



The health impact of suicide and self-inflicted injuries in Australia, 2019

Web report | Last updated: 04 Nov 2021 | Topic: [Burden of disease](#) | [Media release](#)

About

This report updates and extends data previously published on the burden of suicide and self-inflicted injuries from the 2015 Australian Burden of Disease Study (ABDS) (AIHW 2019). It includes updated estimates of the total, fatal and non-fatal burden of suicide and self-inflicted injuries in Australia in 2019. Detailed information is provided by age and sex, on changes over time, and on differences by key population groups.

Cat. no: PHE 288

Findings from this report:

- [145,703 years of healthy life lost due to suicide and self-inflicted injuries in 2019, 99% of which was fatal burden](#)
 - [Suicide and self-inflicted injuries represented around 3% of the total burden of disease and injury in Australia](#)
 - [The proportion of total burden from suicide and self-inflicted injuries was higher among males \(75%\) than females \(25%\)](#)
 - [On average, males and females lost 42 years of life due to dying from suicide in 2019](#)
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Summary

Suicide and self-inflicted injuries contribute substantially to the burden of disease within the Australian population. Burden of disease analysis measures the combined impact of living with illness and injury (non-fatal burden) and dying prematurely (fatal burden) using the Disability-adjusted Life Years (DALY) metric.

This report presents new data on the disease burden of suicide and self-inflicted injuries in Australia in 2019. Interactive data visualisations provide detailed information by age and sex, on changes over time, and on differences by key population groups. Throughout this report, supplementary tables are referenced using the prefix 'S' (for example, Table S1). These supplementary tables are available on the [Data page](#).

Burden of disease estimates for 2019 are not available for other diseases and injuries; hence, it was not possible to update the disease rankings and proportion of total burden due to suicide and self-inflicted injuries for the 2019 reference year. However, as these statistics are not expected to change much from year to year, they have been estimated using data from the 2018 ABDS.

In 2019, Australians lost 145,703 years of healthy life due to suicide and self-inflicted injuries - representing around 3% of the total burden of disease and injury in Australia. Nearly all (99%) of the burden of suicide and self-inflicted injuries was due to dying prematurely (fatal burden). On average, males and females lost 42 years of life due to dying from suicide in 2019. Suicide was the third leading cause of fatal burden in Australia in 2018 (second for males) and the leading cause of fatal burden for males and females aged 15-44 (AIHW forthcoming 2021a).

Three-quarters of the total burden of suicide and self-inflicted injuries in 2019 occurred in males, and it was highest in people aged 25-34.

After adjusting for population increase and ageing, there was a 13% increase in total burden due to suicide and self-inflicted injuries between 2003 and 2019 (from 5.2 to 5.9 DALY per 1,000 population).

Burden of suicide and self-inflicted injuries varied by population

In 2019, the rate of burden of suicide and self-inflicted injuries:

- was lowest in Victoria and highest in the Northern Territory, where the rate was 1.6 times as high as the national rate
- generally increased with increasing remoteness, with the highest rates of burden among people living in Remote and Very remote areas, where the rates were 2.3 times those for Major cities
- increased with increasing socioeconomic disadvantage, with the rate of burden among people in the lowest socioeconomic areas (most disadvantaged areas) being twice as high as that of those in the highest (least disadvantaged) socioeconomic areas.

Almost half the burden can be attributed to behavioural risk factors

A portion of disease burden could be prevented if exposure to modifiable risk factors is avoided or reduced. In 2019, it is estimated that almost half (48%) of the burden of suicide and self-inflicted injuries is due to 4 modifiable risk factors:

- child abuse and neglect during childhood among people aged 5 and over
- alcohol use among people aged 15 and over
- illicit drug use among people aged 15 and over
- intimate partner violence among females aged 15 and over.

In 2019, child abuse and neglect during childhood was the leading risk factor contributing to the burden of suicide and self-inflicted injuries in both males and females. It was associated with 33% of total suicide burden in females and 24% in males aged 5 and over.

Alcohol use was the second leading risk factor among males and was responsible for 17% of the burden due to suicide and self-inflicted injuries among males aged 15 years and over in 2019 (18,108 DALY); while, for females, intimate partner violence contributed almost 20% of the burden among those aged 15 years and over (6,964 DALY).

Introduction

Background

Suicide and intentional self-harm are serious but preventable public health problems. As part of the national effort to address suicide and self-harm in Australia, the Australian Institute of Health and Welfare set up the National Suicide and Self-harm Monitoring System. This system will improve the quality, accessibility and timeliness of data on deaths by suicide, and on self-harming and suicidal behaviours. For more information on the system, see the AIHW [Suicide and self-harm monitoring website](#).

There were 3,300 deaths by suicide in 2019, and more than 28,600 hospitalisations due to intentional self-harm in 2019-20 in Australia (AIHW 2021c). Males were 3 times more likely to take their lives than females, but females were more likely than males to be hospitalised for intentional self-harm.

Results from the 2018 ABDS indicate that suicide and self-inflicted injuries accounted for 2.8% of total burden (140,737 DALY) in 2018. It was the third leading cause of total burden in males, who suffered 3 times the amount of burden due to suicide as females. Almost all (99%) of this burden was due to fatal burden; that is, dying prematurely from suicide. Suicide was the second leading cause of fatal burden among males, responsible for 7.6% of total years of life lost. Suicide was the leading cause of fatal burden among males and females aged 15-44 (AIHW forthcoming 2021a).

The primary aim of this report is to update and extend data previously published on the burden due to suicide and self-inflicted injuries from the 2015 ABDS (AIHW 2019). Detailed estimates of the total, fatal and non-fatal burden of suicide and self-inflicted injuries in 2019 are provided, as well as trends and analysis by selected population groups.

Burden of disease estimates for 2019 are not available for other diseases and injuries; hence, it was not possible to update the disease rankings and proportion of total burden due to suicide and self-inflicted injuries for the 2019 reference year. However, as these statistics are not expected to change much from year to year, they have been estimated using data from the 2018 ABDS.

What is burden of disease?

Burden of disease analysis measures the impact of disease and injury in a population by estimating the amount of DALY experienced by the population (AIHW 2019). This measure counts the combined years of healthy life lost due to living with disease or injury ('years lived with disability' or YLD) and dying prematurely from disease and injury ('years of life lost' or YLL) (AIHW 2019). One DALY represents 1 year of healthy life lost.

Rather than just counting deaths and disease prevalence, burden of disease analysis takes into account the age at death and the severity of disease to estimate the total health loss. The contribution of various modifiable risk factors to disease burden is also estimated (AIHW 2019).

Information on the burden of disease and injuries as well as the contribution of various risk factors to burden is important for monitoring population health and for providing an evidence base to inform health policy and service planning (AIHW 2019).

Burden estimates for suicide and self-inflicted injury

Fatal burden estimates (YLL) presented in this report were derived from the AIHW National Mortality Database (NMD). Non-fatal burden estimates (YLD) were derived from data sourced from the AIHW National Hospital Morbidity Database (NHMD) and the AIHW National Non-admitted Patient Emergency Department Care Database (NNAPEDCD) (see [Technical notes](#) for further information on the data sources and methods used).

Box 1: Key terms used in this report

attributable burden: The disease burden attributed to a particular risk factor. It is the reduction in fatal and non-fatal burden that would have occurred if exposure to the risk factor had been avoided (or, more precisely, had been at its theoretical minimum).

disability-adjusted life years (DALY): A measure (in years) of healthy life lost, either through premature death - defined as dying before the ideal life span (YLL) - or, equivalently, through living with ill health due to illness or injury (YLD). It is often used synonymously with 'health loss'.

fatal burden: The burden from dying 'prematurely' as measured by years of life lost against an ideal life expectancy. Often used synonymously with YLL, and also referred to as 'life lost'.

non-fatal burden: The burden from living with ill-health as measured by years lived with disability. It is often used synonymously with YLD.

risk factor: Any factor that represents a greater risk of a health condition or health event. Risk factors for suicide and self-inflicted harm include child abuse and neglect, alcohol use and illicit drug use. Intimate partner violence is also a risk factor for women aged 15 and over.



How much burden

On this page:

- [Total burden](#)
- [Fatal burden](#)
- [Non-fatal burden](#)

Total burden

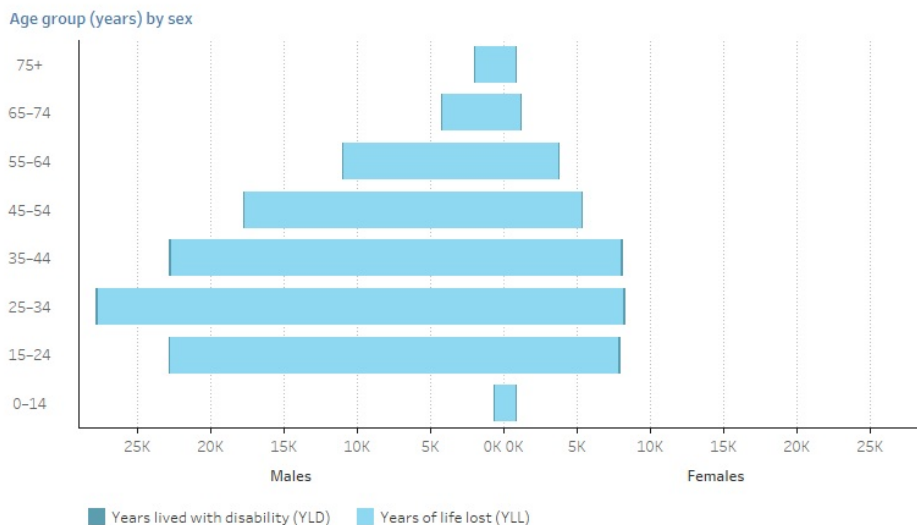
Total burden is measured using the summary metric of DALY. In 2019, Australians lost 145,703 years of healthy life due to suicide and self-inflicted injuries, at a rate of 5.7 DALY per 1,000 population (Table S1). This represents around 3% of the total burden of disease and injury in Australia (based on data from the 2018 ABDS).

Three-quarters of the total burden of suicide and self-inflicted injuries in 2019 occurred in males (109,144 DALY) at a rate of 8.7 per 1,000 population, accounting for an estimated 4% of total burden among males. In contrast, suicide and self-inflicted injuries were responsible for 36,558 DALY in females in 2019 at a rate of 2.9 per 1,000, accounting for an estimated 1.5% of total burden among females.

Among those aged 15 and over, males suffered a higher burden (and rate) of suicide and self-inflicted injuries than females in each age group (figures 1 and 2).

Figure 1: Burden (YLL and YLD number) due to suicide and self-inflicted injuries, by age group and sex, 2019

This figure presents the age and sex structure of the overall burden of suicide and self-inflicted injuries in Australia in 2019. It compares the proportion and number of fatal and non-fatal burden by sex and age groups. Males have a higher burden of suicide and self-inflicted injuries compared to females for all age groups among those aged 15 years and over.



Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Overall, the proportion of total burden due to suicide and self-inflicted injuries was highest among people aged 25-34 (25%), followed by those aged 15-24 and 35-44 (both 21%).

Fatal burden represented almost all (99%) of the total burden due to suicide and self-inflicted injuries in 2019. Non-fatal burden represented 0.9% of total burden and was slightly higher for females and those aged 25-34 (figures 1 and 2).

Figure 2: Number and rate of burden (DALY, YLL, YLD and deaths) due to suicide and self-inflicted injuries, by age group and sex, 2003, 2011, 2015, 2018 and 2019

Figure 2 presents the number and age-specific rate of total, fatal and non-fatal burden and the number of deaths by sex and age group in each reference year from 2003 to 2019. For each year and sex, a bar chart is used to describe the pattern of total, fatal and non-fatal burden by age group, while a line chart displays the age-specific rates of total, fatal and non-fatal burden. In 2019, total burden of suicide and self-inflicted injuries was highest among those aged 25-34, after that, the total burden of suicide and self-inflicted injuries decreased with increasing age.

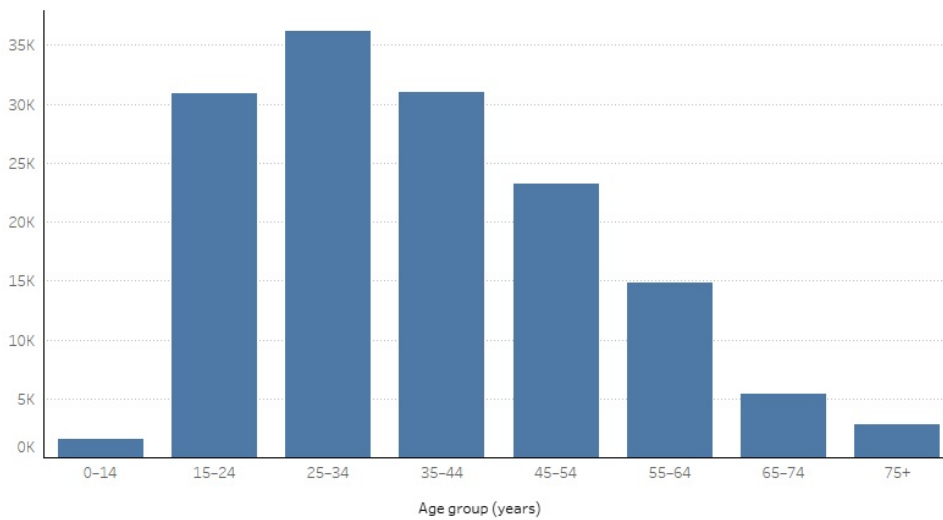
Select a measure: Disability-adjusted life years (DALY) Years lived with disability (YLD) Years of life lost (YLL) Deaths

Sex: Females Males Persons

Year: 2019

Data Type: Number Rate

Number of DALY | Persons



Note: Deaths are counted by year of occurrence and aligned to the ABDS 2018 causes; they may differ from the number of suicide deaths reported elsewhere. Death rates are not published.
 Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Fatal burden

Fatal burden, known as ‘years of life lost’ (YLL), is measured against an ideal life expectancy.

Suicide and self-inflicted injuries were responsible for 144,407 years of life lost due to premature death in 2019. It is estimated to account for around 6% of the total fatal burden of disease and injury in Australia (based on 2018 ABDS data). When compared with other diseases and injuries using data from the 2018 ABDS, suicide was the third leading cause of fatal burden (second for males) and the leading cause of fatal burden for males and females aged 15-44 (AIHW forthcoming 2021a).

Total YLL for suicide equated to a crude rate of 5.7 YLL per 1,000 population in 2019 (Table S1). The average number of years of life lost per death due to suicide in 2019 was 41.8 years, which was lower than the average of 44.3 years in 2003 (Table S2). These data were similar by sex: males lost an average of 41.9 years due to dying from suicide and self-inflicted injuries in 2019 compared with 44.4 in 2003, and females lost an average of 41.6 years in 2019 compared with 43.7 in 2003. This suggests that the average age for suicide deaths is increasing over time (as fewer years of life are lost the older one gets and the closer they are to the ideal life expectancy).

The age and sex pattern of fatal burden due to suicide reflects that for the total burden due to suicide and self-inflicted injuries; that is, 75% of fatal burden occurred in males and both the YLL number and rate were highest among those aged 25-34 (Figure 1).

Non-fatal burden

Non-fatal burden, known as ‘years lived with disability’ (or YLD), is measured using information on incidence, prevalence, duration and severity of the disease or injury. YLDs for suicide and self-inflicted injuries are primarily based on data from the NHMD and the NNAPEDCD, which are weighted for severity (AIHW forthcoming 2021b). As not all suicide attempts and cases of self-harm are reported in these 2 databases, estimates of the non-fatal burden of suicide and self-inflicted injuries reported here are likely to be underestimates.

In 2019, Australians lost 1,296 years of healthy life (YLD) due to living with the impact of suicide and self-inflicted injuries. This equated to a crude rate of 0.05 YLD per 1,000 population (Table S1). It is estimated that suicide and self-inflicted injuries accounted for 0.05% of all non-fatal burden in Australia (based on 2018 ABDS data).

Contrasting with fatal burden, 55% of non-fatal burden occurred in females (711 YLD) compared with 45% in males (585 YLD).

By age, non-fatal burden was highest in those aged 25-34 (314 YLD; 24% of YLD due to suicide and self-inflicted injuries) followed by those aged 15-24 (307 YLD; 24%) (Figure 1).

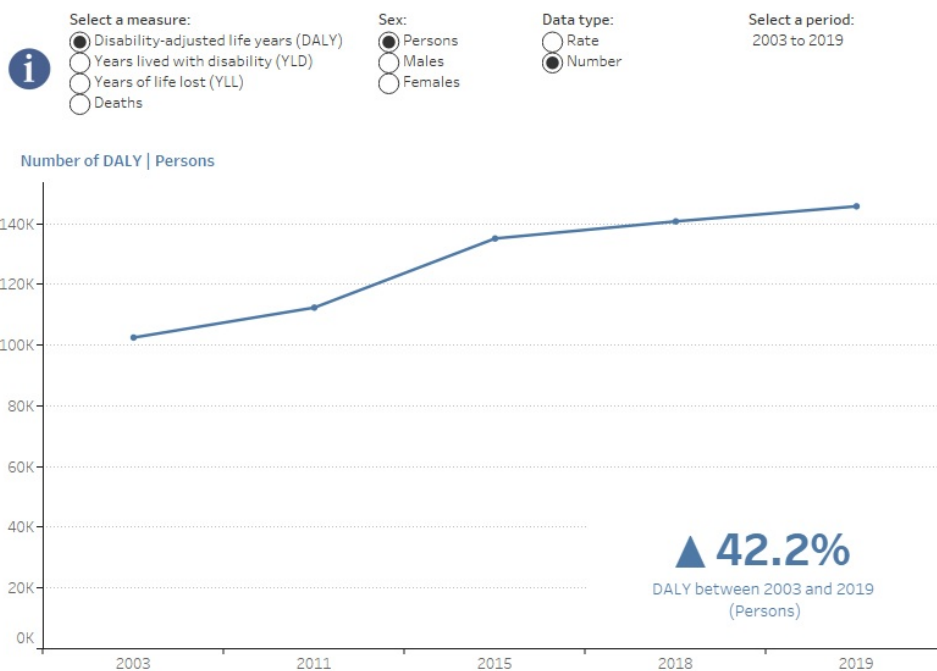
Changes over time

After accounting for population increase and ageing, there was a 13% increase in the overall burden of suicide and self-inflicted injuries between 2003 and 2019, from 5.2 to 5.9 DALY per 1,000 population (Figure 3; Table S3). During this period, the age-standardised rate of fatal burden (YLL) for suicide also increased from 5.2 to 5.8 YLL per 1,000 (13%); however, the age-standardised rate for non-fatal burden (YLD) remained stable.

Females experienced a larger increase in the overall burden of suicide and self-inflicted injuries between 2003 and 2019 (28%) than males (8.7%). Similarly, the increase in fatal burden over this time was higher in females (29%) than in males (8.8%).

Figure 3: Number and age-standardised rate of burden (DALY, YLL, YLD and deaths) due to suicide and self-inflicted injuries, by sex, 2003, 2011, 2015, 2018 and 2019

Figure 3 shows the number and age-standardised rates of burden and the number of deaths by sex in each reference year from 2003 to 2019 by a line chart. A text box at the bottom right highlights the percentage change in the number and age-standardised rates for total, fatal and non-fatal burden between selected years. There was a sharp increase in the rate of total burden between 2003 and 2019 for females.



Note: Deaths are counted by year of occurrence and aligned to the ABDS 2018 causes; they may differ from the number of suicide deaths reported elsewhere. Death rates are not published.
Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Total burden rates for suicide and self-inflicted injuries increased or remained relatively stable for all age groups between 2003 and 2019. Among females, the largest rate increases occurred in those women aged 75 and over (98%; from 0.44 DALY per 1,000 population in 2003 to 0.87 DALY per 1,000 in 2019) and those aged 15-24 (84%; from 2.8 to 5.1 DALY per 1,000) (Figure 4; Table S4). Among males, those men aged 55-64 experienced the largest increase (56%; from 4.9 to 7.7 DALY per 1,000), followed by men aged 45-54 (32%; from 8.5 to 11.3 DALY per 1,000).

Figure 4: Rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by age group and sex, 2003, 2011, 2015, 2018 and 2019

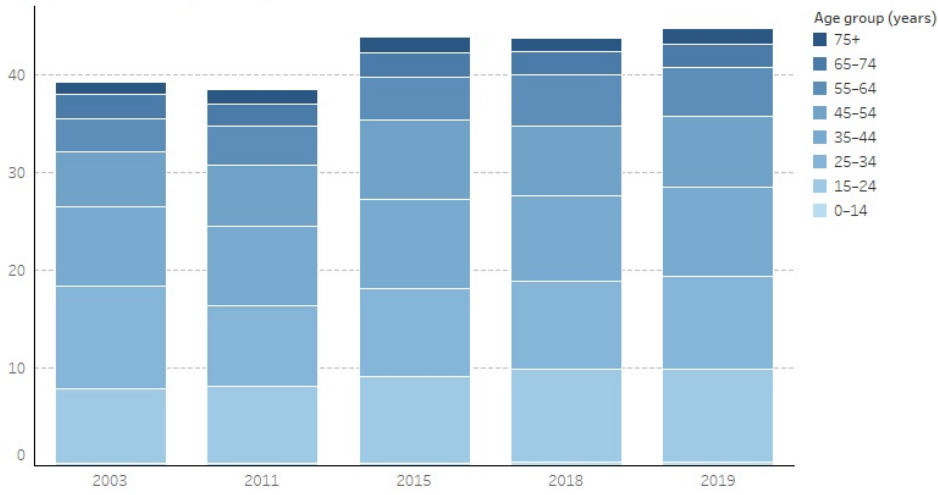
Figure 4 is a stacked bar chart presenting the age-specific rates of total, fatal and non-fatal burden due to suicide and self-inflicted injuries by sex in each reference year from 2003 to 2019. Total burden rates for suicide and self-inflicted injuries increased or remained relatively stable for all age groups between 2003 and 2019.

Select a measure: Disability-adjusted life years (DALY) Years lived with disability (YLD) Years of life lost (YLL)

Sex: Females Males Persons

Age group (years): All

Age-specific DALY rate (per 1,000) | Persons



Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Note: ****
 Source: AIHW Austral

Key population groups

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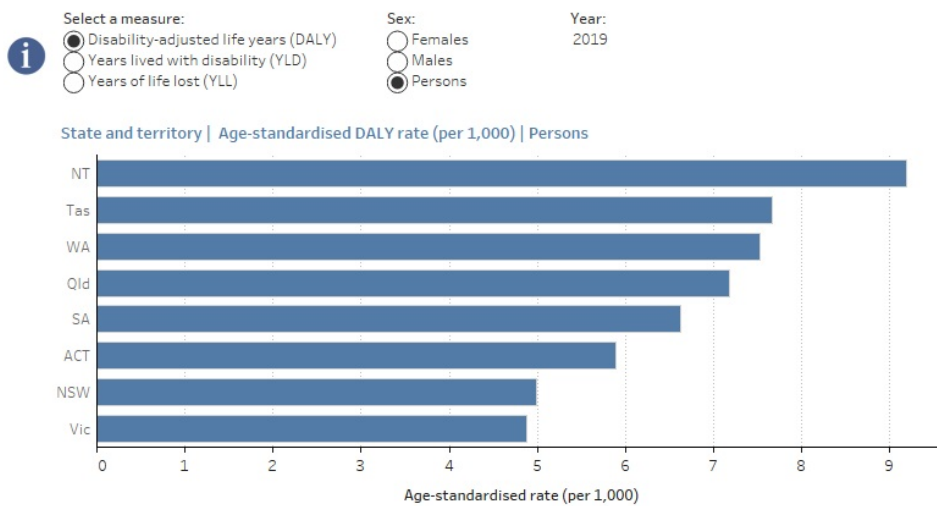
- [State and territory](#)
- [Remoteness area](#)
- [Socioeconomic area](#)

State and territory

Burden due to suicide and self-inflicted injuries varies by state and territory. After adjusting for population increase and ageing, total burden rates in 2019 were lowest in Victoria (4.9 DALY per 1,000 population) and highest in the Northern Territory (9.2 DALY per 1,000). Victoria also had the lowest age-standardised rate for fatal burden (4.8 YLL per 1,000) and the Northern Territory had the highest (9.1 YLL per 1,000) (Figure 5; Table S5). The rates of both total and fatal burden due to suicide and self-inflicted injuries in the Northern Territory were 1.6 times as high as the national rates (9.2 compared with 5.9 DALY per 1,000; and 9.1 compared with 5.8 YLL per 1,000) in 2019.

Figure 5: Age-standardised rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by state and territory and sex, 2011, 2015, 2018 and 2019

This bar chart presents the distribution of age-standardised rates of total, fatal and non-fatal burden by state and territory and sex in each reference year, from 2011 to 2019. In 2019, the Northern Territory had the highest age-standardised rates of total burden for males and females (11.3 and 7.0 DALY per 1,000 respectively). Victoria had the lowest rates of total burden for males and females (7.5 and 2.3 DALY per 1,000 respectively)



Note: Rates were age-standardised to the 2001 Australian Standard Population and are expressed as per 1,000 population.
Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Non-fatal burden due to suicide and self-inflicted injuries was also highest in the Northern Territory, where the age-standardised rate was 2.1 times the national rate (0.11 compared with 0.05 YLD per 1,000 population). Non-fatal burden rates for the other states and territories ranged from 0.04 to 0.07 YLD per 1,000. Caution should be used when interpreting these figures due to small numbers.

Males and females aged 15-24 in the Northern Territory experienced the highest rates of total, fatal and non-fatal burden of suicide and self-inflicted injuries in 2019 (Figure 6; Table S6). Total burden rates were around 31 DALY per 1,000 population for both males and females in this age group in the Northern Territory.

Figure 6: Number and rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by state and territory, age group and sex, 2019

This grouped bar chart presents the distribution of the number and age-specific rates of total, fatal and non-fatal burden due to suicide and self-inflicted injuries, by state and territory and sex in 2019. For each sex and type of burden, it allows the comparison of age-specific burden rates by age group across the states and territories. In 2019, males and females aged 15-24 in the Northern Territory experienced the highest rates of total, fatal and non-fatal burden due to suicide and self-inflicted injuries.

Visualisation not available for printing

Total burden rates were highest for people aged 15-24 in all states and territories except Western Australia - where 25-34 year olds had the highest rate - and Tasmania, where 45-54 year olds had the highest rate.

Between 2011 and 2019, the age-standardised rate of total burden of suicide and self-inflicted injuries increased in each state and territory except the Northern Territory, where it fell by 7.9% for all people (from 10.0 to 9.2 DALY per 1,000 population) and by 25% for males (from 15.1 to 11.3 DALY per 1,000 population) (Figure 5; Table S5). The total burden rate increased, however, for females in the Northern Territory (by 66%; from 4.2 to 7.0 DALY per 1,000 population).

The Australian Capital Territory experienced the largest increase in the age-standardised rate of total burden due to suicide and self-inflicted injuries for all people (61%; from 3.7 DALY per 1,000 population in 2011 to 5.9 DALY per 1,000 in 2019) and for males (95%; from 4.8 DALY per 1,000 population in 2011 to 9.3 DALY per 1,000 in 2019). For females, the total burden rate fell by 5.1% in the Australian Capital Territory (from 2.6 DALY per 1,000 to 2.5 DALY per 1,000) (Figure 5; Table S5). However, it should be noted that these trends are based on relatively small numbers and should be interpreted with caution.

These trends were also observed for the fatal burden due to suicide and self-inflicted injuries.

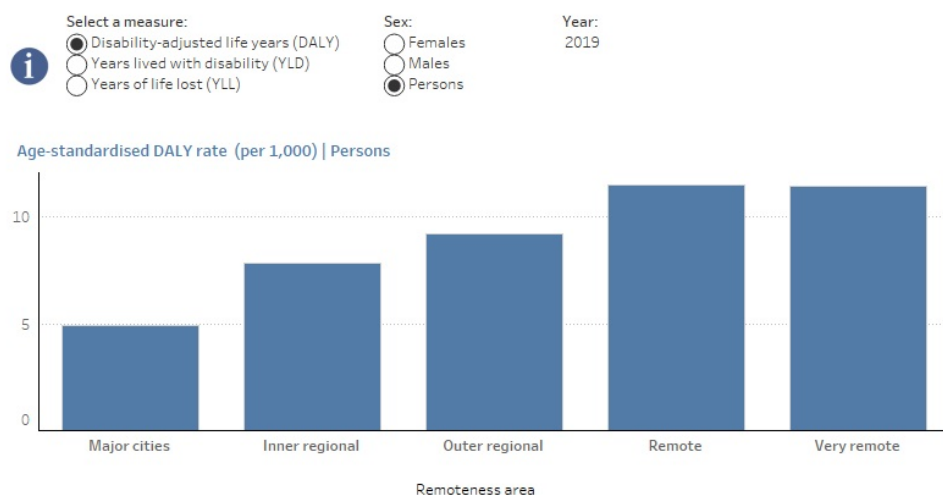
Remoteness area

The rate of burden due to suicide and self-inflicted injuries generally increased with increasing remoteness in 2019 (Figure 7; Table S7). The rate of total burden was highest in Remote areas (11.5 DALY per 1,000 population) and Very remote areas (11.4 DALY per 1,000), around 2.3 times the rate in Major cities (4.9 DALY per 1,000). A similar pattern was observed for both fatal and non-fatal burden.

Figure 7: Age-standardised rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by remoteness area and sex, 2015, 2018 and 2019

This bar chart presents age-standardised rates of total, fatal and non-fatal burden due to suicide and self-inflicted injuries by remoteness and sex for the reference years 2015, 2018 and 2019. It shows the comparison across the five remoteness areas: Major cities, Inner regional, Outer regional, Remote and Very remote areas.

In 2019, the rate of burden of suicide and self-inflicted injuries generally increased with increasing remoteness. The rate of total burden was highest in Remote areas (11.5 DALY per 1,000 people) and Very remote areas (11.4 DALY per 1,000 people), around 2.3 times the rate in Major cities (4.9 DALY per 1,000 people). A similar pattern was observed for both fatal and non-fatal burden.



Note: Rates were age-standardised to the 2001 Australian Standard Population and are expressed as per 1,000 population. Geography is based on area of usual residence, classified according to Remoteness Area Australian Statistical Geography Standard 2016 (see Technical notes).
Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

In 2019, males experienced more total and fatal burden from suicide and self-inflicted injuries in each remoteness category, with the largest difference being in Inner regional areas where the rates in males were around 3.5 times as high as those in females. In contrast, non-fatal burden was higher among females than males in every remoteness category.

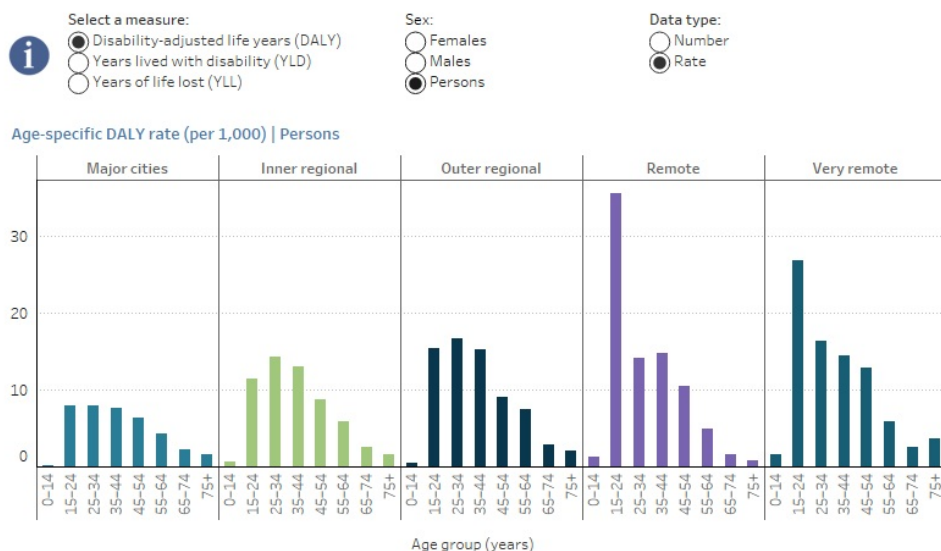
People aged 15-24 living in Remote areas had the highest rate of total suicide burden in 2019 (35.4 DALY per 1,000 population) and the highest rate of fatal burden (35.2 YLL per 1,000) (Figure 8; Table S8). Those aged 15-24 living in Very remote areas had the second highest rates of total and fatal burden (26.8 and 26.6 per 1,000, respectively). The highest rates of non-fatal burden also occurred among people aged 15-24 living in Remote and Very remote areas (0.2 YLD per 1,000).

Times series data by remoteness are presented only for 2015 to 2019 due to changes in Census remoteness boundaries since 2015. Between 2015 and 2019, the age-standardised rate of total burden of suicide and self-inflicted injuries increased by 12% in Inner regional areas and by 13% in Remote areas. Rates remained relatively stable in Major cities, Outer regional and Very remote areas (Table S7). Similar trends occurred for fatal burden between 2015 and 2019.

Figure 8: Number and rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by remoteness area, age group and sex, 2019

This grouped bar chart presents the number and age-specific rates of total, fatal and non-fatal burden by remoteness area and sex in 2019. For each sex and type of burden, it shows the age distribution within each of the five remoteness areas, allowing comparison of the burden by age group across these remoteness areas.

In 2019, people aged 15-24 years living in Remote areas had the highest rates of total, fatal and non-fatal suicide burden (35 DALY per 1,000; 35 YLL per 1,000; and 0.2 YLD per 1,000 respectively), while those aged 15-24 years living in Very remote areas had the second highest rates (27 DALY per 1,000; 27 YLL per 1,000; and 0.2 YLD per 1,000 respectively).



Note: Geography is based on area of usual residence, classified according to Remoteness Area Australian Statistical Geography Standard 2016 (see Technical notes).
 Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Socioeconomic area

Socioeconomic areas are presented as approximate quintiles in this report. The lowest quintile (Quintile 1, or Q1) represents the approximate 20% of the population living in areas with the lowest socioeconomic characteristics; that is, it is the most disadvantaged. The level of socioeconomic position increases with each quintile, through to the approximate 20% of the population living in areas with the highest socioeconomic characteristics (Quintile 5, or Q5); that is, the least disadvantaged.

In 2019, the age-standardised rates of total, fatal and non-fatal burden of suicide and self-inflicted injuries increased with increasing socioeconomic disadvantage (Figure 9). This was true for both males and females (Table S9). The rate of burden in the lowest socioeconomic areas (most disadvantaged areas) (7.9 DALY per 1,000 population) was 2.0 times the rate of the highest (least disadvantaged) socioeconomic areas (3.9 DALY per 1,000).

Figure 9: Age-standardised rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by socioeconomic area and sex, 2015, 2018 and 2019

This bar chart presents the age-standardised rates of total, fatal and non-fatal burden by the five socioeconomic areas (Quintile 1, Quintile 2, Quintile 3, Quintile 4 and Quintile 5, with Quintile 1 being the area with the most socioeconomic disadvantage and Quintile 5 being the area with the least) and sex in the reference years 2015, 2018 and 2019. In 2019, the age-standardised rates of total, fatal and non-fatal burden due to suicide and self-inflicted injuries increased with increasing socioeconomic disadvantage for both males and females. The rate of total burden was 2 times as high in the lowest socioeconomic area (7.9 DALY per 1,000) as that in the highest area (3.9 DALY per 1,000).



Note: Rates were age-standardised to the 2001 Australian Standard Population and are expressed as per 1,000 population. Socioeconomic area was classified using the population-based ABS Index of Relative Socio-economic Disadvantage of Socio-Economic Indexes for Areas 2016 (see Technical notes).
 Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

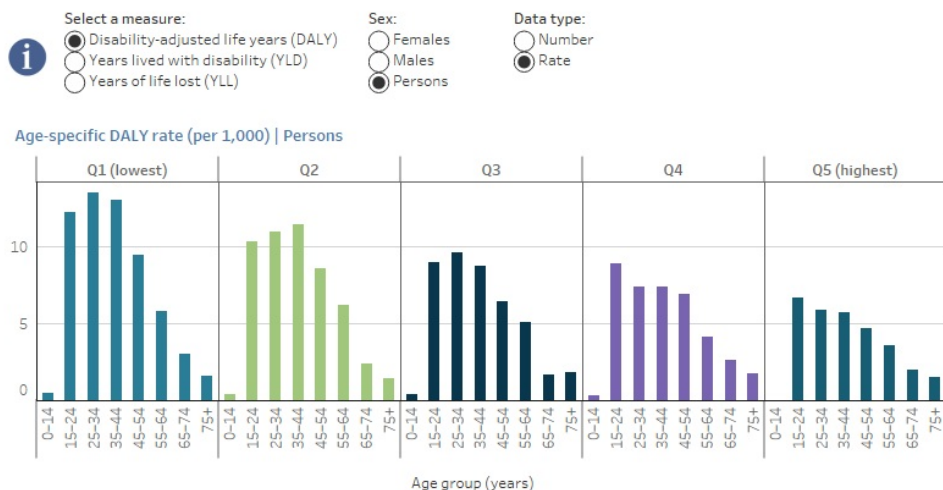
The rate of fatal burden in the lowest socioeconomic areas (7.8 YLL per 1,000 population) was also 2.0 times the rate of the highest socioeconomic areas (3.8 YLL per 1,000), while the rate of non-fatal burden was 1.8 times as high in the lowest socioeconomic areas (0.07 YLD per 1,000) as in the highest socioeconomic areas (0.04 YLD per 1,000).

Age-specific rates of total burden due to suicide and self-inflicted injuries showed a fairly similar pattern by socioeconomic area, being highest among those aged 15-44. People aged 25-34 in the lowest socioeconomic areas had the highest rate of burden of suicide and self-inflicted injuries in 2019 (13.6 DALY per 1,000 population) (Figure 10; Table S10).

Times series data by socioeconomic area are presented for 2015 to 2019 only, due to changes in Census boundaries used to calculate Socio-Economic Indexes for Areas since 2015. Between 2015 and 2019, the age-standardised rate of total burden of suicide and self-inflicted injuries remained relatively stable in each socioeconomic area, except in socioeconomic area Quintile 2 (the second most disadvantaged areas) where there was an 12% increase (from 6.2 DALY per 1,000 population to 6.9 DALY per 1,000) (Figure 9; Table S9).

Figure 10: Number and rate of burden (DALY, YLL and YLD) due to suicide and self-inflicted injuries, by socioeconomic area, age group and sex, 2019

This grouped bar chart presents the number and age-specific rates of total, fatal and non-fatal burden due to suicide and self-inflicted injuries by socioeconomic area and sex in 2019. It shows the age distributions in each of the five socioeconomic areas, allowing comparison of the burden by age group across each socioeconomic area. Age-specific rates of total burden due to suicide and self-inflicted injuries showed a fairly similar pattern by socioeconomic area, being highest among those aged 15-44.



Note: Socioeconomic area was classified using the population-based ABS Index of Relative Socio-economic Disadvantage of Socio-Economic Indexes for Areas 2016 (see Technical notes).

Source: AIHW Australian Burden of Disease Database.

<http://www.aihw.gov.au>



Risk factors

Box 2: How are risk factors selected?

A portion of disease burden could be prevented if exposure to relevant risk factors were avoided or reduced. The 2018 ABDS examined the contribution of 40 risk factor exposures (such as cannabis use, cocaine use) combined into 20 individual risk factors (such as illicit drug use) to the burden of disease (referred to as ‘attributable burden’). Attributable burden reflects the direct link between a risk factor (for example, alcohol use) and a disease or injury outcome (for example, suicide and self-inflicted injury).

For a risk factor to be included in the study, it had to meet several criteria including:

- having strong evidence of a causal association with linked diseases measured in the ABDSs
- being modifiable
- being able to be measured in the Australian population (AIHW forthcoming 2021b).

Associations between risk factors and linked diseases were evaluated based on sufficient evidence of a causal link. These were assessed against criteria established by the World Cancer Research Fund whose grading system evaluates associations as being either convincing, probable, possible or insufficient.

Four individual risk factors (6 risk factor exposures) were included in the analysis of attributable burden for suicide and self-inflicted injuries as having convincing or probable evidence in the literature of a causal association (AIHW 2018; Ayre et al. 2016; Moore et al. 2015):

- child abuse and neglect during childhood among people aged 5 and over
- alcohol use among people aged 15 and over
- illicit drug use (specifically, amphetamine use, cocaine use, and opioid use) among people aged 15 and over
- intimate partner violence among women aged 15 and over. The contribution of these risk factors to the burden of suicide and self-inflicted injuries is now described.

In 2019, it is estimated that almost half (48%) of the burden of suicide and self-inflicted injuries is due to these 4 modifiable risk factors.

Child abuse and neglect during childhood was consistently the leading behavioural risk factor contributing to the burden of suicide and self-inflicted injuries in both males and females aged 5 and over between 2003 and 2019 (Figure 11). In 2019, it contributed one-third (33%; 12,031 DALY) of the total burden in females and 24% in males (25,690 DALY) (Table S11).

Figure 11: Burden of suicide and self-inflicted injuries attributable to selected risk factors, by sex, 2003, 2011, 2015, 2018 and 2019

This bar chart presents numbers and proportions of burden of suicide and self-inflicted injuries due to six risk factor exposures by sex in 2003, 2011, 2015, 2018 and 2019. These risk factors are child abuse and neglect during childhood among people aged 5 years and over; alcohol use and illicit drug use (specifically cocaine use, amphetamine use and opioid use) among people aged 15 years and over; and intimate partner violence among females aged 15 years and over.

It also shows the ranking of the attributable burden in the selected risk factors for each reference year. Child abuse and neglect during childhood was consistently the leading behavioural risk factor contributing to the burden of suicide and self-inflicted injuries in both males and females aged 5 years and over between 2003 and 2019. In 2019, it contributed one third (33%; 12,031 DALY) of the total burden in females and 24% in males (25,690 DALY).

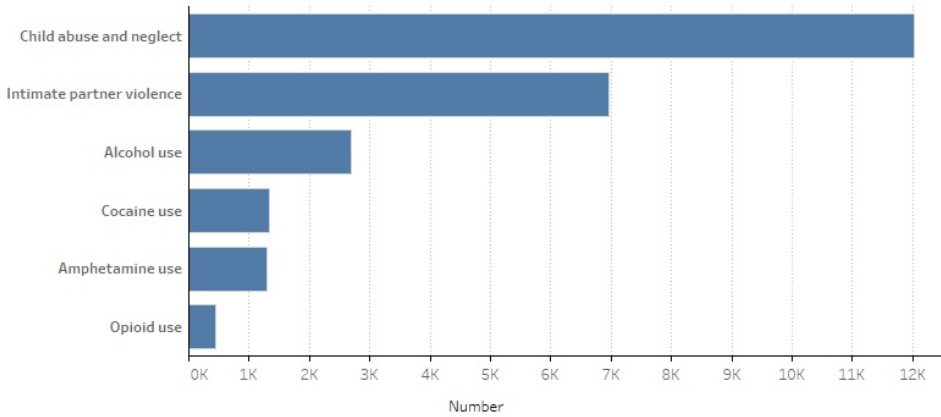


Sex:
Females

Year:
2019

Select a measure:
Attributable disability-adjusted life years (DALY)

Risk factor | Attributable DALY | Females



Note: Intimate partner violence risk factor is estimated in females only as the evidence in the literature used to inform the linked diseases and relative risks was available only for females (Ayre et al. 2016).

Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

Among males aged 15 and over, alcohol use was the second leading behavioural risk factor and was responsible for 17% (18,108 DALY) of the total burden of suicide in 2019. For women aged 15 and over, intimate partner violence was the second leading contributor (20%; 6,964 DALY) in 2019, and this was consistent over time.

Among those aged 15 and over, illicit drug use was responsible for 17% of male and 8.6% of female suicide burden in 2019. Cocaine use had the greatest attributable DALY, followed by amphetamine use and opioid use.

In 2019, child abuse and neglect during childhood was the greatest contributor to the total burden of suicide and self-inflicted injuries in both males and females aged 5 and over in all age groups except women aged 85 and over (Table S12). The majority of the burden attributable to child abuse and neglect was experienced in ages 15-44.

The majority of the burden of suicide and self-inflicted injuries attributable to alcohol use occurred in those aged 15-54, peaking at 15-24 for both males and females. Similarly, most of the burden attributable to illicit drug use was experienced in those aged 15-54, peaking at 25-34 for both males and females (Table S12).

The risk factors contributing to the burden of suicide and self-inflicted injuries varied somewhat by age group.

- For example, for children aged 5-14, child abuse and neglect is the only risk factor contributing to the burden, responsible for 18% of male and 26% of female burden due to suicide and self-inflicted injuries in 2019 (Figure 12).
- Among those aged 65-84, intimate partner violence was responsible for 18% of the female burden due to suicide and self-inflicted injuries, while child abuse and neglect was responsible for 16% of the total burden due to suicide and self-inflicted injuries in this age group.
- For women aged 85 and over, intimate partner violence was the main risk factor contributing to the burden due to suicide and self-inflicted injuries (responsible for 15%).

Figure 12: Burden of suicide and self-inflicted injuries attributable to selected risk factors, by age and sex, 2019

The bar chart presents rankings of attributable burden of suicide and self-inflicted injuries of the six risk factor exposures by sex and age group. These risk factors are child abuse and neglect during childhood among people aged 5 years and over; alcohol use and illicit drug use (specifically cocaine use, amphetamine use and opioid use) among people aged 15 years and over; and intimate partner violence among females aged 15 years and over.

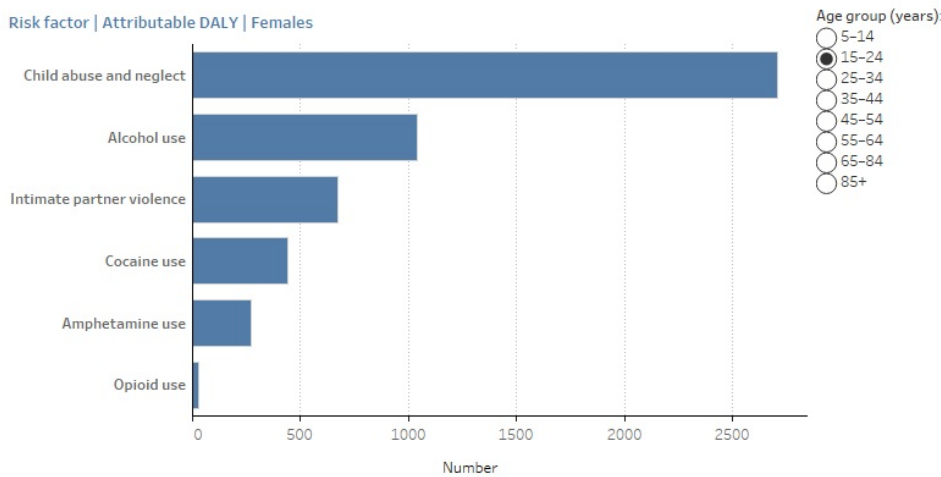
The risk factors contributing to the burden of suicide and self-inflicted injuries varied somewhat by age group. For example, for those aged 5-14, child abuse and neglect is the only risk factor contributing burden, responsible for 18% of male and 26% of female burden due to suicide and self-inflicted injuries in 2019. For those aged 65-84 years, intimate partner violence and child abuse and neglect were the major risk factors contributing burden (responsible for 18% and 16% respectively); and for women aged 85 years and over, intimate partner violence was the main risk factor contributing to the burden due to suicide and self-inflicted injuries (responsible for 15%).



Sex:
Females

Select a measure:
Attributable disability-adjusted life years (DALY)

Risk factor | Attributable DALY | Females



Note: Intimate partner violence risk factor is estimated in females only as the evidence in the literature used to inform the linked diseases and relative risks was available only for females (Ayre et al. 2016).
Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>

It is not possible to estimate attributable burden for child abuse and neglect in childhood by socioeconomic area as Moore and others (2015) did not report this. For the other risk factors, there was a general pattern of increasing attributable burden with decreasing socioeconomic position, after adjusting for population increase and ageing.

For example, in 2019, the rates of suicide burden attributable to alcohol use were 2.8 times higher for males and 2.2 times higher for females in the lowest socioeconomic areas (most disadvantage areas) compared with the highest (least disadvantaged) areas (Figure 13; Table S13). For illicit drug use among both males and females, the attributable burden was highest in the second most disadvantaged areas (Quintile 2, or Q2) and lowest in the least disadvantaged areas (Quintile 5, or Q5), with the greatest disparity seen for opioid use (Table S13).

Figure 13: Burden (DALY, YLL and YLD) of suicide and self-inflicted injuries attributable to selected risk factors, by socioeconomic area and sex, 2019

The grouped bar chart presents the burden of suicide and self-inflicted injuries attributable to three selected risk factors (alcohol use and illicit drug use among people aged 15 years and over; and intimate partner violence among females aged 15 years and over) by socioeconomic area and sex in 2015, 2018 and 2019.

The figure shows the distribution and ratio between the age-standardised attributable rate in the lowest socioeconomic area to those in the highest area for each of the three risk factors by reference year and sex, for 2015, 2018 and 2019. For example, in 2019 the age-standardised rates of suicide burden attributable to alcohol use were 2.8 times higher for males and 2.2 times higher for females in the lowest socioeconomic area compared to the highest area.

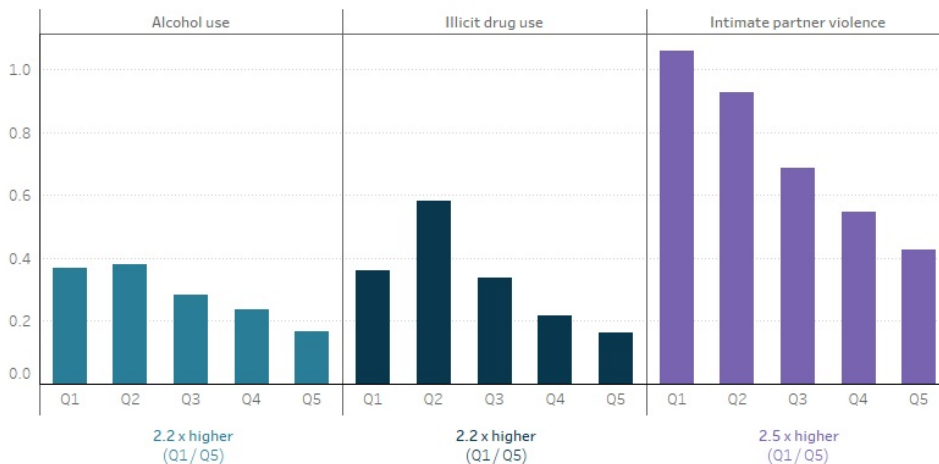
Select a measure:
 Attributable disability-adjusted life years (DALY)
 Attributable years lived with disability (YLD)
 Attributable years of life lost (YLL)

Sex:
 Females
 Males
 Persons

Year:
2019

Quintile 1 (Q1) represents the 20% of the population with the lowest socioeconomic characteristics while Quintile 5 (Q5) represents the highest 20%.

Age-standardised attributable DALY rate (per 1,000) | Females



Notes

- Rates were age-standardised to the 2001 Australian Standard Population and expressed as per 1,000 people.
 - Intimate partner violence risk factor is estimated in females only as the evidence in the literature used to inform the linked diseases and relative risks was available only for females (Ayre et al. 2016).
 - Child abuse and neglect was not estimated by socioeconomic group as this was not reported by Moore and others (2015).
- Source: AIHW Australian Burden of Disease Database.
<http://www.aihw.gov.au>





Technical notes

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Technical notes

AIHW National Mortality Database

The 2019 fatal burden (YLL) estimates for suicide and self-inflicted injuries were derived from the AIHW National Mortality Database (NMD) and are considered to be of high quality. More information on the NMD is available at: [Deaths data](#).

AIHW National Hospital Morbidity Database

For the non-fatal burden (YLD) of suicide and self-inflicted injuries, data for admitted cases were sourced from the National Hospital Morbidity Database (NHMD) and these data are considered to be of high quality. More information about this data collection is available at: [National Hospitals Data Collection](#).

AIHW National Non-Admitted Patient Emergency Department Care Database

The National Non-Admitted Patient Emergency Department Care Database (NNAPEDCD) was used to assess non-admitted (emergency care) cases. More information about this data collection is available at: [National Hospitals Data Collection](#).

Technical notes

On this page:

- [Estimating fatal burden](#)
- [Estimating non-fatal burden](#)
- [Estimating risk factor attributable burden](#)
- [Geography](#)

Estimating fatal burden

Expressed as years of life lost (YLL), fatal burden is a measure of years lost due to premature death, measured against an ideal life expectancy. Analysis of fatal burden takes into account all deaths that occur in a population during a reference period. In this study, YLL estimates for the fatal burden of suicide and self-inflicted injuries were based on deaths that occurred in the reference year 2019.

Deriving YLL requires both:

- mortality data - the actual number of deaths and the ages at which those deaths occurred
- a reference life table - a measure of life expectancy at each age to derive years of life lost at each age. The reference life table used in calculating YLL for this report was the Global Burden of Disease (GBD) 2010 standard reference life table (Murray et al. 2012), which has a life expectancy at birth of 86.0 years for both males and females. This is consistent with the life table used in the 2018 Australian Burden of Disease Study (ABDS).

For this report, deaths are counted by year of occurrence and aligned to the ABDS causes; therefore they may differ from the number of suicide deaths reported elsewhere.

The analyses included all deaths with an underlying cause of death with an external cause of injury as 'suicide and self-inflicted injuries' (ICD-10 codes X60-X84, Y87.0) occurring during the reference periods (calendar years 2003, 2011, 2015 and 2018). For 2019, due to late registration of some deaths that occurred in November and December 2019 that are not captured in the latest 2019 deaths data, deaths that occurred between November 2018 to October 2019 were used to adjust for this undercount of 2019 deaths.

The analysis data set for this study comprised mostly cause of death information based on a final version of data. Specifically, deaths for the 2003, 2011 and 2015 reference years used a final version of cause of death data, while those for 2018 and 2019 used a preliminary version of cause of death. Since 2006, deaths certified by a coroner are revised and causes are updated, pending the status of coroner investigation. As such, some cause of death information is subject to change. The Australian Bureau of Statistics (ABS) revisions process is described in detail elsewhere (ABS 2020).

For more information on estimating fatal burden of disease for suicide and self-inflicted injuries, see AIHW forthcoming 2021b.

Estimating non-fatal burden

Expressed as years lived with disability (YLD), non-fatal burden is a measure of healthy years lost due to ill health. Calculating YLD can be quite complex, but in simple terms it incorporates:

- the number of people with the disease, and the consequences of the disease (referred to as 'sequelae') during the reference year
- the duration of the disease sequelae (duration is expressed as a fraction of a year)
- the severity of the ill health associated with the disease sequelae (referred to as the 'disability weight').

Disability weights attempt to capture the severity of the effects of a disease or injury on a scale from 0 (perfect health) to 1 (equivalent to death). In this report, disability weights from the Global Burden of Disease Study 2010 (also used in the 2018 ABDS) were used for YLD estimates for suicide and self-inflicted injuries.

The analysis of YLD for suicide and self-inflicted injuries includes 2 components:

1. the short-term consequences of cases from the reference year admitted to hospital plus those that present at an emergency department but do not get admitted
2. a proportion of suicides and self-inflicted injuries from previous years that have ongoing health loss - these are the long-term consequences of cases from previous years.

In general, the short-term consequences of admitted injuries is derived directly from hospitalisations data (incidence multiplied by duration). Short-term non-admitted estimates are derived using emergency department data and by applying an inflation factor (derived by the ratio of non-admitted to admitted cases for injuries by age and sex) to the short-term admitted cases to more fully capture the cases presenting to the emergency department but not admitted.

For more information on calculating inflation factors for non-admitted injuries, see AIHW forthcoming 2021b.

The long-term prevalence for injuries for the reference years 2003, 2011, 2015 and 2018 was sourced from the 2018 ABDS. The long-term prevalence of injuries in 2019 was derived from the 2018 ABDS by adding the injury incidence from 2018 (adjusted for all-cause mortality) to the long-term prevalence in 2018; that is, the long-term cases in 2018 (who are still alive in 2019) were added to the new cases from 2018.

The major data sources used to estimate YLD injuries in 2019 were the NHMD and the NNAPEDCD. For further information on these databases, including data quality statements, see [National Hospitals Data Collection](#).

Consequences of suicide and self-inflicted injuries

This analysis of injury YLD sourced from hospitalisations data is carried out on the nature of injury; that is, what is being treated in the hospital (traumatic brain injury, broken bone and so on). A separate analysis of the nature of injury and its corresponding external cause allows for different types of injury to be mapped to the cause of the injury (car accident, fall and so on) - in this case, suicide and self-inflicted injuries. This mapping (nature of injury to external cause mapping) is used to estimate injuries that are attributed to the suicide and self-inflicted injuries category.

The short-term injury prevalence is the sum of the short-term admitted prevalence and the short-term non-admitted prevalence. The short-term injury prevalence is added to the long-term injury prevalence, giving an estimate of total injury prevalence. The mapping is then used to estimate the proportion of injury health loss (prevalence and YLD) caused by suicide and self-harm.

For more information on estimating non-fatal burden of disease for suicide and self-inflicted injuries, see AIHW forthcoming 2021b.

Estimating risk factor attributable burden

Attributable burden reflects the direct link between a risk factor (for example, alcohol use) and a disease or injury outcome (for example, suicide and self-inflicted injury). Population attributable fractions (PAFs), a measure from 0 to 1, are used to determine the proportion of a particular disease that could have potentially been avoided if the population had never been exposed to a risk factor.

- PAFs equal to zero means there is no burden attributable to the risk factor.
- PAFs equal to 1 means that all the burden of the linked disease(s) is attributable to the risk factor.

To estimate the risk factor attributable burden for suicide and self-inflicted injuries in 2019, the PAFs estimated for suicide and self-inflicted injuries in the 2018 ABDS (AIHW forthcoming 2021b) were multiplied by the 2019 YLL, YLD and DALY estimates for suicide and self-inflicted injuries.

Four individual risk factors (6 risk factor exposures) were included in the analysis of attributable burden for suicide and self-inflicted injuries as having convincing or probable evidence in the literature of a causal association:

- child abuse and neglect during childhood among people aged 5 and over
- alcohol use among people aged 15 and over
- illicit drug use (specifically amphetamine use, cocaine use, and opioid use) among people aged 15 and over
- intimate partner violence among women aged 15 and over.

For more information on estimating attributable burden, including how PAFs were calculated in the 2018 ABDS, see AIHW forthcoming 2021b.

Geography

Remoteness area

The remoteness areas divide Australia for statistical purposes into broad geographic regions that share characteristics of remoteness. The Remoteness Structure, which divides each state and territory into several regions based on their relative access to services, has 5 classes of remoteness: *Major cities*, *Inner regional*, *Outer regional*, *Remote* and *Very remote*. The category *Major cities* includes Australia's capital cities, except for Hobart and Darwin, which are classified as *Inner regional*.

Remoteness areas are based on the Accessibility and Remoteness Index of Australia. For 2015, 2018 and 2019, the remoteness structure was based on the Australian Statistical Geography Standard 2016.

Socioeconomic area

Socioeconomic areas are based on the Index of Relative Socio-economic Disadvantage (IRSD) in this report. The IRSD is one of 4 Socio-Economic Indexes for Areas (SEIFA) developed by the ABS. This index is based on factors such as average household income, education levels and unemployment rates. The IRSD is not a person-based measure; rather, it is an area-based measure of socioeconomic disadvantage in which small areas of Australia are classified on a continuum from disadvantaged to affluent. This information is used as a proxy for the socioeconomic disadvantage of people living in those areas and may not be correct for each person in that area.

Socioeconomic areas are presented as approximate quintiles in this report. The lowest quintile (Quintile 1, or Q1) represents the approximate 20% of the population living in areas with the lowest socioeconomic characteristics; that is, it is the most disadvantaged. The level of socioeconomic position increases with each quintile, through to the approximate 20% of the population living in areas with the highest socioeconomic characteristics (Quintile 5, or Q5); that is, the least disadvantaged. For 2015, 2018 and 2019, socioeconomic areas were based SEIFA 2016 IRSD (ABS 2018).



Technical notes

This report was authored by Anne-Marie Waters and Wendy Ho of the Burden of Disease and Mortality Unit of the Australian Institute of Health and Welfare (AIHW), under the guidance of Michelle Gourley. Special thanks are extended to other members of the Burden of Disease and Mortality Unit, including Ruihua Guo who prepared the Tableau data visualisations and the Technical notes; Nick Mann and Vergil Dolar who provided advice on methods; and Paula Laws who assisted in the finalisation of the report.

Funding for the report was provided by the AIHW's Suicide & Self-harm Monitoring Unit.

The authors would like to acknowledge Richard Juckes, the head of the AIHW's Health Group and Matthew James, the Deputy Chief Executive Officer of the AIHW for reviewing and making valuable additions to the report.

Subject-matter expert review of relevant sections of this report was also provided by the Suicide & Self-harm Monitoring Unit, the AIHW's Hospitals Data Unit, and the AIHW Burden of Disease Jurisdictional Working Group.



Technical notes

ABDS	Australian Burden of Disease Study
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
DALY	Disability-Adjusted Life Years
GBD	Global Burden of Disease
ICD-10	International Statistical Classification of Diseases and Related Health Problems, Tenth Revision
IRSD	Index of Relative Socio-economic Disadvantage
K	thousand
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
NNAPEDCD	National Non-admitted Patient Emergency Department Care Database
NSW	New South Wales
NT	Northern Territory
PAF	population attributable fraction
Qld	Queensland
SA	South Australia
SEIFA	Socio-Economic Indexes for Areas
Tas	Tasmania
Vic	Victoria
WA	Western Australia
YLD	years lived with disability
YLL	years of life lost

Technical notes

age-specific rate: The number (of **deaths** or **fatal burden**) in a specific age group divided by the population for that age group in the reference year and expressed per 1,000 population. Populations are based on the Australian estimated resident population as at 30 June of the reference year available to the AIHW when preparing this dynamic data display.

age-standardised rate: A rate that takes into account the age structure of the population and allow comparisons between differently sized populations. In this report, age-standardised rates were directly age-standardised to the 2001 Australian standard population and are expressed per 1,000 population.

attributable burden: The disease burden attributed to a particular **risk factor**. It is the reduction in **fatal burden** and **non-fatal burden** that would have occurred if exposure to the risk factor had been avoided (or more precisely had been at its theoretical minimum).

burden of disease (and injury): The quantified impact of a disease or injury on a population, using the disability-adjusted life year (**DALY**) measure.

DALY (disability-adjusted life years): A measure (in years) of healthy life lost, either through premature death - defined as dying before the expected life span at the age of death (**YLL**) - or, equivalently, through living with ill health due to illness or injury (**YLD**). It is often used synonymously with 'health loss'.

deaths: Counts of deaths that occur during the reference year. In the Australian Burden of Disease Study, the cause of death was aligned to the diseases/injuries listed in the Australian Burden of Disease Study disease list.

fatal burden: The burden from dying 'prematurely' as measured by years of life lost. Often used synonymously with **YLL**, and also referred to as 'life lost'.

non-fatal burden: The burden from living with ill health as measured by years lived with disability. Often used synonymously with **YLD**.

population attributable fraction (PAF): For a particular **risk factor** and causally linked disease or injury, the percentage reduction in burden that would occur for a population if exposure to the risk factor were avoided or reduced to its theoretical minimum.

risk factor: Any factor that causes or increases the likelihood of illness or death due to a disease or injury or other unwanted condition or event.

YLD (years lived with disability): A measure of the years of what could have been a healthy life but were instead spent in states of less than full health. YLD represent **non-fatal burden**.

YLL (years of life lost): Years of life lost due to premature death, defined as dying before the global ideal life span at the age of death. YLL represent **fatal burden**.

Technical notes

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Data

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Related material

Related topics

- [Suicide & self-harm monitoring](#)
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 - [Risk factors](#)
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