Australian Government
Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Bureau of Infrastructure and Transport Research Economics

Snapshot of Bus Safety

Examining crashes and fatalities involving buses can give crucial information on bus safety. Looking at patterns over time can help us understand whether there are notable trends, and help guide policy makers and industry groups with their strategies and interventions. This statistical snapshot contributes by providing a newly consolidated view of the bus fleet, along with the latest data on crashes, injuries and deaths.

Bus Fleet

Most buses involved in a crash are 10 years old or less.

- From 2012 to 2021 (latest data available), 120 (69%) buses involved in a crash were 10 years old or less. These buses being more likely to be involved in a crash may be due to reasons such as travelling on the road more often compared to older buses.
- As at January 2023, 99,139 buses were registered, comprising 48,181 heavy (over 4.5 tonnes) and 50,958 light buses (under 4.5 tonnes). Just under half of the registered buses (44,742 or 45%) were 10 years old or less.
- Only 4% (3,605) of registered buses were older than 30 years, and only 10 of them were involved in a crash in the same period.

Fatal Crashes

Bus crashes made up around 1.6% of all fatal road crashes in the past decade (2014 to 2023)

- There were 174 fatal crashes involving a bus, averaging 17 crashes per year.
- The count of fatal crashes per year ranged from a high of 27 in 2017 and a low of 13 in 2020. In 2023, there were 9 fatal crashes involving a bus.
- Nearly half (45%) of fatal crashes occurred in the major cities of Australia, in the most populous states.
- In the 5 years from 2018 to 2022, most fatal bus crashes involved a pedestrian being struck (31 deaths), followed by buses colliding with at least one other vehicle in opposite directions (21 deaths).

Hospitalised Injuries

On average, 239 bus occupants per year were hospitalised with injuries (2012 to 2021), with the number of injuries declining over time.

- Bus occupants made up less than 1% of all hospitalised injuries.
- During this period, around 2,400 bus occupants were hospitalised with injuries. The main cause was from transport accidents that don't involve a crash (63%) e.g. boarding or alighting a bus.
- A total of 34 bus occupants have died over the 10-year period, averaging nearly 4 bus occupants per year and peaking at 12 bus occupants dying in 2017.

Fatalities

Pedestrians and car occupants lead the number of fatalities in bus-involved crashes.

- In the decade from 2014 to 2023, an average of 20 people died each year from a fatal bus crash.
- Bus passengers were least impacted among those who died in fatal bus crashes, with a total of 3 deaths over 2018 to 2022.
- The total deaths from fatal crashes involving a bus ranged from a low of 14 in each of 2020 and 2021 and a high of 32 in 2017. In 2023, there were 17 deaths.

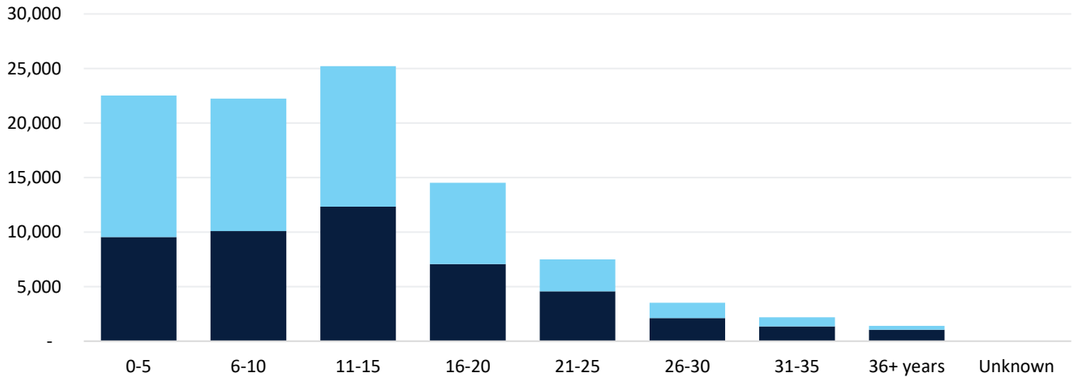
Bus fleet

Nearly half of the Australian bus fleet is composed of younger buses 10 years old or less (45%).

As at January 2023, there were 99,139 registered buses (10 or more seats), composed of 48,181 heavy buses over 4.5 tonnes and 50,958 light buses under 4.5 tonnes.

Forty-five percent of registered buses (44,742 buses) were 10 years old or less. In the 2022-23 financial year, around 4,800 new buses were delivered to the Australian market, making up around 5% of the bus fleet. Only a small share of registered buses (4% or 3,605 buses) were older than 30 years, with an estimated 4% of the bus fleet being deregistered annually.

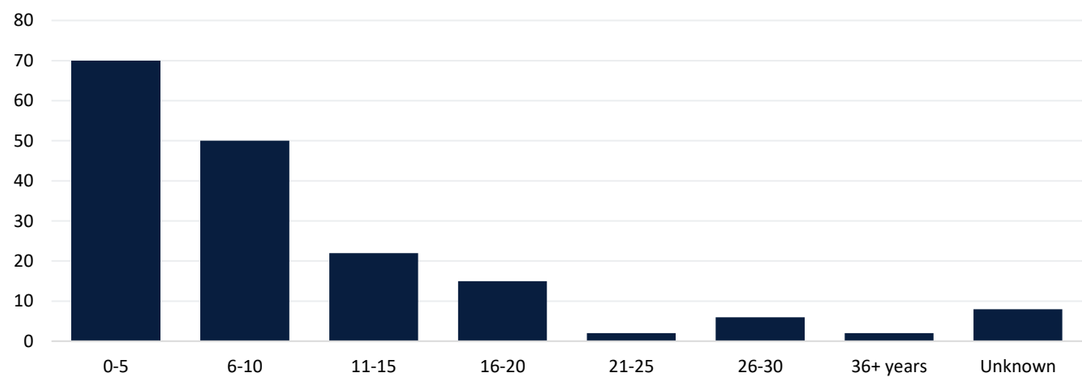
Heavy and light registered buses by age group and weight category



Source 1 BITRE Road Vehicles Australia Data as at January 2023

Buses involved in a crash also tend to be younger, but this may be due to other reasons other than age, such as these vehicles travelling on the road more compared to older buses. From 2012 to 2021, a total of 120 (69%) buses involved in fatal crashes were 10 years old or less. In contrast, only 16 buses (9%) involved in a crash were more than 25 years old.

Buses involved in fatal crashes by bus age at crash



Source 2 BITRE Road Vehicles Australia Data as at January 2023 and National Crash Database, 2012 to 2021

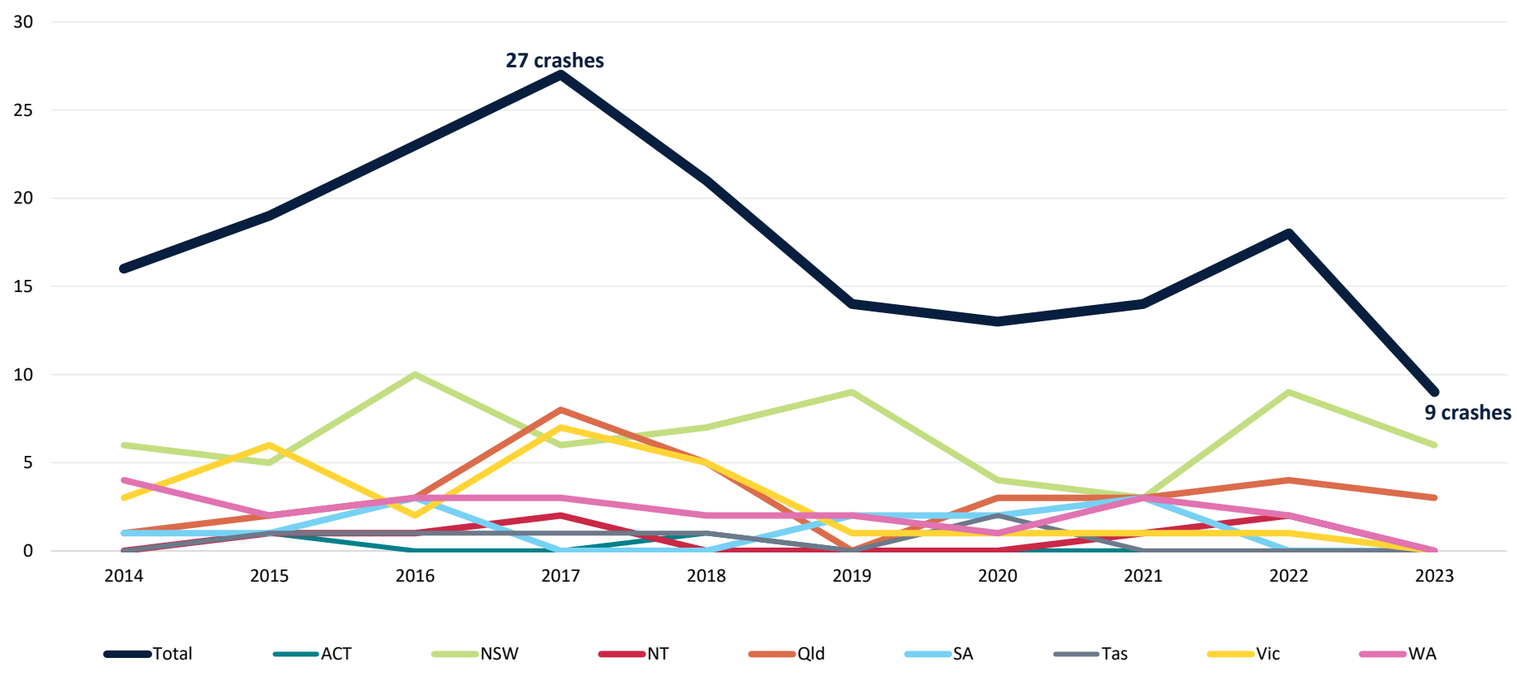
Fatal crashes involving buses

Fatal crashes involving buses are a relatively small proportion of all fatal crashes, which means crashes can be unpredictable and with such low numbers it is difficult to identify trends. When fatal crashes involving a bus do happen, they're most often in the more populous states and regions, with most being a multi-vehicle crash.

Fatal bus-involved crashes make up 1.6% of all fatal road crashes in the past decade. From 2014 to 2023, there were 174 fatal bus-involved crashes, averaging 17 crashes per year.

In 2014, there were 16 crashes, increasing to a peak of 27 in 2017 and decreasing to 9 in 2023. New South Wales reported the highest number of total crashes at 65 (37%) over the period, followed by Queensland at 32 crashes (18%) and Victoria at 27 crashes (16%), mostly driven by having a higher population than most jurisdictions. Smaller states and territories like Tasmania and the Australian Capital Territory reported a low number of crashes, at 6 and 3 crashes respectively.

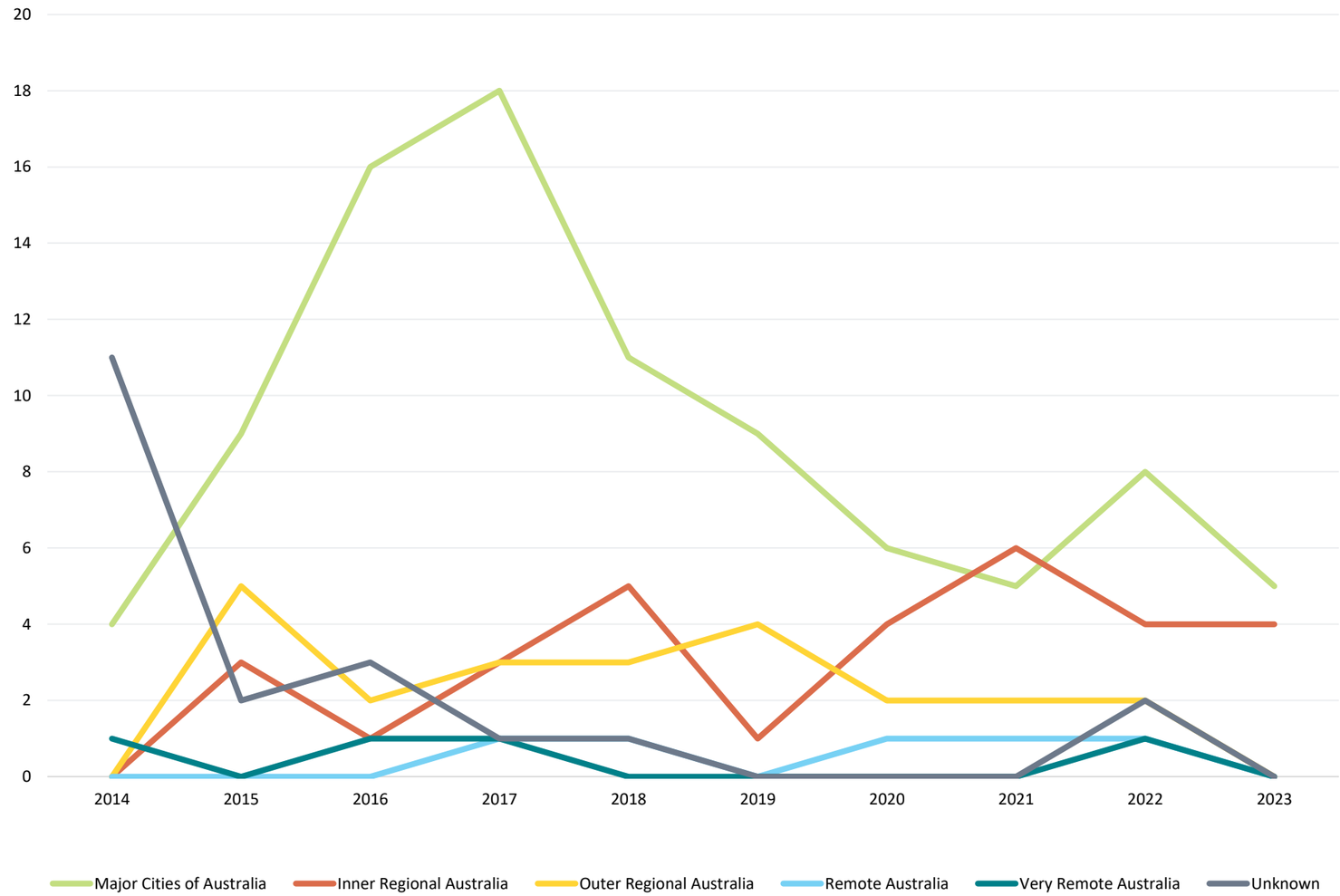
Fatal crashes involving buses by jurisdiction, 2014 to 2023



Source 3 Australian Road Deaths Database as at December 2023

Most of the bus crashes over the decade happened in the major cities of Australia at a total of 91 (51%). The peak of crashes in 2017 also happened in the major cities, with an increase in reported crashes from Queensland and Victoria compared to the previous year. The more remote areas of Australia reported a lower number of crashes. For example, Remote Australia reported the lowest number of crashes at 5 (3%) and Very Remote Australia reported 4 (2%).

Fatal crashes by remoteness, 2014 to 2023



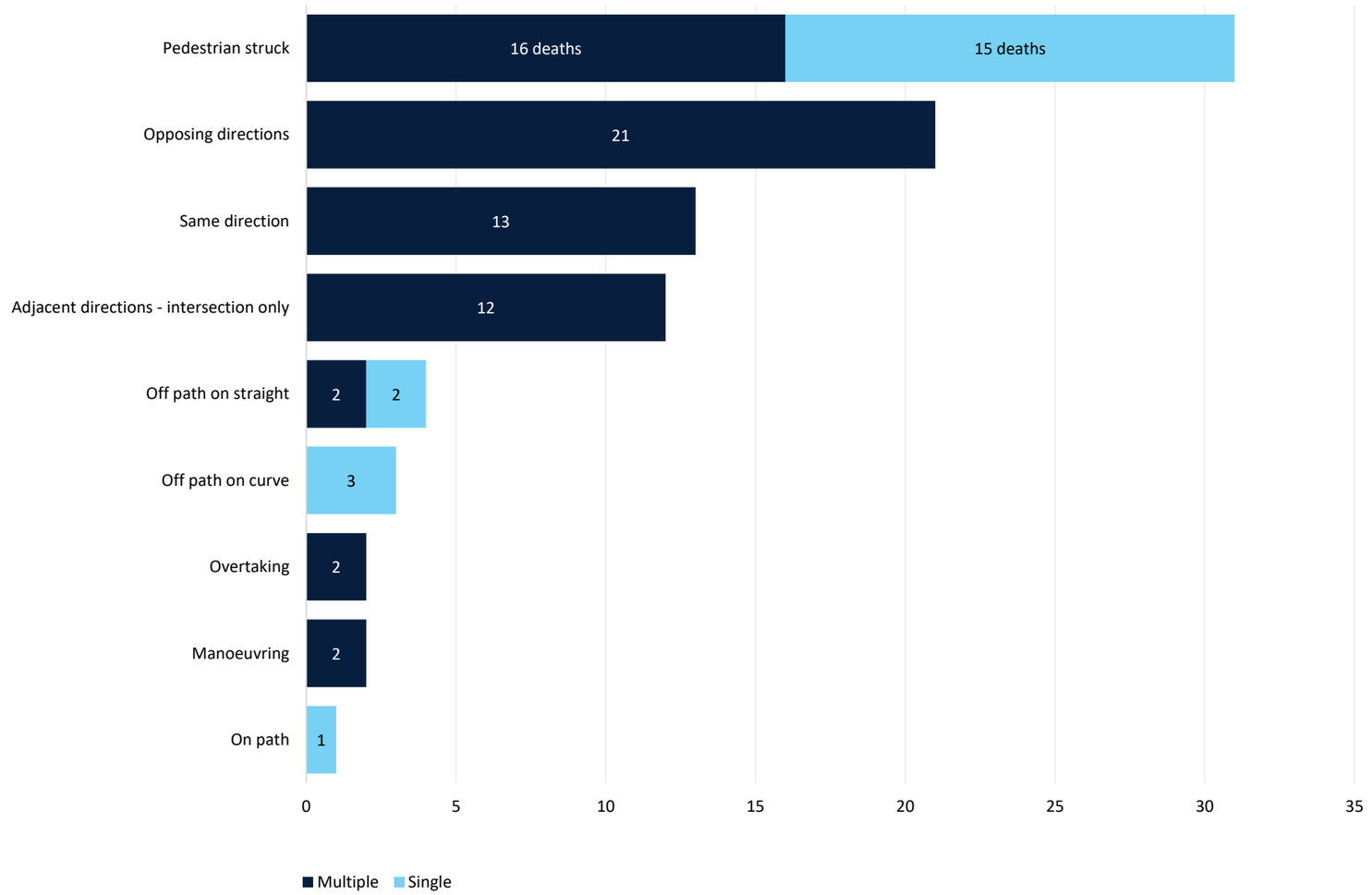
Source 4 Australian Road Deaths Database as at December 2023

Deaths from fatal crashes can be the result of multiple vehicles colliding, or a single vehicle hitting an object or losing control. Using the latest data available from the National Crash Database[1], from 2018 to 2022, most deaths from fatal bus involved crashes have consistently been from multiple vehicles colliding. For example, in 2021, 9 deaths (60%) were because of a multiple vehicle fatal crash, whereas 6 deaths (40%) were because of a single vehicle fatal crash. In 2022, the gap appeared to widen with 19 people dying (79%) because of multiple vehicles involved, as opposed to 5 dying (21%) because of single vehicle incident.

When a fatal bus-involved crash occurs, pedestrians are most often impacted. In the 5-year period, 31 pedestrians died (35%), followed by multiple vehicles colliding in opposite directions at 21 deaths (24%). Multiple vehicle fatal crashes manoeuvring and being 'on path' (for example, the vehicle was parked, had a breakdown or hit an animal) have the lowest number of deaths reported.

Of the pedestrians who died, 9 people were aged between 40 and 64 years (29%). There were 5 deaths in each of the following age groups: 26 to 39, 65 to 74 and 75 years and older (16% each).

Deaths from single and multiple vehicle fatal bus-involved crashes by crash type, 2018 to 2022



Source 5 National Crash Database, 2022

1. Crash type is not reported in the Australian Road Deaths Database, and the latest data available from the National Crash Database is 2022 at the time of reporting

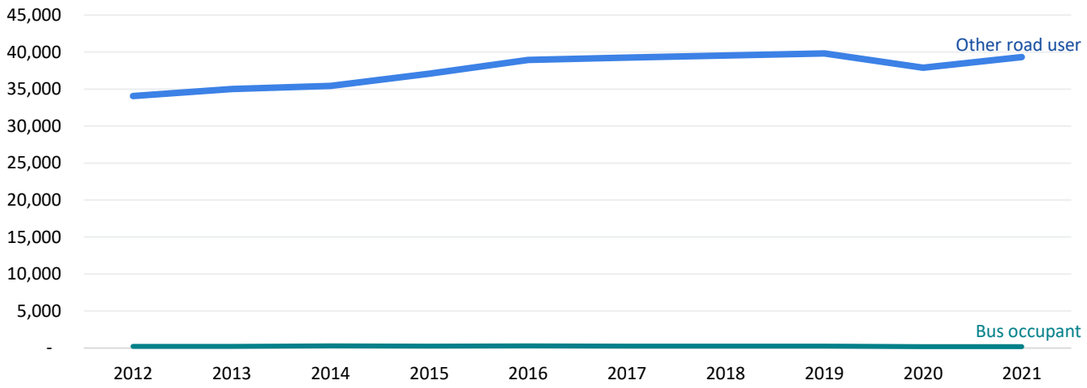
Hospitalised injuries

Over the past decade, less than 1% of hospitalised injuries were from bus occupants, with the number of injuries decreasing over time.

Over the decade from 2012 to 2021, around 2,400 (less than 1%) of people admitted to hospital from a traffic incident were bus occupants, versus around 376,300 (99%) traffic injuries for other road users. On average, 239 bus occupants per year have been injured. While the total number of traffic related hospitalised injuries rose over time by 5,235 (15%) since 2012, the number of bus occupants injured declined by 48 people (decrease of 22%).

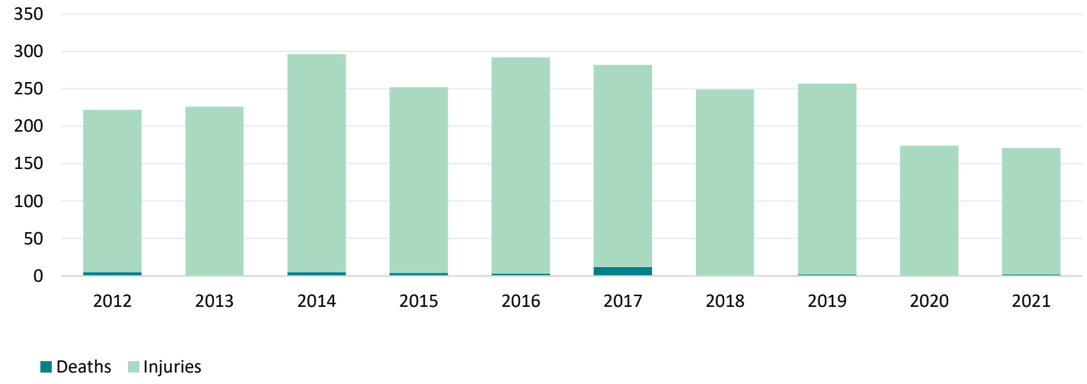
A very small number of bus occupants die compared to those injured over time, totalling 34 over 2012 to 2021. On average, 4 people per year have died over the period, with a peak of 12 deaths in 2017.

Hospitalised injuries from traffic accidents
Bus occupant vs other road user, 2012 to 2021



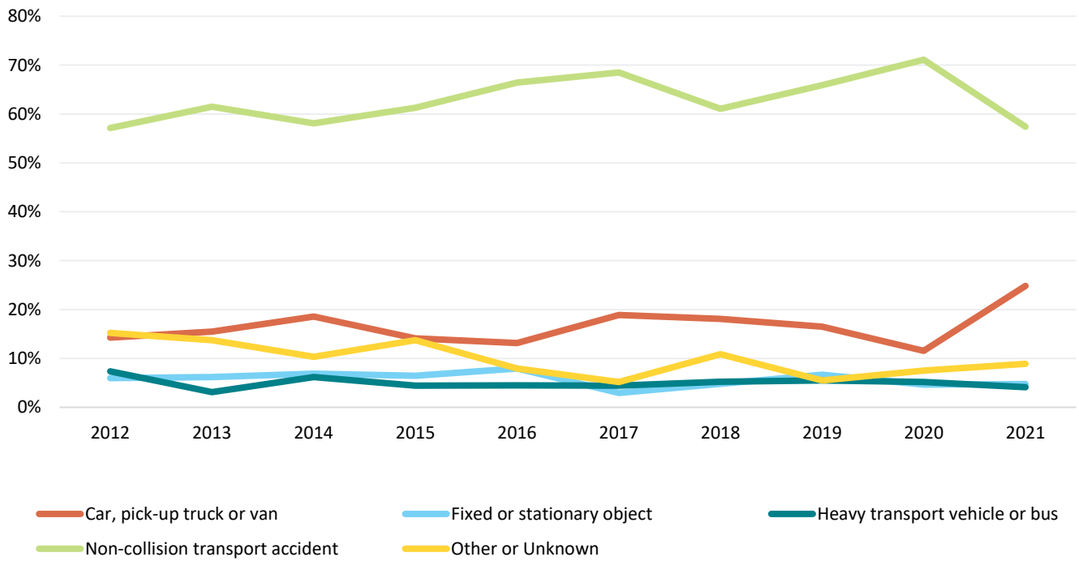
Source 6 AIHW Hospitalised Injuries, 2012 to 2021

Injuries vs deaths for bus occupants, 2012 to 2021



Source 7 AIHW Hospitalised Injuries, 2012 to 2021. National Crash Database as at 2021

Share of total hospitalisation injuries for bus occupants
by counterparty, 2012 to 2021

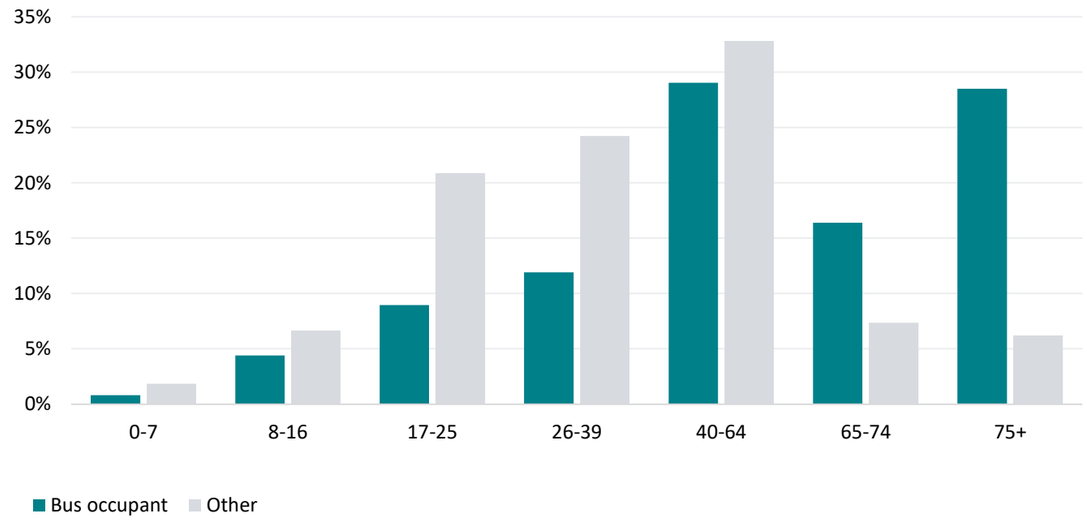


Source 8 AIHW Hospitalised Injuries, 2012 to 2021

Most injuries for bus occupants do not involve a collision with another vehicle or object. They include injuries when boarding or alighting a bus and falls onboard as a result of sudden braking, for example. In 2021, more than half (97 or 57%) of bus occupant injuries occurred in non-collision accidents, whereas a quarter of bus occupant injuries were caused or impacted by crashes with car, pick-up trucks or vans.

In contrast, most hospitalised traffic injuries in 2021 were caused or affected by cars, pick-up trucks or vans, at 16,192 (41%) of total traffic injuries, whereas 10,728 (27%) occurred in non-collision transport accidents.

Share of total traffic related injuries
bus occupant vs other road user by age group, 2017 to 2021



Source 9 AIHW Hospitalised Injuries, 2017 to 2021

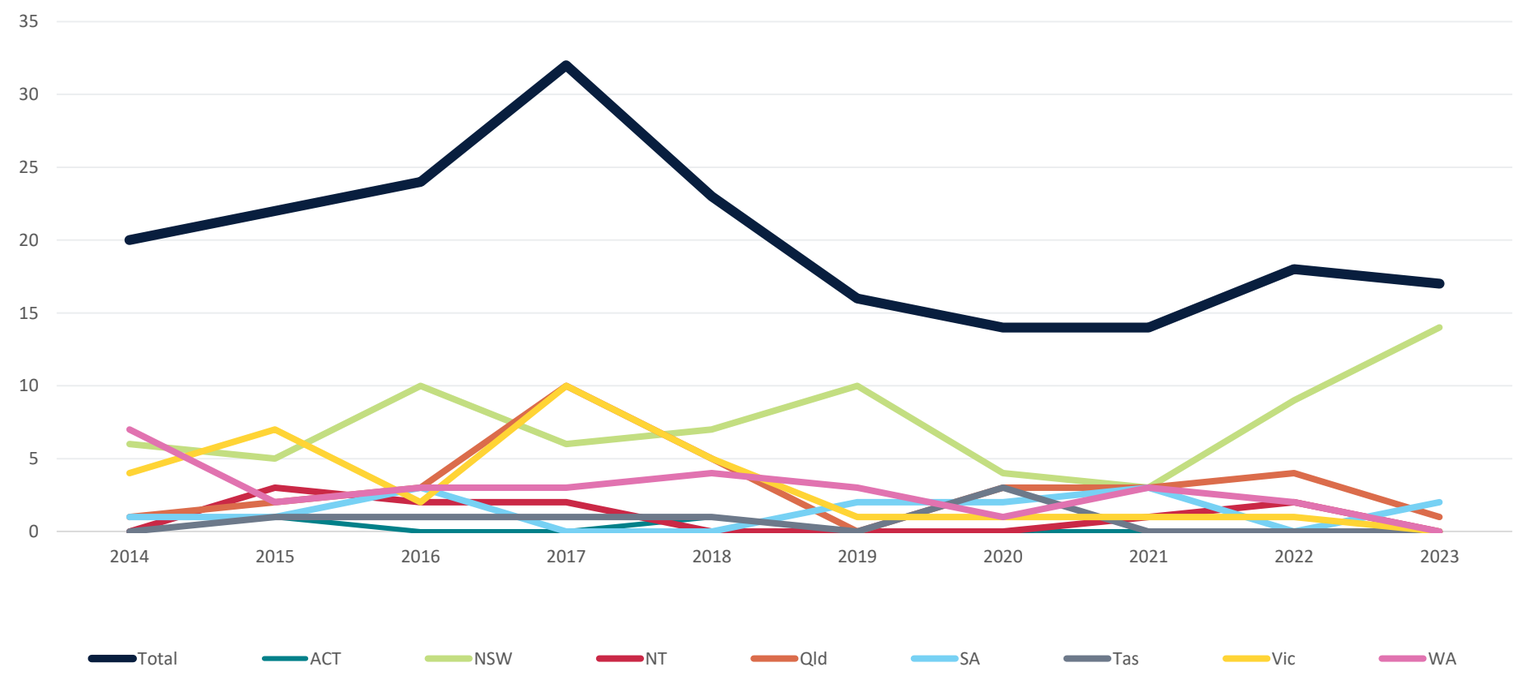
In the past 5 years, most injured bus occupants were aged at least 40 years, comprising 74% (825) of all bus occupant hospitalised injuries. Similarly, 46% (90,857) of other road user traffic-related injuries were also in the same age range.

Fatalities involving buses

Over the past decade (2014 to 2023), bus-involved deaths have remained relatively stable, with an average of 20 people dying each year.

Most fatalities are from NSW, especially in 2023 at 15 fatalities, followed by Queensland at 3 fatalities. Bus-involved fatalities average at between 1% to 2% per year out of all road crash fatalities, which is lower than the average deaths for articulated-truck involved deaths (8%) and heavy rigid truck involved deaths (7%) since 2014.

Deaths involving buses by jurisdiction, 2014 to 2023



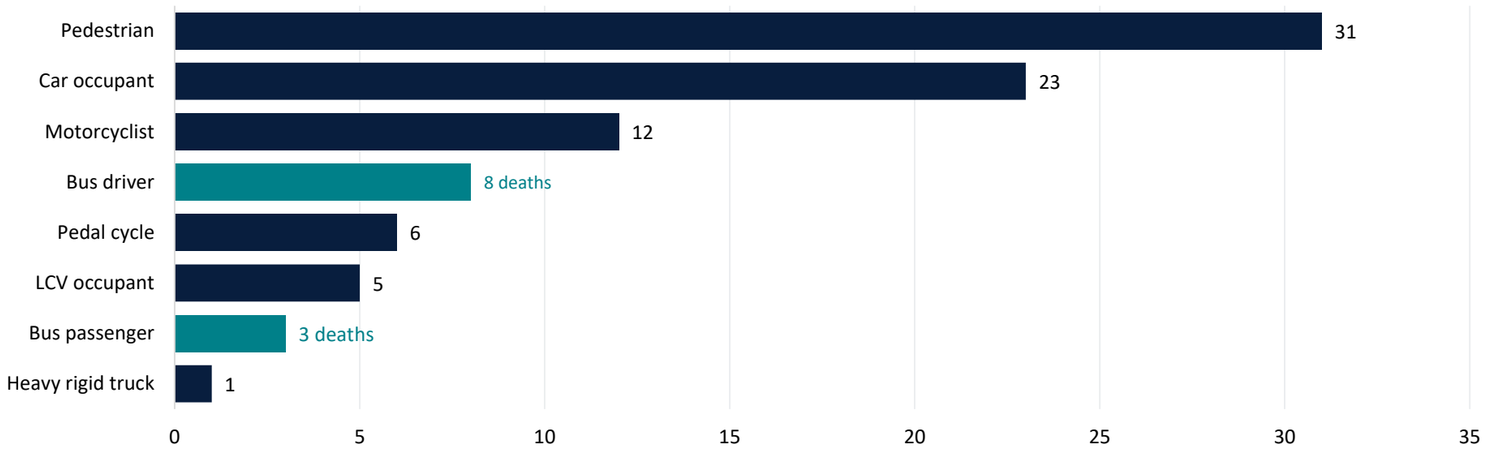
Source 10 Australian Road Deaths Database as at December 2023

When bus-involved crashes happen, it is pedestrians and car occupants who are mainly impacted. From 2018 to 2022, 54 pedestrians and car occupants died in a crash involving a bus. Those that were least affected were cyclists (6 deaths), light commercial vehicle occupants (5 deaths), bus drivers (8 deaths) and bus passengers (3 deaths). About one in five deaths (12% or 11 deaths) were bus passengers and drivers combined.

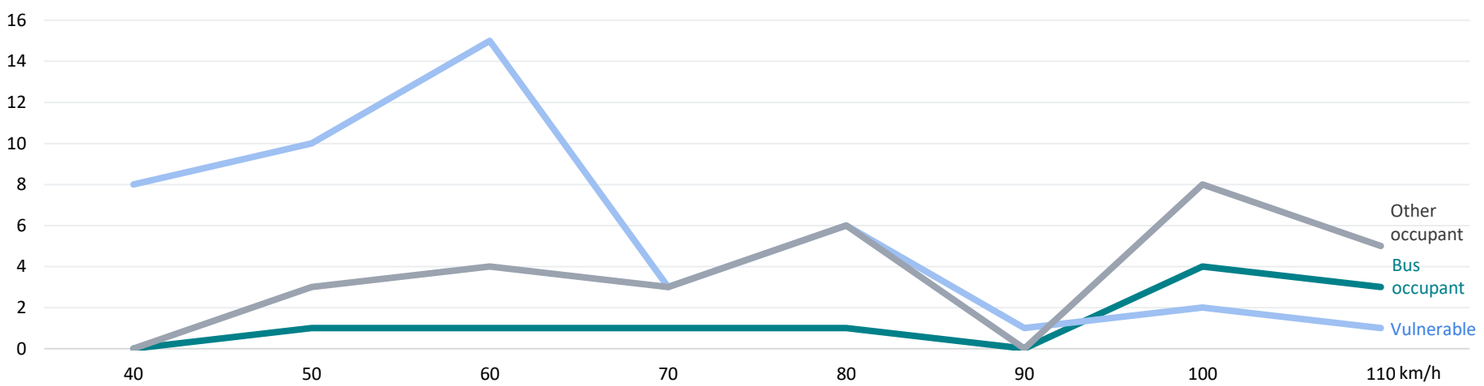
In general, Vulnerable Road Users (VRU) are most likely to be impacted in a crash, especially in areas where pedestrians normally visit. VRU are road users not in a vehicle and generally include pedestrians, motorcyclists, children 7 years and under, the elderly and users of mobility devices. More than half of fatalities involving buses over the last 5 years were VRU (53% or 46 deaths), followed by other occupants (34% or 29 deaths) and bus occupants (13% or 11 deaths).

Just under half of fatalities (49%) happened at the 40 to 60 km/h speed limit zone (42 deaths), with the majority affecting VRU (33 deaths). Most of the remaining fatalities happened at a higher speed limit at the 80 to 110 km/h speed limit zone (43% or 37 deaths), with 19 other occupants being affected, followed by bus occupants at 8 fatalities.

Deaths involving fatal bus crashes by road user, 2018 to 2022



Deaths from fatal crashes involving buses by speed limit, 2018 to 2022



Source 11 National Crash Database, 2022

About the data

Four main datasets were used to collate data on bus safety:

- The National Crash Database (NCD), latest data as at 2022: reports on historical national crashes, vehicles, persons and objects up to 2022.
- Australian Road Deaths Database (ARDD), December 2023: provides monthly police reported details of road traffic crash fatalities in Australia. Data may change over time due to revisions.
- Hospitalised injuries, latest data as at 2021 from the Australian Institute of Health and Welfare (AIHW): summarises hospitalised injuries from road traffic crashes. These are injuries from confirmed admissions to hospital, but does not include in-hospital death.
- BITRE Road Vehicles Australia Data, snapshot data latest as at January 2023: records all registered vehicles in Australia.

For time series, a 10-year reference period was used where possible. Where counts were aggregated, a 5-year period was used.

Definitions

What is counted as a road crash? A crash that took place or started on a road or road-related area, or significantly contributed to the event that happened there (Australian Transport Safety Bureau, 2004). A fatal crash is one that results in at least one death.

What is a road death? A road death or fatality is a person who dies within 30 days as a result of injuries sustained in a road crash. It excludes deaths from road crashes as a result of suicide or natural causes, such as a heart attack (Office of Road Safety, 2023).

What is the difference between a heavy and light bus? Buses are motor vehicles made for carrying passengers with at least 10 seats, including the driver's seat. Heavy buses are those classified over 4.5 tonnes whereas light buses are less than that (Bureau of Infrastructure and Transport Research Economics, 2021).

What does bus-involved mean? Whether a bus was involved in the crash. Bus-involved deaths may be higher than bus occupant deaths (those that occupy a bus, including passengers and drivers on the bus), as it counts deaths from parties in other vehicles or pedestrians, for example.

What is a hospitalised injury? Injuries resulting in confirmed admission to hospital, but not in hospital death from road traffic crashes. The data is sourced from AIHW.

What is a Vulnerable Road User (VRU)? Vulnerable road users (VRU) are road users not in a car, bus or truck, generally including pedestrians, motorcyclists, children 7 years and under, the elderly and users of mobility devices.

References

Australian Transport Safety Bureau. (2004). Guidelines for Determining Events as Road Crashes in Australia. Canberra.

Bureau of Infrastructure and Transport Research Economics. (2021). Road Trauma Involving Heavy Vehicles. Retrieved from www.bitre.gov.au: https://www.bitre.gov.au/sites/default/files/documents/hv_annual_2021.pdf

Office of Road Safety. (2023, November 14). Fatalities Data. Retrieved from Office of Road Safety: https://www.officeofroadsafety.gov.au/data-hub/fatalities-data#:~:text=A%20road%20death%20(or%20fatality,such%20as%20a%20heart%20attack