

Geographical analysis of hospitalised injury and injury deaths data, 2017-18

Web report | Last updated: 31 Aug 2021 | Topic: [Injury](#)

About

This report presents interactive maps and data visualisations based on counts and rates of hospitalised injury and injury deaths by remoteness of usual residence for Australian jurisdictions in 2017-18. Overall, rates of injury hospitalisations and deaths rise with increasing remoteness. Transport accidents and assaults/homicide show the strongest relationship between increasing remoteness and increasing rates of deaths and hospitalisations.

Cat. no: INJCAT 216

- [Geography and injury](#)
- [Data](#)

Findings from this report:

- [For residents of Very remote areas, the rate of injury hospitalisation was more than double that of Major cities](#)
 - [The transport crash death rate for residents of Very remote areas was 5 times as high as for Major city residents](#)
 - [The assault hospitalisation rate was 19 times as high for residents of Very Remote areas compared to Major cities](#)
 - [Rates of self-harm hospitalisation and death were higher in Remote and Very remote areas](#)
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Summary

This report presents interactive maps and data visualisations based on counts and rates of hospitalised injury and injury deaths by remoteness of usual residence for Australian jurisdictions in 2017-18.

Injury hospitalisations and deaths vary according to the regions in which Australians live. Generally, rates of injury hospitalisations and deaths increase with remoteness. The number and rate of injury hospitalisations and deaths also vary by sex, age and external cause according to the remoteness of usual residence (AIHW 2019a, 2019b).

In 2017-18, 350,000 hospitalisations and 8,300 deaths occurred for residents of *Major cities* of Australia. While the numbers of hospitalisations and deaths were higher for residents of *Major cities*, after adjusting for population size, the rates of hospitalised injury and deaths were much higher for residents of *Very remote* areas. For both injury hospitalisations and deaths, rates increased as remoteness of usual residence increased.

The highest rates of injury hospitalisations and deaths occurred for residents of the Northern Territory and the lowest rates were seen for New South Wales. Within each state higher rates of hospitalised injury and death were associated with more remote areas of usual residence.

Transport accidents and Assaults/Homicide showed the strongest relationship between increasing remoteness of usual residence and increasing rates of hospitalisations and deaths.



Geography and injury

This report presents interactive maps and data visualisations based on counts and rates of hospitalised injury and injury deaths, which enable users to explore the data for specific geographic regions based on state/territory and remoteness of usual residence.

Chapters:

- [Impact of remoteness on injury](#)
- [Variation by remoteness](#)
- [Variation by age and sex](#)
- [Variation by state and territory](#)
- [Variation by remoteness for different causes](#)
- [References](#)

Technical information is included in the [data tables](#).



Geography and injury

Injury hospitalisations and deaths vary according to the regions in which Australians live. Nearly 3 in 10 Australians (28%, or around 7 million people) live in rural and remote areas. In this report, the term 'rural and remote' covers all areas outside Australia's *Major cities* and encompasses many diverse locations and communities (AIHW 2019c, 2020).

In 2017, the proportion of Australians by area of remoteness was:

- 72% in *Major cities*
- 18% in *Inner regional* areas
- 8.2% in *Outer regional* areas
- 1.2% in *Remote* areas
- 0.8% in *Very remote* areas (ABS 2018).

Generally, rates of injury hospitalisations and deaths increase with remoteness of usual residence. The number and rate of injury hospitalisations and deaths also varies by sex, age and the type of external cause according to the remoteness of usual residence (AIHW 2019a, 2019b). Differences in rates of injury hospitalisations and deaths by remoteness could be due to factors such as distance or access to services.

Classification of remoteness area

Australia can be divided into several regions based on their distance from urban centres. In this report, 'remoteness area' refers to the place of usual residence of the person who was admitted to hospital or died as a result of an injury, assigned on the basis of the reported Statistical Area Level 2 (SA2) of residence. The remoteness areas were specified according to the ABS Australian Statistical Geography Standard (ASGS).

- *Major cities* (for example, Sydney, Geelong, Gold Coast)
- *Inner regional* (for example, Hobart, Ballarat, Coffs Harbour)
- *Outer regional* (for example, Darwin, Cairns, Coonabarabran)
- *Remote* (for example, Alice Springs, Broome, Strahan)
- *Very remote* (for example, Coober Pedy, Longreach, Exmouth)

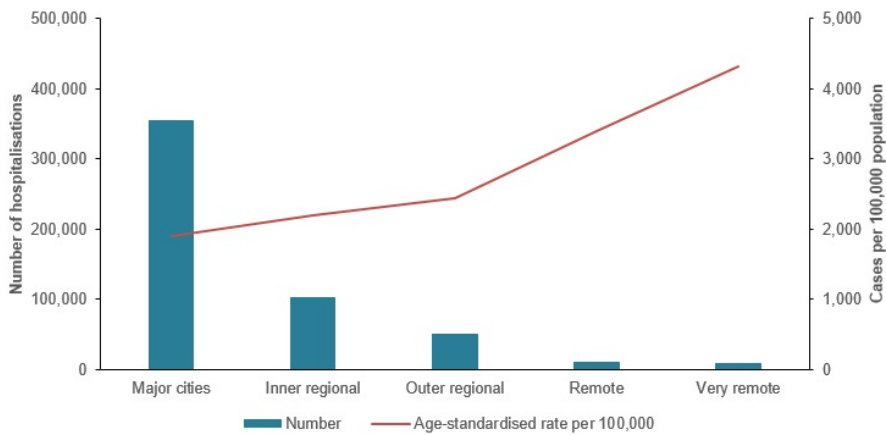
Analyses presented here are based on the place of usual residence of the person, rather than the place the injury occurred. The injury that led to a person's hospitalisation or death might not have occurred in the area in which the person resided. For example, *Major cities* residents may have been injured in transport crashes while in *Inner regional* or *Remote* areas.

Geography and injury

The largest number of injuries in 2017-18 occurred for residents of *Major cities* of Australia with 350,000 hospitalisations and 8,300 deaths (Figures 1 and 2). However, when adjusted for population size, the largest rates of injury hospitalisations and deaths occurred for residents of *Very remote* regions of Australia.

The age-standardised rate of hospitalised injury in 2017-18 increased as the remoteness of usual residence increased (Figure 1). The rate of injury for residents of *Very remote* regions was more than double the rate for residents of *Major cities*. Similarly, rates of injury death rose with increasing remoteness, with the rate for residents of *Very remote* areas being 1.7 times the rate for residents of *Major cities* (Figure 2).

Figure 1: Hospitalised injury cases and age-standardised rates, by remoteness of usual residence, Australia 2017-18

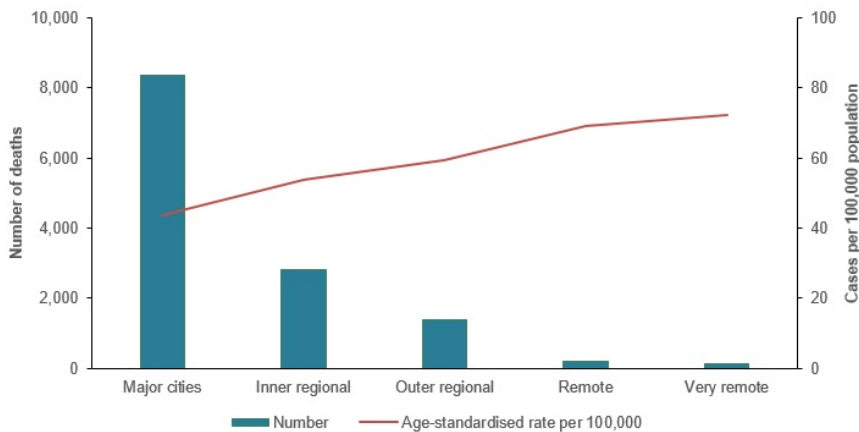


Notes

1. Derived using the Australian Statistical Geography Standard (ASGS) classification.
2. Age-standardised to the 2001 Australian population (per 100,000).

Source: AIHW National Hospital Morbidity Database.

Figure 2: Injury deaths and age-standardised rates, by remoteness of usual residence, Australia 2017-18



Notes

1. Derived using the Australian Statistical Geography Standard (ASGS) classification.
2. Age-standardised to the 2001 Australian population (per 100,000).

Source: AIHW National Mortality Database.

Geography and injury

The pattern of injury hospitalisations and deaths was similar among males and females but differed in some age groups. The differences by age and sex can be explored in the data visualisation below (Interactive 1). In summary:

- for males and females, rates of injury hospitalisations increased consistently with increasing remoteness of usual residence
- rates of injury deaths among males increased with remoteness of usual residence and were highest in *Remote* regions
- rates of injury deaths among females were higher for residents of *Very remote* regions (50 cases per 100,000 population) compared with all other regions. The lowest rate of injury death for females was seen for residents of *Major cities* (38 cases per 100,000 population)
- rates of injury hospitalisations followed the same pattern of increasing as remoteness of usual residence increased for all age groups except for those aged 65 and over, whose highest rate of injury occurred for residents of *Major cities*
- rates of injury deaths follow a similar pattern by age to that of hospitalisations. For those aged 65 and over, the rate of injury death was highest for residents of *Remote* regions (203 cases per 100,000 population) followed by *Major cities* (184 cases per 100,000 population).

Interactive 1

This data visualisation consists of twin bar charts and tables on separate tabs describing counts and rates of injury hospitalisations and deaths by sex, by age group, and by remoteness of usual residence. A notes tab is also available. The reader can select to display by number or rate or age group.

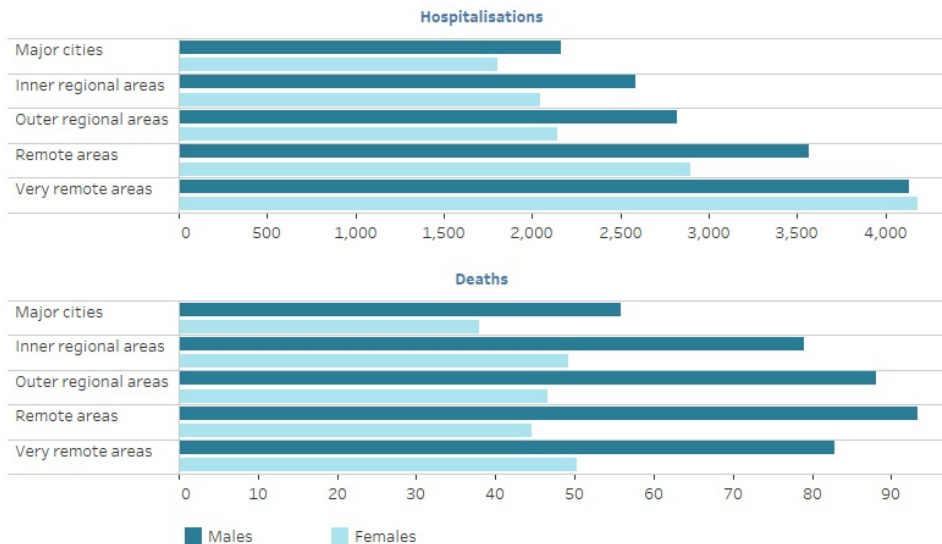
The top bar chart shows that the rate of hospitalisations per 100,000 population rises with increasing remoteness of usual residence for both males and females.

The bottom bar chart shows that for males and females, the lowest injury death rate per 100,000 population is for residents of Major cities (55.9 for males and 37.9 for females). The highest rate for males was for residents of Remote regions (93.3) and for females was for residents of Very remote areas (50.3), although the rate for Inner regional regions for females was similar (49.2).

Counts and rates of injury hospitalisations and deaths by sex, by age group, by remoteness of usual residence, Australia, 2017–18

Select rate or number of cases
Crude rate (per 100,000)

Select age group
All ages



Notes: See notes tab.

Source: AIHW National Hospital Morbidity Database and the AIHW National Mortality Database.

aihw.gov.au

Geography and injury

Tables 1 and 2 show the number and rate of injury hospitalisations and deaths in Australia by state and territory of usual residence. The highest rates of injury hospitalisations and deaths occurred for residents of the Northern Territory and the lowest rates were seen for residents of New South Wales. The Northern Territory has higher numbers of people living in *Remote* and *Very remote* areas compared with NSW, as well as a higher proportion of people who are of Aboriginal and/or Torres Strait Islander origin.

Table 1: Rates and counts of hospitalised injury cases, by state and territory, Australia, 2017-18

State or territory of residence	Number	Age standardised rate (per 100,000)	Crude rate (per 100,000)
New South Wales	152,879	1,803.7	1,929.4
Victoria	130,290	1,931.2	2,038.6
Queensland	127,453	2,492.2	2,565.0
Western Australia	48,698	1,852.3	1,884.5
South Australia	38,098	2,013.0	2,202.0
Tasmania	10,197	1,845.8	1,941.3
Australian Capital Territory	8,379	2,015.5	2,013.2
Northern Territory	10,823	4,602.4	4,375.4
All Australia	532,562	2047.9	2148.2

Notes

1. State or territory is based on place of usual residence.
2. 'All Australia' includes other territories.
3. Denominators for crude rates were estimated resident population (ERP) values as at 31 December 2017.
4. Age-standardised rates were standardised to the 2001 Australian population (per 100,000), 5 year age groups to 95+.

Source: AIHW National Hospital Morbidity Database

Table 2: Rates and counts of injury deaths, by state and territory, Australia, 2017-18

State or territory of residence	Number	Age standardised rate (per 100,000)	Crude rate (per 100,000)
New South Wales	4,107	45.8	51.8
Victoria	2,851	40.1	44.6
Queensland	2,892	53.8	58.2
Western Australia	1,402	51.5	54.3
South Australia	1,014	48.6	58.6
Tasmania	353	56.1	67.2
Australian Capital Territory	241	57.4	57.9
Northern Territory	166	75.9	67.1
All Australia	13,028	47.4	52.6

Notes

1. State or territory is based on place of usual residence.
2. 'All Australia' includes other territories.
3. Denominators for crude rates were estimated resident population (ERP) values as at 31 December 2017.
4. Age-standardised death rates were standardised to the 2001 Australian population (per 100,000), using 6 age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65+).

Source: AIHW National Mortality Database.

The state and territory differences in crude rates of injury hospitalisations and deaths by age and sex can be explored in the data visualisation below (Interactive 2). In summary:

New South Wales

- Rates of hospitalised injury rose with increasing remoteness of usual residence but not in a linear fashion. The highest rate of hospitalised injury occurred for residents of *Remote* regions (2,299 cases per 100,000 population). There was little difference between males and females but there was variation by age group. A reverse trend was seen among those aged 65+, with higher rates of hospitalised injury for residents of *Major cities* (4,571 cases per 100,000).
- Rates of injury death increased with increasing remoteness of usual residence. The highest rate of injury death was for residents of *Very remote* regions (109 deaths per 100,000). As with hospitalised injuries there was little difference between males and females. Rates of injury death increased with remoteness for each of the age groups examined, except for those aged 65 and over where the highest rate of injury deaths occurred for residents of *Remote* regions (204 deaths per 100,000).

Victoria

- Victoria has no *Very remote* regions and while the rate of injury hospitalisations increased with increasing remoteness, the highest rate occurred for residents of *Inner regional* areas (2,256 cases per 100,000). Like the patterns seen in New South Wales, there were no differences between males and females and no variation among the different age groups. For Victorians aged 65 and over the highest rates of hospitalised injury occurred for residents of *Major cities* (4,750 cases per 100,000).
- Rates of injury death in Victoria increased with increasing remoteness from *Major cities* to *Outer regional* areas but decreased in *Remote* regions. The highest rate of injury death occurred for residents of *Outer regional* areas (61 deaths per 100,000). Differences were seen between males and females with lower rates of injury deaths among females (45 deaths per 100,000) in *Outer regional* regions compared to males (78 deaths per 100,000).

Queensland

- Rates of hospitalised injury in Queensland increased with increasing remoteness of usual residence. The highest rate of hospitalised injury occurred for residents of *Very remote* regions (3,550 cases per 100,000). The effect was seen for males and females and for each age group. The exception was those aged 65 and over where the highest rate occurred for residents of *Major cities* (5,230 cases per 100,000).
- Rates of injury death in Queensland increased with increasing remoteness from *Major cities* to *Remote* regions but decreased in *Very remote* regions. The rate of injury death among females did not increase with increasing remoteness of usual residence. Variation in the rate of injury death was seen in the 45-64 and 65+ age groups.

Western Australia

- Rates of hospitalised injury in Western Australia increased with increasing remoteness of usual residence. The highest rate of hospitalised injury occurred for residents of *Very remote* regions (2,992 cases per 100,000 population). The rate of hospitalised injury was highest among males living in *Remote* regions (2,776 cases per 100,000), while for females the highest rates were for residents of *Very remote* regions (3,527 cases per 100,000). Rates were highest in *Very remote* regions for all age groups.
- Rates of injury deaths did not follow the same pattern of increases with increasing remoteness of usual residence. The highest rates of injury death in Western Australia were seen for residents of *Inner regional* and *Outer regional* areas, 69 deaths per 100,000 population each. There was a decrease in rate of injury deaths for males by remoteness of usual residence with increasing remoteness and in contrast, a rise for females. Rate of injury death by remoteness varied among the different age groups.

South Australia

- Generally, rates of hospitalised injury in South Australia increased with increasing remoteness of usual residence. The highest rate of hospitalised injury occurred for residents of *Very remote* regions (3,833 cases per 100,000 population). There was little difference between males and females. The highest rates of hospitalised injury occurred in *Very remote* regions for all age groups other than 65+.
- Rates of injury death in South Australia rose with increasing remoteness. However, for females the rate of death peaked for residents of *Remote* regions at 65 deaths per 100,000. Variation in the rate of injury deaths was seen among the different age groups by remoteness of usual residence. There were small numbers of deaths in many age groups across the remoteness zones.

Tasmania

- Tasmania has no *Major city* regions and while the rate of injury hospitalisations was highest for residents of *Very remote* regions (2,410 cases per 100,000) it was very similar among the other 3 remoteness zones. Among males, rates of injury hospitalisations increased with increasing remoteness of usual residence. For females, rates decreased with increasing remoteness but were still highest in *Very remote* regions. Variation in the rate of injury hospitalisations was seen among the different age groups by remoteness of usual residence. Rates were highest for residents of *Inner regional* areas for those aged 0-4, 45-64, and 65+ and in *Very remote* regions for those aged 5-14, 15-24, and 25-44.

- Rates of injury deaths in Tasmania by remoteness were variable for males and females and across all age groups. The most consistent finding was high rates of injury deaths among those living in *Remote* regions of Tasmania.

Australian Capital Territory

- ACT only has two remoteness zones: *Major cities* and *Inner regional* areas. Rates of hospitalised injury tended to be higher in the *Inner regional* areas but not for females or those aged 5-14 and 15-24.
- Rates of injury death overall were higher in *Inner regional* areas however there were small numbers of deaths in many age groups across the two remoteness zones making any further interpretation difficult.

Northern Territory

- The Northern Territory has no *Major cities* or *Inner regional* areas. Overall, and for males and females, rates of hospitalised injury were higher in each successive remoteness zone. The highest rate of hospitalised injury occurred for those living in *Very remote* regions (7,157 cases per 100,000). With respect to age, the relationship between increasing rates of hospitalisation by increasing remoteness was seen in each age group other than 5-14 and 15-24. In these two groups the rates of hospitalised injury were higher for residents of *Remote* regions.
- The rate of injury deaths increased with increasing remoteness of usual residence overall and by sex. There was variability in the relationship between remoteness and rates of injury death among the age groups.

Interactive 2

This data visualisation consists of a map, chart and table on separate tabs describing counts and rates of injury hospitalisations and deaths by sex, by age group, by state or territory, and by remoteness of usual residence. A notes tab is also available. The reader can select to display by sex, number or rate, age group or state.

The default view is a map of Australia showing rates of injury hospitalisation per 100,000 population. The map shows the highest rate of injury hospitalisation is for residents of Very remote areas of the Northern Territory (7,157) and the lowest rate is for residents of Very remote areas of New South Wales (1,748).

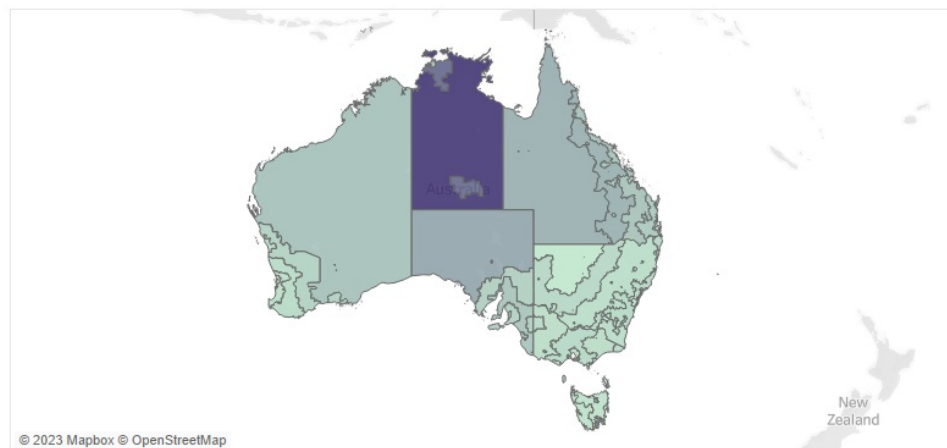
Counts and rates of injury hospitalisations by sex, by age group, by state or territory, by remoteness of usual residence, Australia, 2017-18

Select sex
Persons

Select rate or number of cases
Crude rate (per 100,000)

Select age group
All ages

Zoom to state or territory
All



1,748 7,157

Notes: See notes tab.

Source: AIHW National Hospital Morbidity Database and the AIHW National Mortality Database.
aihw.gov.au

Geography and injury

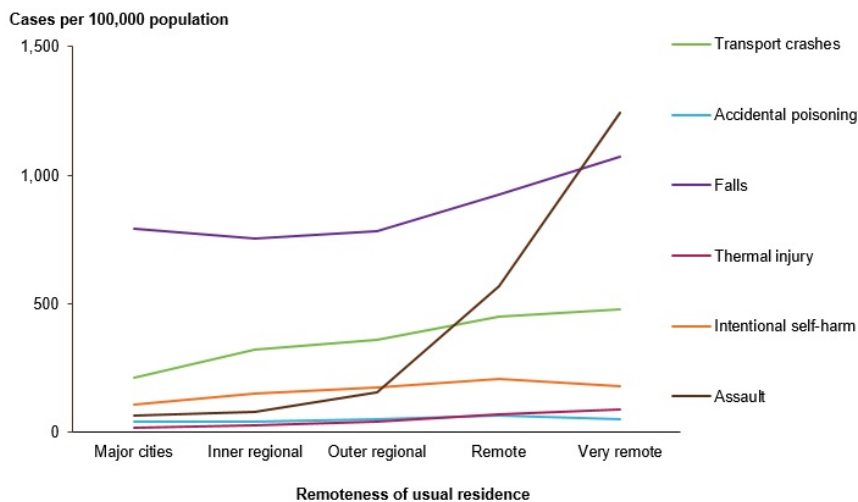
Rates of injury hospitalisation and deaths due to a range of external causes vary according to the remoteness of a person's usual residence. In many cases rates rise with increasing remoteness.

It is not always possible to identify specific reasons for the patterns of hospitalised injuries and deaths seen within different external causes according to the remoteness of a person's usual residence, particularly when comparing states and territories. Differences in health care access, utilisation and quality between rural and urban populations can contribute to increases in hospitalisations and deaths for all external causes of injury to varying degrees. Where possible, specific factors that contribute to the varying rates of hospitalisations and deaths by remoteness are mentioned below.

Figures 3 and 4 show the age-standardised rates of hospitalised injury and injury deaths in Australia by a selected number of external causes of injury. For injury hospitalisations, rates rise consistently with increasing remoteness for hospitalisations; largely due to transport crashes, falls and assaults. For the other external causes of injury there is some minor variation, but the same overall trend is present. Rates rise consistently with increasing remoteness for deaths due to transport crashes, thermal injuries, suicide and homicide. For accidental poisoning deaths and deaths due to falls there was less of a clear-cut relationship with remoteness of usual residence.

Differences in rates of injury hospitalisations and deaths by different external causes can be explored in the data visualisation below (Interactive 4). Some additional commentary on each of the external causes is also presented.

Figure 3: Age-standardised rates of selected external causes of hospitalised injury cases, remoteness of usual residence, Australia 2017-18

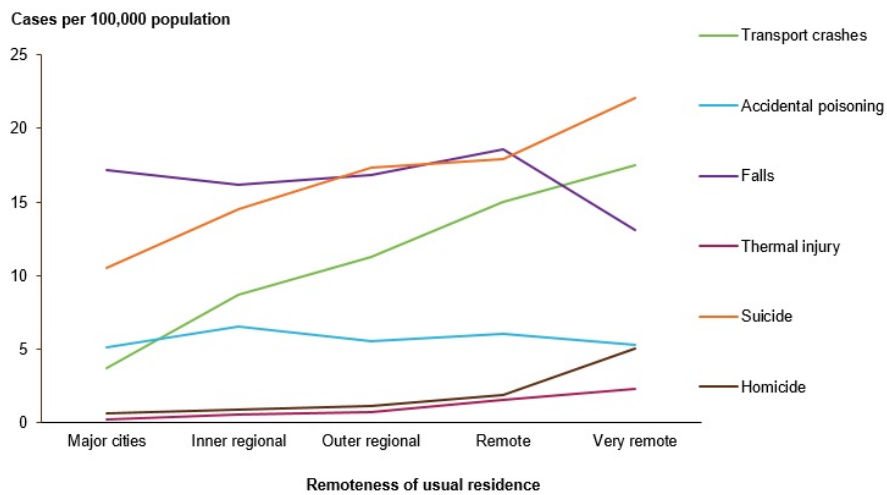


Notes

1. Based on place of usual residence.
2. Rates are age-standardised to the 2001 Australian population (per 100,000).

Source: AIHW National Hospital Morbidity Database.

Figure 4: Age-standardised rates of selected external causes of injury deaths, remoteness of usual residence, Australia, 2017-18



Notes

1. Based on place of usual residence.
2. Rates are age-standardised to the 2001 Australian population (per 100,000).

Source: AIHW National Mortality Database.

Transport crash injuries

Many factors contribute to the increase in hospitalisations and deaths due to transport crashes in *Remote* and *Very remote* regions including travel distances, road conditions, higher speed limits and unsealed roads. Rates of hospitalised injury and death increased with increasing remoteness of usual residence for transport crashes. For injury hospitalisations for residents of *Very remote* areas, the rate was twice as high as for those living in *Major cities*, and for transport crash deaths the rate was 5 times as high.

Accidental poisoning

The rate of hospitalised injury due to accidental poisoning rose with increasing remoteness up to a point with the highest rate occurring for residents of *Remote* regions (67 cases per 100,000). In contrast, there was no relationship between rates of accidental poisoning deaths and remoteness of usual residence.

Falls

Rates of hospitalised falls injury increased with increasing remoteness of usual residence. The rate of hospitalised falls injury for residents of *Major cities* was 793 cases per 100,000 compared with 1,070 for those living in *Very remote* areas. The rate of fall related deaths was not as closely linked to remoteness of usual residence with a lower rate of fall injury deaths for residents of *Very remote* areas.

Thermal injury

Environmental risk factors for burn injury can be more prominent in rural and regional areas and include exposure to different occupational (for example, hot farm machinery, back burning) and recreational (for example, campfires) hazards (AIHW 2016). For thermal injury hospitalisations for residents of *Very remote* areas, the rate was 5 times as high as for those living in *Major cities*. Rates of thermal injury deaths also increased with increasing remoteness of usual residence.

Intentional self-harm/Suicide

Difficulty of access to mental health services in rural and remote areas is an additional contributing factor to the higher rates of intentional self-harm and suicide deaths in increasingly remote areas. Rates of hospitalised intentional self-harm increased with increasing remoteness up to *Remote* areas but were slightly lower for residents of *Very remote* areas. For suicides, rates increased with increasing remoteness to be twice as high for residents of *Very remote* areas compared with those living in *Major cities*.

Assault/Homicide

For hospitalised assault cases, rates of assault for residents of *Major cities* were 65 cases per 100,000 population compared with 1,244 cases per 100,000 population those living in *Very remote* areas. Rates of homicide were 8 times higher for residents of *Very remote* areas (5 cases per 100,000 population) compared with *Major cities* (0.6 cases per 100,000 population). This is influenced by the higher hospitalisation rates for injury-related assaults for Indigenous Australians living in remote areas.

Interactive 3

This data visualisation consists of a map, chart and table on separate tabs describing counts and rates for each of injury hospitalisations and deaths by sex, by external cause, and by state and territory of remoteness of usual residence. A notes tab is also available. The reader can select to display by sex, number or rate, external cause or state. The default view is a map of Australia showing rates of injury hospitalisation for unintentional falls per 100,000 population. The map shows the highest rate of falls injury hospitalisation is for residents of *Very remote* regions of the Northern Territory (1,257) and the lowest rate is for residents of *Very remote* regions of Tasmania (505).

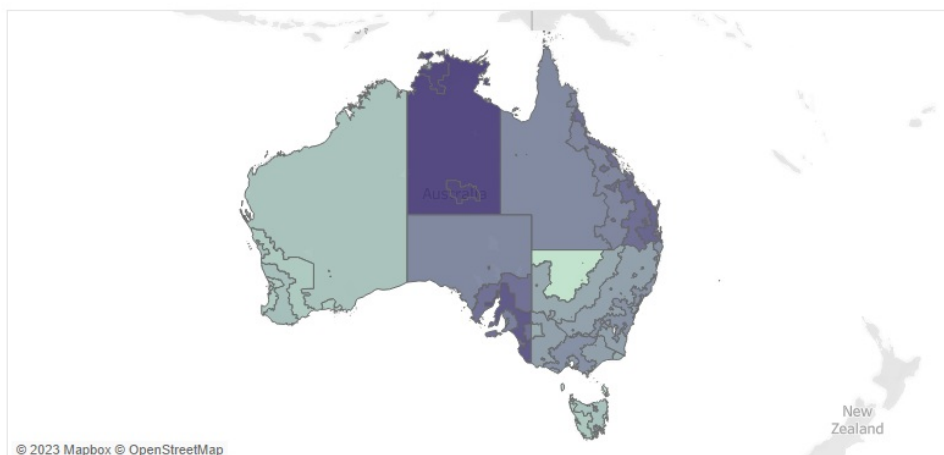
Counts and rates of injury hospitalisations by sex and external cause, Australia 2017-18

Select sex
Persons

Select rate or number of cases
Crude rate (per 100,000)

Select the external cause of injury
Falls

Zoom to state or territory
All



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505 1,257

Notes: See notes tab.

Source: AIHW National Hospital Morbidity Database and the AIHW National Mortality Database.

aihw.gov.au





Geography and injury

ABS (Australian Bureau of Statistics) 2018. Population by age and sex, regions of Australia, 2017. ABS Cat. no. 3235.0. Canberra: ABS. Derived by AIHW from SA1 estimated resident populations.

AIHW (Australian Institute of Health and Welfare): Pointer S & Tovell A 2016. [Hospitalised burn injuries, Australia, 2013-14](#). Injury research and statistics series no. 102. Cat. No. INJCAT 178. Canberra: AIHW.

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Data





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