
- Release roadside testing results
- Release granular enforcement data – Fixed & Mobile Cameras
- Eg. Why and where were pedestrians hit?
- Eg. Where are true blackspots in rural areas?

Driver Behaviour

- Extend mandatory vehicle tracking to LCV (less onerous than HVNR) with basic minimum capabilities such as Blackbox data for accident retrieval by Police, and WHS Compliance
- More assertive age testing for license approval (75+)
- Roadside testing regimes – drugs and alcohol (based on measured blackspots)
- Rural area education campaigns (Distractions, Anticipation)
- Speed enforcement in genuine black spot intersections, not broad spectrum
- Ease off contentious Road Safety measures – e.g. 30 km/hr metro speed limits – which are unlikely to pay safety dividends, and erode public support

Summary Tables

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Deaths by Group	2022	%
Driver	557	46.6%
Passenger	189	15.8%
Pedestrian	163	13.6%
Motorcyclist	246	20.6%
Cyclist	40	3.3%
Totals	1,195	

Summary Tables

Registered Vehicle Census	2016	2020	2021	<u>Growth</u>	<u>Composition</u>
Passenger Vehicles	13,815,107	14,679,249	14,850,675	7.5%	73.7%
Light Commercial Vehicles	2,985,592	3,407,016	3,519,457	17.9%	17.5%
Light Rigid Trucks	145,426	176,680	187,329	28.8%	0.9%
Heavy Vehicles	430,997	463,971	474,916	10.2%	2.4%
Motorcycles	828,965	880,881	913,803	10.2%	4.5%
Campervans	60,900	72,220	74,324	22.0%	0.4%
Other	120,149	125,314	122,438	1.9%	0.6%
Totals	18,387,136	19,805,331	20,142,942	9.5%	

1. Bureau of Infrastructure and Transport Research Economics Australian Road Deaths Database, 14 April 2023. (BITRE)

2. International Transport Forum (OECD), Report March 2021

3. Australian Bureau of Statistics – Vehicle Registration Census, 30 June 2021

Publications & Websites

Australian Cycling Safety	View publication
National Road Safety Strategy	View publication
Austrroads programme of road safety research	Visit website
Department of Infrastructure, Transport, Regional Development & Communications	Visit website
Office of Road Safety	Visit website
Bureau of Infrastructure, Transport & Regional Economics	Visit website
Road Safety Statistics	Visit website
Road Safety Performance	Visit website
2018 Inquiry into the National Road Safety Strategy	Visit website
2019 Review into National Road Safety Governance Arrangements	Visit website
Austrroads	Visit website
ARRB (Australian Road Research Board)	Visit website
Monash University Accident Research Centre	Visit website