Suicide & self-harm monitoring

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Suicide & self-harm monitoring data

Over 3,000 deaths by suicide occur each year in Australia
In 2020, there were 3,139 deaths by suicide—an average of about 9 deaths per day—with an age-standardised rate of 12.1 per 100,000 population.

Males are 3 to 4 times more likely to take their own life than females
In 2020, there were 2,384 male deaths at a rate of 18.6 per 100,000; there were 755 female deaths at a rate of 5.8 per 100,000. In 2020, the number of deaths by suicide was markedly higher for males than females in all reported age groups.

Females are more likely to attempt suicide than males or be hospitalised for intentional self-harm than males
Rates of ambulance attendances for suicide attempt and self-injury were higher for females than males. In 2019-20 females made up almost two-thirds (63%) of intentional self-harm hospitalisations.

Numbers of suspected deaths by suicide in 2020 were similar to those in previous years
Published data from the suicide registers in New South Wales, Victoria and Queensland show no evidence of any increase in suspected suicide deaths in 2020.

Suicide is the leading cause of death for young people
Over one-third of deaths in Australians aged 15-24 were due to suicide in 2020.

Suicide rates are more than twice as high in young Indigenous Australians compared to non-Indigenous Australians
In 2016-2019, the age-specific rate of suicide deaths was 3.2 times higher in Indigenous Australians aged 0-24 and 2.7 times higher in those aged 25-44, than non-Indigenous Australians.

The highest proportion of deaths by suicide occur during mid-life
More than half of all deaths by suicide in 2020 (52%) occurred in people aged 30-59 (1,637 deaths).

Suicide rates are highest among middle aged and older males
Since 2008, the highest suicide rates have generally been among males aged 40-49 and over 85.

Results of a birth cohort analysis show trends in suicides have changed over time
Suicide rates for the most recently-born female cohorts are higher than those for earlier female cohorts at the same age while suicide rates for the most recently-born male cohorts are similar to, or lower than, earlier male cohorts at the same age.

Using linked data, the estimated suicide risk is higher among those with fewer years of education
Among males aged 25-54 with secondary school or no education, the cumulative suicide risk is 2.6 times higher than among males with a university degree. This gradient between highest and lowest levels of educational attainment for females was consistent with that seen for males—with a smaller ratio (1.6 times).

Suicide and Self-harm monitoring data

Suicide and Self-harm Monitoring brings together key statistical data on suicide and self-harm from multiple national sources that will be updated regularly as new data become available. Here, you can examine the data through interactive visualisations and read information on the demographics, trends, methods and risk factors of suicide and self-harm in Australia.

This website represents only one part of a comprehensive program of work on suicide and self-harm in Australia by the AIHW (for more information visit About the Suicide and Self-harm Monitoring System).

Why is it important to collect data about suicide and self-harm?
Monitoring of suicide and intentional self-harm—how many people harm themselves, when, where and how—can provide a better understanding of the nature of suicide and self-harm in Australia and help determine who may be at increased risk. Reporting of this data can raise community awareness of suicide and self-harm, further research, improve responses and support services for those that need them, and inform the design and targeting of suicide prevention activities.

Considerations when using these data

There are several considerations to keep in mind when examining suicide and self-harm data and information in Australia.

Deaths by suicide

The assembling and national reporting of deaths by suicide has up to an 18-month time lag. Deaths by suicide may be presented by year of occurrence of death or year of registration. Although reporting of deaths by suicide by year of death can provide more reliable information on trends in occurrence than reporting by year of registration, the latest data available may underestimate the number of deaths, especially those in the later months of the year, due to a lag in registration. For this reason, and unless otherwise specified, year of registration of death has been used to allow the latest year of data to be compared with previous years. In both cases, the latest years of data are coded with preliminary causes of death information and may underestimate causes of death that are usually certified by a coroner, including deaths by suicide. For more information on how deaths are registered, coded and updated, visit Technical notes.

Suspected deaths by suicide

Suicide registers that exist in several jurisdictions can provide more timely data on suspected deaths by suicide. Recent surveillance data from suicide registers are preliminary and may change over time, typically upon completion of the coronial investigation. Suicide registers have been established in New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania.

During the COVID-19 pandemic, the AIHW partnered with several register data custodians to obtain up-to-date data on suicides across the jurisdictions. The AIHW has been receiving data on suspected suicide deaths since April 2020. The AIHW subsequently reports the data to government on a weekly basis in 2020, fortnightly basis in 2021, and monthly basis in 2022. The data is used to inform governments’ decision making and response to the pandemic (visit Regular updates to Government on Mental health-related service use). Due to the highly sensitive nature of coronial investigations, the AIHW will not publicly release jurisdictional data unless they have been published by the relevant data custodians (visit Suspected deaths by suicide).

A key aim of the National Suicide and Self-harm Monitoring Project is for suicide registers to exist in all Australian jurisdictions. The AIHW has been working with State Coroners and Department of Health officials in South Australia, the Australian Capital Territory and the Northern Territory to establish suicide registers in their jurisdiction. The South Australian government launched their Suicide Registry in January 2022 with funding from the AIHW. Detailed planning with the Australian Capital Territory is continuing for a register to be launched in 2022.

Hospital admissions

Hospital admissions data are collated as an annual release with a 12-month lag.

Ambulance attendances

Ambulance data are currently available for some states and territories for selected months from 2018 to 2021 (visit Ambulance attendances: suicidal and self-harm behaviours), with monthly data from January 2021. In addition, monthly ambulance data for Victoria from January to March 2021 are also reported (visit COVID-19). Further information on the collection of data and sources is available in the Technical notes.

Issues with small numbers and the need for caution

Deaths by suicide are statistically rare events. Small numbers can raise privacy and confidentially issues but also statistical concerns. For this reason, values based on small numbers of deaths, hospitalisations for intentional self-harm or ambulance attendances have been suppressed in order to maintain data confidentiality, and/or avoid publishing statistics of low reliability. Visit Technical notes for further information.

The statistics on deaths by suicide reported here fluctuate from one period to the next—mostly due to small counts (and in the case of females, very small counts)—especially in many smaller subgroups (for example, individual age groups or small geographic areas). Estimates of rates are also subject to random variability. Statistics based on small numbers of deaths by suicide should be interpreted with caution and all rates and their comparison with rates in other populations should be reported in context. For further insight into the methodological challenges and statistical issues of monitoring suicide and self-harm, visit Suicide Mortality in Australia: Estimating and Projecting Monthly Variation and Trends From 2007 to 2018 and Beyond.

How to use the interactive data visualisations

- Due to large data sets, visualisations may take time to load.
- Visualisations are compatible with Chrome, Microsoft Edge and Firefox.
Each panel may contain more than 1 visualisation. You can interact with the visualisations to see the specific data you are interested in by either selecting from the filter(s) at the bottom of the chart, or in the case of maps, from the pop up box by clicking on an area of interest.

Hover over each data point to see the underlying data and, if available, further details.

The Data downloads page provides the source data as Excel (.xlsx) files. The relevant source supplementary table is cited at the bottom of each visualisation.

Each visualisation may be downloaded and exported or shared.

A print friendly PDF of all pages of text and the default visualisations related to suicide and self-harm may also be downloaded—click on the ‘Download all data pages’ button. Visit Technical notes for information about data sources, data quality and methodology.
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**Suicide & self-harm monitoring: Deaths by suicide in Australia**

If at any point you feel worried about harming yourself while viewing the information on this website—or if you think someone else may be in danger—please stop reading and [seek help](suicide-self-harm-monitoring/research-information/crisis-support).

**Important points to remember about deaths by suicide:**

- Each statistic represents a person—with a family and community grieving for their loss
- Although it is a relatively rare cause of death—in 2020, 1.9% of all deaths were by suicide—it can have devastating and long-lasting effects on those left behind.

**The reasons people take their own life are complex**

- Suicide can affect anyone—regardless of their personal characteristics and family background—but some populations are at greater risk.
- There is also no single reason why a person chooses to end their life—the reasons are often complex. For information on risk factors see [Behaviours and risk factors](suicide-self-harm-monitoring/research-information/crisis-support).

**Deaths by suicide are preventable**

- Monitoring the number, trends and rates of suicide in Australia is key to understanding who is at risk and for the planning and targeting of suicide prevention activities.
- It is our endeavour that by bringing together various data sources we can strengthen the evidence base to build a more coherent picture of suicide and self-harm in Australia in order to improve the effectiveness of suicide prevention.

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Deaths by suicide over time

Numbers and rates of deaths by suicide change over time as social, economic and environmental factors influence suicide risk. The data visualisations below provide an overview of the characteristics of people who have died by suicide in Australia since 1907, looking at trends and variations by sex and age—how many there were, how old they were when they died, and the methods used over time. This analysis may provide useful information on potentially preventable factors, such as restricting access to means of suicide and reducing the risks posed by social or economic factors. Over time, the accuracy and quality of the data collected have been influenced by a number of factors including changes in legislation, technology and a reduction in social stigma.

Suicide deaths by sex, Australia, 1907 to 2020.

The line graph shows age-standardised rates of suicide for males, females and persons from 1907 to 2020. Users can also choose to view the number of deaths by suicide and male to female rate ratios from 1907 to 2020 and median age at death by sex from 1964 to 2020. The data can be viewed for any period between the years for which data are available. The visualisation includes text boxes with numbers and rates of deaths by suicide in Australia in 2020 for persons, males and females. In 2020, there were 3,139 suicide deaths recorded at a rate of 12.1 per 100,000 population; there were 2,384 deaths by suicide for males, with a rate of 18.6 and 755 for females, with a rate of 5.8.

Numbers of deaths by suicide increased steadily over the first half of the 20th Century (from 461 in 1907 to 760 in 1950), with peaks and troughs in numbers of suicides corresponding with significant world events (see below). However, since the 1950s numbers of deaths by suicide increased more steeply over time—in part driven by population growth. Peaks in numbers of deaths by suicide occurred during the
1960s and late 1990s. Since the mid-2000s numbers of deaths by suicide in Australia have increased, reaching over 3,000 Australians dying by suicide by 2015.

Have suicide rates changed over time?
Between 1907 to 2020, age-standardised suicide rates in Australia ranged from 8.4 deaths per 100,000 population per year (in 1943 and 1944) to 18.4 in 1963.

- Suicide rates peaked in 1913 (18.0 deaths per 100,000 population), 1915 (18.2), 1930 (17.8), 1963 (18.4) and 1967 (17.7). These peaks tended to coincide with major social and economic events or changes, see *Impact of social and economic events*.
- Suicide rates tended to decrease from 1907 to 1915 (from 16.9 to 18.2 deaths per 100,000 population). Rates then fluctuated throughout the late 1910s and early 1920s (from 13.1 deaths per 100,000 population in 1918 to 16.2 in 1920, returning to 12.8 in 1922), before increasing to a peak of 17.8 in 1930.
- Rates then declined throughout the 1930s and early 1940s, reaching a low of 8.4 deaths per 100,000 population in 1943 and 1944 (however, suicide rates for the war years may have been underestimated, see *Impact of social and economic events* below).
- Rates tended to increase throughout the 1950s, peaking at 18.4 deaths per 100,000 population in 1963. Rates remained high throughout the 1960s while the 1970s and early 1980s saw a decline in rates (from 15.4 deaths per 100,000 population in 1971 to 11.6 in 1984).
- Rates began to rise in 1985 and fluctuated from 14.3 in 1987 to 11.9 in 1993 with a recent peak of 14.8 in 1997. This was followed by sustained declines over the early 2000s, with a low of 10.2 per 100,000 population in 2006.
- After 2006, suicide rates began to rise, which is partly due to improvements in data quality and capture (see below). In 2020, the rate was 12.1 deaths per 100,000 population—down from a post-2006 high of 13.2 in 2017. It is important to note that deaths registered in 2020 and 2019 are preliminary and as such, are subject to revision (see below).

It is important to note that deaths by suicide were underestimated in the collection of routine deaths data, particularly in the years before 2006 (AIHW: Harrison et al 2009; De Leo, 2010; AIHW: Harrison & Henley 2015). Since then, the Australian Bureau of Statistics (ABS) has introduced a revisions process to improve data quality by enabling the revision of cause of death for open coroner’s cases over time. Deaths registered in 2020 and 2019 are preliminary and data for 2018 are revised and therefore, data for these years are subject to further revision by the Australian Bureau of Statistics. Data from 1907 to 2017 are final (for further information see *Technical notes*).

What’s changed in the last decade?
Please note: small numbers can result in large yearly variation in suicide rates. Caution is advised when making year to year comparisons.
- Over the last decade, the age-standardised suicide rate for males increased from 16.2 deaths per 100,000 population in 2011 to 18.6 in 2020. Female rates also increased from 5.1 deaths per 100,000 population in 2011 to 5.8 in 2020.

For detailed analysis of recent trends in suicide in Australia, see *Suicide Mortality in Australia: Estimating and Projecting Monthly Variation and Trends From 2007 to 2018 and Beyond*.

Impact of social and economic events
While the reasons for an individual’s suicide death are personal and often complex, overall peaks and troughs in rates and numbers of deaths by suicide historically coincide—more or less—with social and economic events.

Falls in the male suicide rate coincided with both World Wars 1 and 2. These falls are at least partly a statistical artefact due to the fact that deaths from all causes (including deaths by suicide) of Australian service personnel while overseas were not included in Australian death registration data, while population estimates were not adjusted to allow for the absence of these personnel (AIHW 2005; AIHW: Harrison & Henley 2014).

The highest annual age-standardised rate for males in the last century occurred in 1930 (29.8 deaths per 100,000 population), during the Great Depression—a period of high unemployment, particularly among males. The rise in both male and female suicide rates in the 1960s has been attributed, in part, to the unrestricted availability of barbiturate sedatives (Oliver & Hetzel 1972; Whitlock 1975). Subsequent falls in these rates in the late 1960s and early 1970s have in turn been attributed to the introduction of restrictions to the availability of these drugs in July 1967 (AIHW: Harrison & Henley 2014). While high rates of suicide in the late 1980s and early 1990s also coincided with a period of economic uncertainty in Australia, the social and economic disruption related to the COVID-19 pandemic has not seen an increase in the number of suspected deaths by suicide referred to coroners courts.

Males have consistently higher rates of suicide than females
Since 1907, the male age-standardised suicide rate has been consistently higher and more variable than the female rate. Variations in the overall suicide rate in Australia have been largely driven by changes in the male suicide rate.

The peak in overall suicide rates in 1930 was driven by an increase in male suicide rates, peaking at 29.8 deaths per 100,000 in 1930—the highest rate ever recorded. Similarly, the increase in overall suicide rates in the 1990s was also mainly driven by an increase in male rates. The peak in the 1960s reflects a rise in suicide rates for both males and females.

The male suicide rate ranged from a high of 5.6 times that of females in 1930 to lows of less than twice the female rate in the 1960s and early 1970s—mainly due to the marked rise in female suicide rates at this time. Since then, the male suicide rate has fluctuated around 3-4 times that of the female rate.
Although males are more likely to die by suicide, females are hospitalised for intentional self-harm (with and without suicidal intent) almost twice as frequently as males (see Intentional self-harm hospitalisations). Furthermore, ambulance attendance data reporting on attendances for suicide attempts between 2018 and 2020 suggest females are more likely to attempt suicide than males (see Ambulance attendances, suicidal and self-harm behaviours).

Patterns of suicide by age have changed over time

Age-specific suicide rates for males are higher than those for females across all reported age groups for all years. Use the year slider to see how patterns of suicide in males and females have changed in Australia over time. Hover over the graph to display the tooltip to see the trend in deaths by suicide by sex over time for each age group. The age distribution of deaths by suicide is similar for males and females. The highest proportion of deaths by suicide occur during mid-life. More than half of all deaths by suicide (52%) in 2020 occurred in people aged 30-59 (1,637 deaths) compared with 24% for those aged 15-29, and 23% for those aged 60 and over.

In 2020, the highest suicide rate for males occurred in those aged 85 and over (36.2 deaths per 100,000 population); however, the number of deaths by suicide recorded for this age group was low (74 deaths). High rates of suicide were also recorded in males aged 40-44 and 50-54 (both 27.1). Males aged between 40-54 accounted for over one quarter (27%) of deaths by suicide by males. The highest suicide rate for females was in those aged 45-49 (9.6 deaths per 100,000 population) accounting for the highest proportion of deaths by suicide for females (10.9%).

Suicide deaths by age and sex, Australia, 2019.

The bar chart shows the age-specific rates of suicide for males and females by age groups (five year age bands from 15-19, 20-24, etc to 80-84 and 85 and over). Users can choose to view numbers of deaths by suicide for males and females in these age groups. Data can also be viewed by year from 1907. In 2020, age-specific suicide rates were much higher in males than females for all age groups, and the highest rates were in males aged 85+ at 36.2 per 100,000 population and females aged 45-49 at 9.6 per 100,000 population.

For approximately the first half of the period 1907 to 2020, age-specific suicide rates in males generally increased with age; however, by the start of the 1990s this pattern had changed substantially with suicide rates highest in younger males aged 20-39 and males aged 80 and over. Since 2008, the highest suicide rates have been observed in middle-aged males (aged 40-49) and older males aged 85 and over; however, it should be noted that rates of death by suicide in males aged 85 and over have historically been based on relatively small numbers compared to other age groups and as such, the rates can be quite volatile over time and should be interpreted with caution.

Throughout 1907 to 2020, the lowest suicide rates in males were observed in those aged 15-19.

- From 1907 to 1970, suicide rates in males aged 15-19 were less than 10 deaths per 100,000 population. Rates then increased throughout the 1970s and 1980s peaking at 21.0 deaths per 100,000 population in 1988, while still remaining the lowest of the reported age groups.
- In 2020, the suicide rate for males aged 15-19 was 16.9 deaths per 100,000 population.
Males aged 20–24 had the second-lowest age-specific suicide rates of all males for most of the 20th Century; however, this changed from the late 1960s.

- From 1907 to 1966, suicide rates for males 20–24 were around 11 deaths per 100,000 population with peaks of 16.8 in 1914, 17.0 in 1958, and 19.1 in 1963 and a low of 1.9 in 1944.
- From the late 1960s to the late 1990s, suicide rates in this age group increased steadily to more than 26 deaths per 100,000 population, reaching a high of 43.1 deaths per 100,000 population in 1997.
- Rates fell steadily to 16.3 deaths per 100,000 population in 2009 but since have risen above 20 deaths per 100,000 to 24.9 in 2020.

A similar pattern was observed for those aged 25-29.

The pattern of age-specific suicide rates for middle-aged males (aged 40–59) was different to that of younger age groups, with the highest rates being observed in the first part of the 20th Century and then falling to lower levels.

- The highest age-specific suicide rate for middle-aged males was 64.9 deaths per 100,000 population in 1913 for males aged 50-54. Peaks of more than 56 deaths per 100,000 population were also seen in 1930 (56.6). Age-specific rates then fell to a low of 14.5 deaths per 100,000 population in 1944. Similar patterns were seen for 40-44, 45-49 and 55-59 age groups with the second highest age-specific rate of 63.9 deaths per 100,000 for males aged 55-59 in 1931 and the lowest age-specific rate of 10.5 deaths per 100,000 population for males aged 40-44 in 1944.
- Rates tended to increase throughout the 1950s and 1960s peaking again at 42.0 deaths per 100,000 population in 1962 for males aged 55-59, before falling to 19.1 in 1983. The greatest decline during this time period was seen for males aged 55-59 falling from 41.6 deaths per 100,000 population in 1968 to 18.4 in 1977.
- Since then, rates for these age groups have fluctuated to a high of 34.4 deaths per 100,000 population in 1987 for males aged 55-59 and a recent high of 33.8 in 2017 for males aged 45-49.

A similar pattern was seen in males aged 60 and older. It should be noted that the number of deaths by suicide recorded for older males historically has been low, particularly for males aged 75 and older. This causes fluctuation in the age-specific rates. Therefore, caution should be used when interpreting trends for these age groups over time.

- The age-specific suicide rate for males aged 60 and older was about 40 deaths per 100,000 population from 1907 to 1967.
- From 1968, suicide rates for males aged 60 and older generally fell. For example, suicide rates for males aged 65-69 fell to an all time low of 12.6 per 100,000 population in 2005. In 2020, the rate of suicide for males aged 65-69 was 17.5.

Age-specific suicide rates for females showed comparatively little variation over time—except for a peak in multiple age groups during the 1960s.

- For the first half of the 20th Century, age-specific rates in females aged 40-59 was about 9 deaths per 100,000 population, with peaks of 21.5 in 1915 and 21.2 in 1953, in the 55-59 age group. The highest rate recorded for females was 29.2 deaths per 100,000 population in 1963 for the 50-54 age group and remained around 20 until peaking a second time in 1967 at 27.1 for the 65-69 age group. Rates then fell to a low of 4.1 deaths per 100,000 population in 2004 and 2005 for females aged 55-59. Age-specific suicide rates have increased in this age group to 9.4 deaths per 100,000 population in 2019 and fell to 5.9 in 2020.
- Similar patterns were seen for females aged 20-39 and 60 and older, albeit with lower suicide rates.
- A different pattern has been observed in females aged 15-19. Suicide rates fluctuated from around 2 to 6 deaths per 100,000 population from 1907 to the late 1930s. The fluctuations in rates have been mainly due to small numbers of deaths by suicide in this age group. Rates then declined to around 1 to 2 deaths per 100,000 population during the 1940s and 1950s. Rates then increased in the 1960s to the late 1990s, fluctuating between 2 and 6 deaths per 100,000 population. Since then, suicide rates have increased to between 3 and 8 deaths per 100,000 population with the highest rate recorded in this age group in 2012 (8.3 deaths per 100,000 population). In 2020, the rate was 6.1 for females aged 15-19.

How have methods of suicide changed over time?

Understanding the methods used for suicide can play an important role in suicide prevention. These data are provided to inform discussion around restriction of access to means as a policy intervention for the prevention of suicide.

Please consider your need to read the following information. If this material raises concerns for you or if you need immediate assistance, please contact a crisis support service, available free of charge, 24 hours a day, 7 days a week.

Please consider the Mindframe guidelines, if reporting on these statistics.

The classification system used to code causes of deaths data, ICD-10, uses the term ‘mechanism’ to refer to the external cause of death. Throughout Suicide & self-harm monitoring ‘mechanism’ has been used in data visualisations, while the term ‘method’ has been used in the accompanying text.

Suicide deaths by sex and mechanism, Australia, 1907 to 2020.
The line graph shows age-standardised suicide rates by mechanism for poisons, gas, firearms, hanging and other mechanisms from 1907 to 2020. Users can also choose to view age-standardised rates and numbers of deaths by suicide, by sex and mechanism (including all mechanisms) from 1907 to 2020 and median age at death by sex and mechanism from 1964 to 2020. The data can be viewed for any period between the years for which data are available. The highest suicide rates by mechanism between 1907 and 2020 were for poisons in the 1960s, at around 7 to 8 deaths per 100,000 population falling steeply throughout the 1970s to below 3 from 1981. Around this time, suicide rates by hanging began to rise steeply, becoming the highest by mechanism after 1988 and more than doubling from 3.2 deaths per 100,000 population in 1988 to 7.2 in 2020.

Hanging (ICD-10 X70) has become the most common method of suicide in Australia and use of this method increased substantially over the last 25 years. Age-standardised rates of suicide by hanging remain much higher for males than females, but have increased for both sexes.

- Rates of suicide by hanging were relatively steady from 1930 to the late 1980s, with rates around 3 deaths per 100,000 population for males and lower for females. Prior to 1930, rates of suicide by hanging were volatile.
- From the late 1980s, rates of hanging increased as other methods of suicide (firearms and poisoning by gas) declined.
- Hanging became the most common method of suicide for males in 1989 and for females in 1997. Age-standardised suicide rates by hanging in males have more than doubled since then—from 5.7 per 100,000 population in 1989 to 12.5 in 2019, then falling to 11.4 in 2020. In 2020, hanging accounted for almost two-thirds (61%) of male deaths by suicide.
- Similarly, the rate of suicide by hanging increased more than 1.7 times in females from 1.9 deaths per 100,000 population in 1997 to 3.3 in 2019, then falling to 3.1 in 2020. In 2020, hanging caused half (52%) of all deaths by suicide in females, having increased steadily from 30% of deaths by suicide in 1997.

Use of firearms (ICD-10 X72–X75) was the most common method of suicide for males from 1907 to the late-1980s.

- In males, the rate of suicide by use of firearms was more than 5 deaths per 100,000 population per year for most of 1907 to 1993 (with a peak of 10.2 deaths per 100,000 population in 1914 and a fall below 5 deaths per 100,000 population in 1941 to 1946).
- In contrast, female rates of suicide by this method were low (less than 0.6 deaths per 100,000 population).
- Rates of suicide by use of firearms declined steeply for both males and females from 1987 and continued to decline from 1996, coinciding with the introduction of gun control restrictions and reforms.

In the 1920s, poisoning by gas (ICD-10 X67), largely due to carbon monoxide poisoning, became a new method of suicide in Australia with the introduction of the domestic gas supply and the motor vehicle to Australia.

- Rates of poisoning by gas peaked in 1963 in females (2.1 deaths per 100,000 population) and were also high for males (4.8). Rates then declined throughout the 1970s—this has been attributed to the replacement of toxic ‘town gas’ by less toxic gases in most of Australia at this time (AIHW: Harrison & Henley 2014).
- Rates of poisoning by gas subsequently increased again in the 1980s and 1990s, peaking for males (5.8 deaths per 100,000 population) and for a second time in females at a much lower level (1.2 deaths per 100,000 population) in 1997 as a result of the increasing use of motor vehicle exhaust gas (AIHW: Harrison & Henley 2014).
- A decline in poisoning by gas after 1997 was likely due to the introduction of emission controls that greatly reduced the amount of carbon monoxide permitted in the exhaust gas of new motor vehicles (AIHW: Harrison & Henley 2014).
Exposure to poisonous substances excluding gas (ICD-10 X60–X66, X68–X69) was the most common method of suicide for females from 1907 until 1997.

- For most of the first half of the 20th Century, rates of poisoning by substances (excluding gas) were approximately 2 deaths per 100,000 population in females; however, during the 1960s rates increased to 4 times that—peaking at 8.4 in 1967—before returning to previous levels in the 1980s.
- A similar peak in suicide rates by this method was seen in males, with rates more than doubling in the 1960s to a peak of 8.2 deaths per 100,000 population in 1963 before falling again in the 1970s and 1980s.
- These peaks in suicide rates due to poisonous substances (excluding gas) during the 1960s have been attributed mainly to the unrestricted availability of barbiturate sedatives (AIHW: Harrison & Henley 2014). These trends were not associated with compensatory falls in the use of other methods of suicide during this time. In July 1967, in response to concerns over misuse of these drugs, the supply of barbiturates was limited and deaths by suicide from poisoning (excluding gas) in both males and females declined soon after (AIHW: Harrison & Henley 2014).
- In 2020, poisoning by substances (excluding gas) was the second most common means of suicide among females with a rate of 1.6 deaths per 100,000 population—accounting for almost a third of female deaths by suicide each year for the last decade.

Age-standardised rates for suicides by other methods (ICD-10 X71, X76-X84, Y87.0) are only available from 1964.

- Rates for these methods were relatively stable over the period 1964 to 2020 for both males and females.
- It is not possible to report on these different methods individually, as the numbers are too small to report for privacy or data reliability reasons.

References


Birth cohort analysis of deaths by suicide

Analysing deaths by suicide according to the period in which people were born can provide additional insights to that obtained by examining suicide rates by period of death (see Deaths by suicide over time).

A ‘birth cohort’ is a group of people born within the same defined period. People in a birth cohort age together over time and experience the same events and changes in technology or cultural norms at the same age.

This birth cohort analysis relates deaths by suicide to period of birth (birth cohort) and age at death. It examines how suicide rates change within birth cohorts as they age and how they vary between birth cohorts when compared at the same age.

Data sources and methods

This analysis is based on data from the AIHW National Mortality Database, which holds records for deaths in Australia from 1964.

Suicide rates by age at death (5-year age groups; ages 10-14 years and older) were calculated for each birth cohort. Birth cohorts can be defined in terms of any range of birth dates for which data are available; the cohorts presented here are those born in each 5-year period from 1954-58 through to 2004-08. The earliest birth cohort, those born in 1954-58, can be followed for over 60 years. For more information on data sources and methods, see Suicide in Australia: Trends and analysis 1964 to 2018.

How do suicide rates change among birth cohorts?

The interactive data visualisation shows how suicide rates have changed as people in each birth cohort have aged—with each line representing a birth cohort. By comparing the earlier birth cohorts with those born more recently, see how the age groups most at risk change.


The line graph shows age-specific rates of suicide for 5-year birth cohorts from 1954-1958 to 2004-2008 by age at death from 15-19 to 60-64 for males by all mechanisms. Users can also choose to view suicide rates by sex, mechanism and age at death. The highest suicide rate was in males born 1969-1973 who died aged 25-29, followed by males in this cohort who died aged 20-24.
In the earlier male birth cohorts (born 1954–58 to 1974–78) peaks in suicide rates for each subsequent birth cohort tended to be higher and occur at successively younger ages of death—with peaks tending to coincide with deaths occurring in the 1990s (period of death). For more information, see Suicide deaths over time. Suicide rates in these cohorts then tended to decline as they aged.

For example, peak suicide rates in males born in:

- 1954–58 occurred at age 40–44 (29.4 deaths per 100,000 cohort members)
- 1959–63 occurred at age 35–39 (31.0)
- 1964–68 occurred at age 30–34 (34.0)
- 1969–73 occurred at age 25–29 (36.9)
- 1974–78 occurred at age 20–24 (33.4).

For the majority of the male cohorts born in the later years, from 1974–78 onwards, suicide rates were still rising at the end of the available data; the oldest people in these cohorts were aged 42–46 years in 2018.

Suicide rates in female cohorts were much lower than those of male cohorts and for the earlier born cohorts tended to increase as they aged.

- For example, the highest suicide rates in female cohorts were in those born in 1964–68 and 1969–73—the same cohorts that had the highest rates in males. However, peaks in suicide rates for these female cohorts tended to occur at older ages (9.7 and 9.5 at age 50–54 and 45–49, respectively) than in male cohorts (which peaked in early adulthood and then declined).

How do suicide rates vary between birth cohorts when compared at the same age?

The interactive data visualisation shows how suicide rates have changed for people of the same age, but born at different times—each line representing the same age group. By following the suicide rate of a specific age group, see how suicide rates have changed for people born between 1954 and 2008.


The line graph shows age-specific suicide rates for ages of death from 10–14 to 60-64, by 5-year birth cohorts from 1954-1958 to 2004-2008 by all mechanisms for females. Users can also choose to view suicide rates by sex, mechanism and for selected age-ranges at death. The rates of suicide among young females aged 15–19 at death showed the greatest change between the earliest and latest born cohorts for which data are available, almost doubling from 3.6 per 100,000 population in the 1954-1958 cohort to 6.4 in the 1999-2003 cohort, with some fluctuation in between these cohorts.
In females, the suicide rate at age 15–19 for those born most recently (1999–2003) was 1.8 times higher than the earliest cohort born in 1954–58. This pattern was not observed in males of the same age.

- For females born in 1999-2003, the suicide rate reached 6.4 deaths per 100,000 cohort members at age 15–19—considerably higher than females born in 1954–58 (3.6 deaths per 100,000 cohort members).

Suicide rates at age 45–49 have increased with each successive birth cohort in both males (from 24.1 in those born in 1954–58 to 29.5 deaths per 100,000 cohort members in those born in 1969-73) and females (from 6.7 to 9.5 deaths per 100,000 cohort members in the same cohorts).

Suicide rates across male cohorts compared at the same age show no clear pattern. Rates at younger ages of death (15–19 and 20–24) tended to be higher for those born prior to 1979–83 than in those born in more recent cohorts (1984-1988 onwards).

- For males born in 1984-88 the suicide rate at age 20–24 was almost half that of the cohort born in 1969-73 (18.0 deaths per 100,000 cohort members compared with 35.1).
- Rates of suicide at age 15–19 for males born in 1974–78 were 1.8 times higher than those with the lowest rate born in 1954–58 (18.0 deaths per 100,000 cohort members and 10.0, respectively). Rates at age 15–19 were 12.3 deaths per 100,000 cohort members in the most recent male birth cohort for which data are available (1999–2003).

**Trends in methods of suicide by birth cohort and age at death**

Understanding the methods used for suicide can play an important role in suicide prevention. These data are provided to inform discussion around restriction of access to means as a policy intervention for the prevention of suicide.

Please consider your need to read the following information. If this material raises concerns for you or if you need immediate assistance, please contact a crisis support service, available free of charge, 24 hours a day, 7 days a week.


The classification system used to code causes of deaths data, ICD-10, uses the term ‘mechanism’ to refer to the external cause of death. Throughout Suicide & self-harm monitoring ‘mechanism’ has been used in data visualisations, while the term ‘method’ has been used in the accompanying text.

The interactive data visualisations show which methods underlie changes in suicide rates as people in each birth cohort have aged (top visualisation)—and underlie changes in suicide rates for people of the same age, but born at different times (second visualisation).

Rates of suicide by hanging (ICD-10 X70):
tended to increase for both male and female birth cohorts as the cohort aged (top visualisation).

- tended to increase in most age groups with each successive birth cohort in females; the pattern in males was less consistent (second visualisation). For example:
  - rates of suicide by hanging at ages 15-19 increased for each successive female birth cohort from a low of 0.1 per 100,000 cohort members in those born in the earliest cohort (1954-58) to a high of 4.9 in those born in the most recent cohort (1999-2003).
  - in the 2 most recently born female cohorts for which there are data available at ages 15-19 (born in 1994-98 and 1999-2003), rates of suicide by hanging were as high or higher than, rates at almost any other age in all other female cohorts.
  - for males, rates of suicide by hanging at ages 15-19 do not show the same pattern as females; rates in male cohorts increased up until those born in 1979-1983 and have since remained at about the same level (9.5 deaths per 100,000 cohort members for the latest birth cohort, born 1999-2003).

Rates of suicide by use of firearms (ICD-10 X72-X75) for both males and females peaked at younger ages (15-19 or 20-24) in all birth cohorts and then declined as cohorts aged (top visualisation). Suicide rates by this method tended to be lower for each successive birth cohort at all ages for which there are data available.

- Each more recently born male cohort (born 1969-73 to 1989-93) had successively lower suicide rates by use of firearms at age 20-24 (7.3, 3.6, 1.5, 1.0 and 0.8 deaths per 100,000 cohort members).
- A similar pattern was seen for female cohorts; however, rates were low.

Rates of suicide due to exposure to poisons excluding gas (ICD-10 X60-X66, X68-X69) in female cohorts were similar to that of male cohorts throughout the period 1964 to 2018 (0-3.6 deaths per 100,000 cohort members compared with 0-4.3, respectively)—unlike that of other suicide methods (top visualisation). Rates of suicide by this method were still rising for most male and female cohorts at the end of the available data.

Reference


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Deaths by suicide, by states and territories

Patterns of deaths by suicide between states and territories can reveal insights that may be masked by results for the whole of Australia. Variations in the rates of deaths by suicide across states and territories may help to highlight different risk factors and assist in better targeting of suicide prevention activities. For example, differences in the ratio of urban to regional and remote areas may explain some of the differences across states and territories given that the rates of suicide tend to be higher in regional and remote areas, see Suicide by remoteness areas.

Information based on the deceased’s usual state or territory of residence is available for deaths registered after 1979. Deaths by suicide may be presented by either year of death or by year of registration. Reporting by year of death can provide more reliable information on trends in occurrence than reporting by year of registration; however, the latest data available underestimates the occurrence of recent deaths due to a lag in registration, for more information, see Technical notes. Here, statistics based on both year of registration of death and year of occurrence of death are presented.

Suicide deaths by states and territories, Australia, 1979 to 2020.

The line graph shows age-standardised suicide rates by year of registration for all states and territories and Australia from 1979 to 2020. Users can choose to view age-standardised suicide rates, numbers of deaths by suicide, year-on-year change in age-standardised suicide rate and year-on-year change in numbers of deaths by suicide, by year of registration and year of death. Data can be viewed for any period between 1979 and 2020. During this period, rates in the Northern Territory tended to be the highest and were the most variable, ranging from slightly above the national rate in 1999 (14.3 deaths per 100,000 population compared with 13.2) to nearly 3 times the national rate in 2007 (29.8 compared with 10.6).
How do suicide rates vary across states and territories?

From 1979 to 2020, age-standardised suicide rates based on death registrations:

- tended to be lower for New South Wales and Victoria than the overall Australian suicide rate while rates for all other jurisdictions tended to be higher
- tended to be highest in the Northern Territory (ranging from 14.2 in 2013 to 29.8 deaths per 100,000 population in 2007); however, it was one of the jurisdictions with the lowest number of deaths by suicide (from a high of 56 in 2014 to a low of 7 in 1982).

In 2020:

- the age-standardised suicide rate ranged from 10.1 per 100,000 population in Victoria to 20.4 per 100,000 in the Northern Territory.

Age-standardised suicide rates allow for comparisons between states and territories by adjusting for differences in age structures and population size. Rates fluctuate over time—particularly in the smaller jurisdictions—due to the small number of deaths by suicide that are registered each year. Caution is advised when comparing state and territory data. Differences in coronial processes, data processing or coding practices should also be taken into consideration when comparing data across jurisdictions and over time.

In 1979, the highest number of deaths by suicide was in:

- New South Wales (539 deaths), followed by Victoria (462), Queensland (296), South Australia (178) and Western Australia (116).

By 2020, the highest number of deaths by suicide was in:

- New South Wales (876), followed by Queensland (759), Victoria (694), Western Australia (381) and South Australia (234).

However, it should be noted that New South Wales and Victoria have the largest populations in Australia and the populations of both Queensland and Western Australia increased considerably from 1979 to 2020.

What is the effect of reporting deaths by suicide by year of occurrence?

The data for age-standardised rates and number of suicide deaths are broadly similar when analysed by year of death or year of registration. Minor differences arise due to the elapsed time prior to registration with recent years showing some differences due to incomplete coronial processes and registrations.
Australian prevalence estimates of suicidal behaviours

If at any point you feel worried about harming yourself while viewing the information on this website—or if you think someone else may be in danger—please stop reading and seek help.

Suicidal behaviours are defined as thinking about or planning taking one’s own life (suicidal ideation) or attempting suicide.

Understanding the prevalence of suicidal behaviours in Australia is important as this may help to reduce stigma, increase help-seeking behaviour and improve suicide prevention activities.

Many people experience thoughts of suicide:

- the 2007 National Survey of Mental Health and Wellbeing indicated that 2.1 million or 1 in 8 (13%) Australians aged 16-85 had serious thoughts about taking their own life at some point in their lives (Slade et al. 2009).

Yet, while thinking about suicide is common, not everyone goes on to develop a suicide plan or take their own lives. Despite this, it is important to take seriously any person seeking assistance because of suicidal thoughts.

People who experience suicidal ideation and make suicide plans are at increased risk of suicide attempts and those who experience all forms of suicidal thoughts and behaviours are at greater risk of dying by suicide (see Psychosocial risk factors and suicide).

The National Suicide and Self-harm Monitoring Project has funded the collection of data on suicidal behaviours through the National Ambulance Surveillance System. This system uses coded ambulance clinical records from jurisdictional ambulance services across Australia to capture information related to ambulance attendances for mental health and self-harm behaviours (see Ambulance attendances). However, not all people with suicidal behaviours will make contact with these services. Instead, an indication of the prevalence of these behaviours in the community may be derived from surveys of representative samples of the population.

A program of surveys, the National Survey of Mental Health and Wellbeing, began in Australia in the late 1990s. The 2007 National Survey of Mental Health and Wellbeing provided information on the 12-month and lifetime prevalence of mental disorders in the Australian population aged 16-85 years. The Intergenerational Health and Mental Health Study, designed to measure the prevalence of mental illnesses in Australia for the first time since the 2007 National Survey of Mental Health and Wellbeing, was scheduled to be undertaken in 2020 by the Australian Bureau of Statistics; however, due to the COVID-19 pandemic this face-to-face survey has been delayed.

Results from the 2007 National Survey of Mental Health and Wellbeing (Slade et al. 2009) indicate that:

- over 600,000 Australians aged 16-85 had made a suicide plan and over 500,000 attempted suicide during their lifetime.
- females were more likely to be suicidal than males, with a higher prevalence of suicidal ideation in the 12 months before the administration of the survey (2.7% vs 1.9%). These findings are in contrast to the data on deaths by suicide, which show that males are more likely than females to die by suicide. (See Deaths by suicide over time)
- young females aged 16-24 reported the highest prevalence of suicidal behaviours in the 12 months before the administration of the survey (5.1% of females aged 16-24 years)
- mental health service use was relatively high among people who attempted suicide (73.4%) or made a suicide plan (68%) in the 12 months before the administration of the survey. However, although mental health service use was high for those who reported suicidal behaviours, 1 in 4 (25%) people who attempted suicide did not access services for mental health problems in the previous 12 months.

Reference

Suicide & self-harm monitoring

**Suspected deaths by suicide**

In Australia, the coroners court in each state and territory is responsible for investigating suspected deaths by suicide. Several jurisdictions have established their respective suicide surveillance system to collect timely data and information on suicide deaths, including New South Wales, Victoria, Queensland, South Australia and Tasmania. Real-time data from suicide registers are valuable for evidence-based response, research and policy in suicide prevention locally, and across national and international levels.

Data on suspected deaths by suicide in 2020 and 2021 have been released for Victoria and New South Wales from their respective suicide registers. The interim Queensland Suicide Register has released data for 2020. To-date the numbers of deaths in 2020 and 2021 suspected to be from suicide are similar to previous years. These are discussed further in the next section.

It is important to bear in mind that suicide is not influenced or caused by one factor—but results from a complex interaction between multiple risk factors (Leske et al. 2020).

The data from suicide registers are based on initial police reports and other information available at the time of referral to the coroner. They are not directly comparable with data released by the Australian Bureau of Statistics, which are based on final coronial determinations. However, the differences are generally small. For example, in the case of the Victorian Suicide Register (VSR):

> ...analyses have shown that over time, the VSR coding team are consistently 95% accurate or better in identifying the cohort of deaths that are ultimately determined to be suicides (Coroners Court 2021).

The state and territory suicide registers also differ from each other in their processes and counting rules for identifying suspected suicide deaths. Therefore, data from one register cannot be directly compared with those from another.


To facilitate comprehensive suicide surveillance across Australia, AIHW is working with other state and territory governments to establish a suicide register in their respective jurisdiction. Visit Data development activities [https://www.aihw.gov.au/suicide-self-harm-monitoring/about/data-development-activities] to read more.

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Data from suicide registers

Suspected deaths by suicide in Victoria

The Coroners Court of Victoria established the Victorian Suicide Register in 2012 and publishes monthly data reports on suspected deaths by suicide in Victoria.

The Monthly Suicide Data Report for February 2022 shows that the number of deaths in Victoria suspected to be from suicide in 2021 (690) was lower than in 2020 (709), 2019 (700) and 2018 (703) (Coroners Court 2022a).

The monthly data show considerable variation (see Figure 1 below), however, as can be seen in Figure 2, below ‘these monthly fluctuations tend to even out over the course of a year. This demonstrates the importance of not attributing too much significance to the suicide frequency in any one month’ (Coroners Court 2020). The variation between months ‘usually results from random factors rather than underlying systemic issues or emerging clusters. The data therefore should be interpreted cautiously, with great care taken in drawing conclusions about any apparent increase or decrease that is observed’ (Coroners Court 2021).

Figure 1: Number of suspected deaths by suicide in Victoria, by month, January 2016 to February 2022

Figure 2: Cumulative number of suspected deaths by suicide in Victoria, by month, January 2016 to February 2022
Data for each year from 2016-2021 show that in Victoria (Coroners Court 2021, 2022a):

- around three-quarters of suspected deaths by suicide are among males
- the majority of suspected deaths by suicide for both males and females occur among those aged between 25 and 54
- around two-thirds of suspected deaths by suicide occur in metropolitan locations.

From 1 January to 28 February 2022, 112 suspected suicide deaths were reported in Victoria, compared with 110 for the same period in 2021, 131 for this period in 2020 and 133 in 2019 (Coroners Court 2022a).

The Coroners Court of Victoria has also published data on suicides of Aboriginal and Torres Strait Islander people. The number of suspected or confirmed deaths by suicide in 2021 for Aboriginal and Torres Strait Islander people in Victoria was 35, compared to 20 in 2020, 21 in 2019, 16 in 2018. Between 2009-2019, there were between 6 and 17 deaths by suicide (noting that data for this period are unreliable). The Coroners Court of Victoria notes that based on the historical context, this does not appear to be a result of random effects or fluctuation in the data.

There was a marked difference between genders, with the number of suspected suicides among Indigenous males rising from 12 in 2020 to 25 in 2021 compared to a rise from 8 to 10 for Indigenous females over the same period (Coroners Court 2022b).

**Suspected deaths by suicide in Queensland**

The Australian Institute for Suicide Research and Prevention (AISRAP) at Griffith University manages the Queensland Suicide Register (QSR) and the interim Queensland Suicide Register (iQSR). The QSR contains data on confirmed deaths by suicide from 1990-2017 and iQSR contains data on suspected deaths by suicide from 2018 onwards (Leske et al. 2021). AISRAP publishes a report on suicides in Queensland annually.

Due to the time needed to complete coronial investigations, it can take several years for a death to be confirmed as suicide and entered into the QSR. Until this time, data on deaths where suicide is suspected are available from the iQSR. Data from the iQSR show that 791 suspected deaths by suicide occurred in Queensland in 2020 (Leske et al. 2021). Of these deaths, 779 were among residents of Queensland (Leske et al. 2021), compared with 757 suspected deaths by suicide among Queensland residents in 2019 (Leske et al. 2020).

AISRAP has estimated monthly age-standardised suspected suicide rates for residents of Queensland from 1990 to 2020, taking into account population growth for more meaningful comparisons between years. Figures 3 and 4 show monthly age-standardised rates of suspected deaths by suicide from January 2015 to August 2020 (data supplied by AISRAP 2020).

While there are fluctuations by month, the estimated age standardised suspected suicide rate for Queensland residents in 2020 (15.1 per 100,000 population) was similar to 2019 (14.9 per 100,000 population) and lower than the average of the past 5 years (15.5) (Leske et al. 2021). However, when looking at males and females separately, the estimated suspected suicide rate for males increased from 2019 to 2020.
(from 22.9 to 24.0 per 100,000 population), while the rate for females decreased (from 7.3 per 100,000 population in 2019 to 6.6 in 2020). The estimated rates for both males and females in 2020 remained lower than in 2017 (25.7 per 100,000 population for males and 8.1 for females) (Leske et al. 2021).

Figure 3: Age-standardised suspected deaths by suicide rate per 100,000, Queensland males, by month, 1 January 2015 to 31 August 2020

![Figure 3](image)

Figure 4: Age-standardised suspected suicide rate per 100,000, Queensland females, by month, 1 January 2015 to 31 August 2020

![Figure 4](image)

Data from the iQSR for 2020 show that of the 779 Queensland residents who died by suspected suicide (Leske et al. 2021):

- around 78% were male and 22% were female
- the majority of suspected deaths by suicide for both males and females occurred among those aged between 20 and 59
- more than half (around 58%) of suspected deaths by suicide occurred in major cities, compared with regional, remote and very remote areas.

Of the 791 suspected deaths by suicide that occurred in Queensland in 2020, 66 (8.3%) of those were among Aboriginal and Torres Strait Islander people (Leske et al. 2021).

While COVID-19 does not appear to have affected suicide rates in Queensland, Leske et al. (2021) reported that between 1 March and 31 December 2020 COVID-19 appeared to be a contributing factor in 53 of 639 suspected suicides (8.3%), according to police reports. For more information see: COVID-19.

Suspected deaths by suicide in New South Wales

The New South Wales Suicide Monitoring System is a collaboration between NSW Health, the Department of Communities and Justice (DCJ), the State Coroner and NSW Police, which was established in October 2020. NSW Health publishes monthly reports on suspected deaths by suicide occurring in New South Wales.

The latest report for January 2022 found there were 928 suspected deaths by suicide in New South Wales in 2021. This is higher than the number of deaths reported for 2020 (904) but lower than for 2019 (945) (NSW Health 2022). Figures 6 and 7 below show the monthly frequencies of suspected deaths by suicide and cumulative monthly number of suspected deaths by suicide, respectively, in New South Wales from 1 January 2019 to 31 January 2022.

Figure 5: Number of suspected deaths by suicide in New South Wales, by month, January 2019 to January 2022

![Figure 5](image)
In each year from 2019 to 2021 (NSW Ministry of Health 2022):

- around three-quarters of suspected deaths by suicide were among males
- more than half of all suspected deaths by suicide occurred among those aged between 25 and 54
- around half of suspected deaths by suicide occurred among residents of Greater Sydney, with the remainder comprising residents of the rest of NSW and a small number of interstate/overseas residents.
In January 2022 there were 87 suspected deaths by suicide recorded in NSW, compared with 104 suspected suicide deaths recorded in January 2021, 80 recorded in January 2020 and 76 in 2019 (NSW Ministry of Health 2022).

References


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Suicide & self-harm monitoring: Ambulance attendances

The complete extent of non-fatal suicidal and self-harming behaviours in the community is unknown in Australia. Surveys suggest that many people do not seek medical treatment for self-harm injuries. In addition, suicidal ideation and self-harm can be difficult to identify in national administrative data sets, due to the classifications used. Data on hospitalisations due to intentional self-harm under-report the true incidence of these behaviours in the community, as only those with serious physical or mental health issues are admitted to hospital for further treatment. It is not possible to identify those presenting to Emergency Departments with intentional self-harm and suicide ideation in the national data, though some states and territories have developed methodologies to do so, such as algorithms using information from free-text fields and local codes.

Clinical data from ambulance attendances have the potential to provide a more complete picture of suicidal and self-harm behaviours in Australia, and to identify opportunities for improved intervention or postvention—importantly—at a stage when further harm may be prevented.

The National Ambulance Surveillance System (NASS) is a world-first public health monitoring system providing timely and comprehensive data on ambulance attendances in Australia. The NASS is a partnership between Turning Point, Monash University and jurisdictional ambulance services across Australia. The NASS is funded by the AIHW as a component of the National Suicide and Self-harm Monitoring Project to collate and code monthly ambulance attendances data for participating states and territories for self-harm behaviours (suicidal ideation, suicide attempt, death by suicide, self-injury).

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Ambulance attendances: suicidal and self-harm behaviours

The ambulance attendance data includes 1-month per quarter snapshots from Victoria (Vic), Tasmania (Tas) and the Australian Capital Territory (ACT) from March 2018 to June 2021, New South Wales (NSW) from March 2018 to March 2021, and Queensland (Qld) from March 2020 to March 2021. AIHW began receiving monthly data for NSW, Vic, Qld, Tas and the ACT from January 2021.

See Data development activities to learn more about the ongoing developments relating to ambulance attendance data funded through this project.

Self-harm related ambulance attendances are included if self-harm occurred in the preceding (past 24 hours) or during the ambulance attendance, with 4 categories of self-harm related ambulance attendances defined and coded as:

- self-injury (non-fatal intentional injury without suicidal intent)
- suicidal ideation (thinking about killing oneself without acting on the thoughts)
- suicide attempt (non-fatal intentional injury with suicidal intent, regardless of likelihood of lethality)
- suicide (fatal intentional injury with suicidal intent).

Suicide, suicide attempt and suicidal ideation are considered mutually exclusive; however, self-injury could be simultaneously coded with any other self-harm case category.

The number of attendances related to suicide is under-represented as ambulances do not attend all deaths. Furthermore, when they do attend there may be insufficient information to determine suicidal intent at the scene. Rates of death by suicide have not been calculated because of small numbers, which may affect the reliability of the estimates.

For more information, see Data sources - National Ambulance Surveillance System (NASS).

How many ambulance attendances for suicidal and self-harm behaviours?

In 2020 ambulances attended a total of around 33,000 incidents involving suicidal behaviours (suicidal ideation or suicide attempt) in NSW, Vic, Qld, Tas, and the ACT during the months of March, June, September and December. Over one third (36%) of these attendances occurred in NSW, in line with the population distribution between those jurisdictions.

Taking into consideration the population differences of the 5 jurisdictions, the rate of ambulance attendances per 100,000 population for suicidal ideation in 2020 were:

- 103.3 in NSW (around 8,400 attendances)
- 90.9 in Vic (nearly 6,100 attendances)
- 130.9 in Qld (around 6,800 attendances)
- 52.0 in Tas (about 280 attendances)
- 93.2 in the ACT (about 400 attendances)

(Supplementary table National Ambulance Surveillance System—self-harm behaviours AMB S1).

Attendance rates for suicide attempts by comparison, were lower than ideation in all 5 jurisdictions. Rates of attendances for suicide attempts per 100,000 population in 2020 were:

- 41.3 in NSW (nearly 3,400 attendances)
- 50.2 in Vic (nearly 3,400 attendances)
- 72.4 in Qld (over 3,700 attendances)
- 46.1 in Tas (about 250 attendances)
- 60.5 in the ACT (about 260 attendances)

Self-injury accounted for a relatively smaller number of attendances. These behaviours could be solely present in an attendance or present in conjunction with other suicidal and self-harm behaviours.
In 2020, ambulances in NSW, Vic, Qld, Tas and the ACT attended a total of around 6,400 incidents involving self-injury during the months of March, June, September and December; 38% of which occurred in NSW.

In 2020, the rate of ambulance attendances per 100,000 population with self-injury present was:

- 29.8 in NSW (over 2,400 attendances)
- 25.3 in Vic (nearly 1,700 attendances)
- 38.3 in Qld (nearly 2,000 attendances)
- 17.0 in Tas (about 90 attendances)
- 36.4 in the ACT (over 150 attendances)

(Supplementary table National Ambulance Surveillance System—self-harm behaviours S1).

Gender variations

There are distinct differences between genders when examining deaths by suicide and intentional self-harm hospitalisations; higher rates of deaths by suicide are seen in males compared with females (see Deaths by suicide over time) while females have higher rates of hospitalisations for intentional self-harm (see Intentional self-harm hospitalisations). Ambulance attendances however, provide further context to these gender differences. Ambulance attendances capture if the intent of the self-harm was suicidal and therefore can provide information on the extent of these behaviours in the community.

In general, in 2020:

- rates of ambulance attendances for suicide attempt and self-injury were higher for females than males
- in Qld and the ACT the rate of attendances for suicidal ideation was higher for females than males, while in NSW the rate for males was higher. The rates in Vic and Tas were not substantially different between males and females.

The interactive data visualisation shows ambulance attendances for males and females by each attendance type and for each of the four participating states and territories.


The vertical bar graph shows the crude rate and number of ambulance attendances for self-injury, suicidal ideation and suicide attempt for males and females in New South Wales, Victoria, Queensland, Tasmania and the Australian Capital Territory for the combined quarterly snapshot months in 2020. Users can choose to view crude rates and numbers of attendances for New South Wales, Victoria, Queensland, Tasmania or the Australian Capital Territory for all or selected self-harm behaviours. Females generally had higher attendance rates and numbers for self-harm behaviours, with the exception of suicidal ideation in New South Wales and Tasmania. The highest crude rate of attendances for females and males was for suicidal ideation Queensland.

Ambulance attendances for self-harm behaviours by gender, selected states and territories, 2020

In 2020, rates of ambulance attendances for suicide attempt and self-injury were between 1.4 and 2.6 times higher for females than males.

Ambulance attendance rates per 100,000 population for females involving a suicide attempt in 2020 were:
Age and gender variation
The interactive data visualisation below illustrates the distribution of self-harm related ambulance attendances for both males and females by age. For this visualisation, ambulance attendance data from 2020 in NSW, Vic, Qld, Tas and the ACT have been combined.

In general, in 2020 there were higher numbers of attendances for self-harm behaviours in the younger age groups for both males and females. Attendance numbers generally decreased with increasing age.

In 2020:
- attendances for self-injury and suicidal ideation were highest in the 15-19 age group for both males (around 470 and 1,400 attendances respectively) and females (around 1,100 and 2,100 attendances)
- attendances for suicide attempts were highest in the 20-24 age group for males (over 620 attendances) and the 15-19 age group for females (over 1,500).


The bar chart shows the distribution of the number of ambulance attendances for suicide attempts by age group for males and females, for combined quarterly snapshot data collected in New South Wales, Victoria, Queensland, Tasmania and the Australian Capital Territory in March, June, September and December 2020. Users can choose to view ambulance attendance numbers by age group for self injury, suicidal ideation and suicide attempt. The number of attendances for suicide attempts generally decreased with increasing age group from 15-19 and 20-24 for both males and females. Self-harm behaviour attendances were generally higher in females than males, across all age groups.
AIHW began receiving monthly data for NSW, Vic, Qld, Tas and the ACT from January 2021. The latest monthly data is for June 2021, except for NSW and Qld which is only reported until March 2021. These data are provided as additional visualisations in the below section. The visualisations will be updated over time and currently show no discernible trends.

**Attendances for suicidal ideation**

Across the snapshot months between March 2018 and June 2021 (March 2018 to March 2021 for NSW, March 2020 to March 2021 for Qld), the rate of ambulance attendances for suicidal ideation:

- increased in NSW from 17.3 per 100,000 population in March 2018 to 27.0 in March 2021
- increased in Vic from 18.4 per 100,000 population in March 2018 to 19.7 in March 2021 and increased from 17.6 in June 2018 to 20.1 in June 2021
- increased in Qld from 30.6 per 100,000 population in March 2020 to 35.2 in March 2021
- increased in the ACT from 12.4 per 100,000 population in March 2018 to 25.5 in March 2021 and from 10.0 in June 2018 to 26.2 in June 2021
- remained generally stable in Tas (14.6, 14.0, 15.5 and 13.3 in March 2018, 2019, 2020 and 2021 and 12.7, 9.4, 10.5 and 15.2 in June of the same years).

**Attendances for suicide attempts**

Comparing the same months across the years, the rate of ambulance attendances for suicide attempts:

- rose in NSW from 2018 to 2019, with a smaller increase evident from both 2019 to 2020 and from 2020 to 2021
- rose in Vic from 2018 to 2019 then fell from 2019 to 2020 and showed little change from 2020 to 2021
- have remained stable in Qld from March 2020 to March 2021
- fluctuated throughout the entire period in Tas and the ACT with no discernible trend due to large confidence intervals.

**Attendances for self-injury**

Comparing the same months across the years, the rate of ambulance attendances for self-injury:

- increased in NSW from 2018 to 2019, 2019 to 2020, and from 2020 to 2021, for example from March 2018 to March 2021 the rate rose from 4.3 per 100,000 population to 8.3
- decreased from 2018 to 2019 in Vic but rose from 2019 to 2020 and from 2020 to 2021, for example the rate rose from 4.1 per 100,000 population in June 2019 to 6.0 in June 2021
- increased in Queensland from 8.6 per 100,000 population in March 2020 to 10.4 in March 2021
- fluctuated in Tas and the ACT with no discernible trend.

The line graph shows the crude rate and number of ambulance attendances for self-harm behaviours for quarterly snapshot data collected in Victoria, New South Wales, Tasmania and the Australian Capital Territory in March, June, September and December 2018, 2019, 2020, and March and June 2021. It also includes quarterly snapshot data for Queensland in March, June, September and December 2020 and March 2021. Users can choose to view ambulance attendance by self-injury, suicidal ideation and suicide attempt. The crude rate and number of attendances for all suicide behaviours increased over the time period for all selected states and territories, with notable dips in June in 2018, 2019 and in 2021 in New South Wales. Please note the reduction in attendances in June 2021 is considered to be primarily due to missing data as a result of staff industrial action and technical difficulties. Suicidal ideation had the highest number and rate of attendances over the time period. While self-injury had the lowest number and rate of attendances over the time period, it had the largest increase of the suicidal behaviours.
Monthly data from NSW shows a general downward trend in rates of ambulance attendances for suicidal ideation, suicide attempts and self-injury for 2021. Monthly data from Vic had a slight downward trend in suicidal ideation, while suicide attempts and self-injury had no discernible trends over the period. More detailed monthly ambulance attendance data for Victoria from 2018-2020 is also available on the COVID-19 page. Monthly data from other states and territories fluctuated throughout the first half of 2021 with no discernible trends.

The line graph shows the crude rate and number of ambulance attendances for self-harm behaviours for monthly snapshot data collected in New South Wales, Victoria, Tasmania and the Australian Capital Territory from January to June 2021. It also shows these data for Queensland from January 2021 to March 2021. Users can choose to view ambulance attendance by self-injury, suicidal ideation and suicide attempt. Suicidal ideation had the highest number and rate of attendances over the time period, while self-injury had the lowest. There are no discernable trends as of yet. Please note the reduction in attendances for self-harm behaviours in New South Wales are considered to be primarily due to missing data as a result of staff industrial action and technical difficulties.
Patterns by gender over time

Across the snapshot months from March 2018 to June 2021 (March 2018 to March 2021 for NSW, March 2020 to March 2021 for Qld):

- the rate of ambulance attendances for suicide attempts were higher in females than males in NSW, Vic, Qld, Tas and the ACT
- rates of ambulance attendances for self-injury were higher in females than males in NSW, Vic, Qld, and the ACT but are unable to be reported by sex in Tas due to low numbers of attendances and are instead reported by persons
- attendances for suicidal ideation across NSW, Vic, Qld and Tas tended to be similar for females and males, except in the ACT where attendance rates were similar for males and females in 2018 to 2019 but increased each year for females while males stayed relatively stable
- similar trends in attendance rates across both males and females were reported for all self-harm behaviours in NSW and Vic
- attendance rates for suicide attempts in Tas and the ACT for both males and females fluctuated over the period with no discernible pattern reflecting the large confidence intervals.

Ambulance attendances for self-harm behaviours by gender, selected states and territories, snapshot months, 2018-2021

The line graph shows the crude rate and number of ambulance attendances for self-harm behaviours by gender (males and female) for quarterly snapshot data collected in New South Wales, Victoria, Tasmania and the Australian Capital Territory in March, June, September and December 2018, 2019 and 2020, and March and June 2021. It also includes quarterly snapshot data for Queensland in March, June, September and December 2020 and March 2021. Users can choose to view ambulance attendances by self-injury, suicidal ideation and suicide attempt. Across all jurisdictions, the number and rate of attendances for self-harm behaviours fluctuated between snapshot months. Most self-harm behaviours increased across the jurisdictions in the time period for both genders. There were some exceptions however. Suicidal ideation attendances for females in Tasmania slightly decreased over the time period. Please note the reduction in attendances for self-harm behaviours in New South Wales are considered to be primarily due to missing data as a result of staff industrial action and technical difficulties.
Again, monthly data from NSW shows a general downward trend in rates of ambulance attendances for suicidal ideation, suicide attempts and self-injury for both males and females in 2021. Monthly data from other states and territories show that rates of attendances for self-harming behaviours remained relatively stable over the first half of 2021.

Ambulance attendances for self-harm behaviours by gender, selected states and territories, January–June 2021

The line graph shows the crude rate and number of ambulance attendances for self-harm behaviours by gender (males and female) for monthly data collected in New South Wales, Victoria, Tasmania and the Australian Capital Territory from January to June 2021. It also shows these data for Queensland from January 2021 to March 2021. Users can choose to view ambulance attendances by self-injury, suicidal ideation and suicide attempt. There are no discernable trends as of yet. Please note the reduction in attendances for self-harm behaviours in New South Wales are considered to be primarily due to missing data as a result of staff industrial action and technical difficulties.
Patterns by age and gender over time

There is a distinct variation in ambulance attendances for suicidal and self-harm behaviours between age groups 0-24, 25-44, 45-64 and 65+ years.

Across the snapshot months from March 2018 to March 2021, in NSW, Vic, the ACT and Tas combined:

- attendance rates for suicidal ideation were higher in females compared to males in the 0-24 age group, but higher in males in the 25-44, 45-64 and 65+ age groups
- attendance rates for self-injury were higher for females than males in the 0-24 age group
- attendance rates for suicide attempts were higher for females than males in the 0-24 and 25-44 age groups.

Ambulance attendances for self-harm behaviours by age and gender, selected states and territories, snapshot months, 2018-2021

The line graph shows the crude rate and number of ambulance attendances for self-harm behaviours by age group (0-24, 25-44, 45-64 and 65+ years) for quarterly snapshot data collected in New South Wales, Victoria, Tasmania and the Australian Capital Territory in March and June, September and December in 2018, 2019 and 2020, and March and June 2021. Users can choose to view ambulance attendances by self-injury, suicidal ideation and suicide attempt. Attendance rates and numbers for self-harm behaviours were much higher over the time period in females aged 0-24 years, compared to males in the same age group. This gap narrowed as the age group increased. The exception is the 25-44 year age group for suicidal ideation, where the attendance rates and numbers are higher for males than females.

Ambulance attendances for deaths by suicide and suicide attempts, by method

Understanding the methods used in a person's death by suicide or suicide attempt can play an important role in its prevention. These data are provided to inform discussion around restriction of access to means as a policy intervention for the prevention of suicide and self-harm.

Please consider your need to read the following information. If this material raises concerns for you or if you need immediate assistance, please contact a crisis support service, available free of charge, 24 hours a day, 7 days a week.


Across the selected months from March 2018 to December 2020:

- most ambulance attendances for suicide attempts were due to alcohol and other drugs
- the proportion of attendances for suicide attempts by alcohol and other drugs declined (64.0% to 59.9%) while the use of ‘other’ methods increased (41.2% to 43.8%) (note the proportion of attendances for suicide attempts due to other methods is combined due to small numbers)
- attendances for suicide attempts due to hanging was stable (3.8% to 4.3%)
- most ambulance attendances for death by suicide were due to hanging
- the proportion of attendances for death by suicide due to hanging decreased (53.8% to 50.5%) while attendances due to ‘other’ methods increased (34.6% to 36.4%)
- attendances for death by suicide due to alcohol and other drugs increased from 10.3% to 15.0%.
Ambulance attendances for suicides and suicide attempts by modality, selected states and territories, snapshot months, 2018–2021

The line graph separates the number and crude rate of ambulance attendances into the two groups: suicide attempt and death by suicide. Within these groups, attendance by the three modality (method) categories is shown. The modality categories are ‘alcohol and other drugs’, ‘hanging’ and ‘other’ (includes wound/laceration/penetrating injury, inhalation, firearm, drowning, jumping from height, vehicular impact, poison, burning, asphyxia, other and unknown). This is shown for grouped quarterly snapshot data collected in New South Wales, Victoria, Tasmania and the Australian Capital Territory in March, June, September and December in 2018, 2019 and 2020, and in March and June 2021. For suicide attempts, all modality methods remained relatively stable over the time period, with a small increase in ‘other’, and a small decrease in alcohol and other drugs and hanging. For deaths by suicide, alcohol and other drugs and ‘other’ decreased, while hanging increased. Hanging had the highest proportion of attendance for deaths by suicide over the time period, while the proportion of attendances for alcohol and other drugs was highest for suicide attempts.

Content warning:

The data in this visualisation might be distressing to some readers as it contains data on the modality of suicide deaths and attempts. Please consider your need to read the following information. If this material raises concerns for you or if you need immediate assistance, please contact a crisis support service, available free of charge, 24 hours a day, 7 days a week.

Please consider the Mindframe guidelines if reporting on these statistics.

Proceed to visualisation

References


Suicide & self-harm monitoring

What is intentional self-harm?

Intentional self-harm is often defined as deliberately injuring or hurting oneself, with or without the intention of dying. Intentional self-harm comes in many forms, and affects people from different backgrounds, ages and lifestyles. The reasons for self-harm are different for each person and are often complex.

The term ‘intentional self-harm’ in the National Hospital Morbidity Database (NHMD) provides information on patients admitted to hospital for self-poisoning or self-injury, with or without suicidal intent—and therefore includes both suicide attempts and non-suicidal self-harming behaviours.

Most people who self-harm do not go on to end their lives—but previous self-harm is a strong risk factor for suicide. Therefore, monitoring of intentional self-harm is key to suicide prevention.

What are the sources of data on intentional self-harm?

Understanding the scale of the problem of intentional self-harm in Australia is difficult because many cases of self-harm are unreported, unless medical treatment is required.

- Only those patients admitted to hospital for intentional self-harm are currently routinely reported in national data sets.
- Presentations to hospital emergency departments relating to suicide attempts or intentional self-harm cannot be easily identified in the current national emergency department data collection.
- Data collections from general practitioners or mental health services do not routinely capture patients treated for intentional self-harm.
- Data are available from ambulance attendance records and national population surveys (see below).

Improving self-harm data

The NHMD is the national source of hospitalisation data in Australia. Data on the patient’s diagnosis, interventions and ‘external cause’ (including intentional self-harm) are reported to the NHMD by all states and territories using the International statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM) and the Australian Classification of Health Interventions (ACHI). The World Health Organization’s Eleventh revision of the International Classification of Diseases (ICD-11)—yet to be adopted in Australia—has the capability to classify the intent of the external cause of an injury.

In recognition of the need for better data around suicide and self-harm, the AIHW is currently working with key stakeholders, including the Mental Health Information Strategy Standing Committee and Emergency Department data custodians to develop a nationally consistent method to identify and collect data on suicide-related ED presentations.

National survey data

One nationally representative survey to collect data on self-harm is the Australian Child and Adolescent Survey of Mental Health and Wellbeing. In this survey, data on self-harm are available for adolescents aged 12-17. The 2007 National Survey of Mental Health and Wellbeing also includes questions on previous suicidal behaviour. This survey provides lifetime prevalence estimates of mental disorders for Australians aged 16-85.

COVID-19

The data reported are up to 30 June 2020, as such these data include the initial COVID-19 period.
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Intentional self-harm hospitalisations by states & territories
Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see Technical notes.

How do intentional self-harm hospitalisations vary across states and territories?
In 2019-20:
- there were more than 28,600 hospitalisations due to intentional self-harm in Australia, with the highest proportion (30.2%) in Queensland
- the rate of intentional self-harm hospitalisations varied between states and territories in 2019-20, with the Northern Territory reporting the highest rate (240 hospitalisations per 100,000 population), which is more than double the national rate (113)
- the lowest rate was recorded in New South Wales (83 hospitalisations per 100,000 population).

Reporting is based on a patient’s usual residence, not necessarily where they received treatment.

Intentional self-harm hospitalisations, by states and territories, Australia, 2008-09 to 2019-20.
The line graph shows rates of intentional self-harm hospitalisations from 2008-09 to 2019-20 for each state and territory and the total for Australia. Users can also choose to view age-specific rate, numbers and proportion of hospitalisations for intentional self-harm by states and territory by sex and specific age groups. Over the majority of the time period, the Northern Territory had the highest rates of intentional self-harm hospitalisations, except for 2009-2010 where the rates in South Australia (146.8 per 100,000) were slightly higher than Northern Territory (146.6). Rates in the Northern Territory increased from 162.4 per 100,000 population in 2008-09 to 239.9 in 2019-20. In 2019-20, Queensland had the second highest rate at 169.5 hospitalisations per 100,000 population. The total rate for Australia in 2019-20 was 112.9 per 100,000 population.
How have rates of intentional self-harm hospitalisations changed over time by state and territory?
Throughout 2008–09 to 2019–20, rates of intentional self-harm hospitalisations in Queensland, South Australia and the Northern Territory were consistently higher than that of the national rate.

From 2008–09 to 2019–20 the highest rates of hospitalisations due to intentional self-harm in Australia were generally in the Northern Territory.

Over this period, rates of hospitalisations due to intentional self-harm in the Northern Territory increased 1.5 times from 162 hospitalisations per 100,000 population to 240.

The most notable changes between 2008–09 and 2019–20 were seen in young females.

- The rate of intentional self-harm hospitalisations for Northern Territory females in the 0–24 age group increased almost 4-fold (from 98 hospitalisations per 100,000 population in 2008–09 to 382 in 2019–20).
- In Queensland the rate has almost doubled for females in this age group (158 per 100,000 population in 2008–09 to 305 in 2019–20).
- In addition, rates of intentional self-harm hospitalisations for males aged 24 and below in the Northern Territory almost doubled from 90 hospitalisations per 100,000 population in 2008–09 to 174 in 2019–20.

Variation in hospital admission policy and practices between states and territories may have contributed to differences in the reporting of hospitalisation data, for further information see data quality statement (https://meteor.aihw.gov.au/content/index.phtml/itemid/724188).

- New South Wales and Queensland reported an increase in the number of hospitalisations due to intentional self-harm in 2016–17, before decreasing from 2017–18 to 2019–20.
- Between 2011–12 and 2012–13, Victoria reported a substantial decrease in the number of hospitalisations due to intentional self-harm from more than 6,700 (120 hospitalisations per 100,000) to around 4,500 (78 hospitalisations per 100,000). This may reflect a change in Victoria’s emergency department admission policy, for further information see data quality statement (https://meteor.aihw.gov.au/content/index.phtml/itemid/724188).
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**Intentional self-harm hospitalisations by age groups**

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see Technical notes.

**Rates of hospitalisations for intentional self-harm are higher for females**

In 2019-20:

- nearly two thirds of people (63%) hospitalised for intentional self-harm injuries were female (over 18,000 hospitalisations).
- the rate of intentional self-harm hospitalisations was higher for females than males (141 per 100,000 population compared with 84).

This is the opposite of what is seen in deaths by suicide, where rates are higher for males than for females (see Deaths by suicide over time). This may, in part, be due to differences between methods used by males and females—with males tending to use more lethal methods than females.

Intentional self-harm hospitalisations by age and sex, Australia, 2008-09 to 2019-20.

The bar chart shows the age-specific rates of intentional self-harm hospitalisations for males and females for specific age groups and all ages combined in 2019-20. Users can also view age-specific rate, numbers and the proportion of hospitalisations for intentional self-harm by sex for each age group and year from 2008-09 to 2019-20. In 2019-20, females had higher rates of hospitalisation for intentional self-harm than males up to age 75-79. The highest rates for females were in the 15-19 years age group (552.2 hospitalisations per 100,000 population) and the 20-24 years age group for males (168.0).
Rates of hospitalisations for intentional self-harm are higher for young people

Between 2008–09 and 2019–20, the rates of intentional self-harm hospitalisations were consistently high for young people. The highest rates in 2019–20 were recorded for:

- females aged 15–19 (552 per 100,000 population), followed by females aged 20–24 (340).

The highest rates for males also occurred in these younger age groups but rates were at least 2-fold lower than those of females. For example, in 2019–20:

- the rate of self-harm hospitalisations was 165 per 100,000 population for males aged 15–19, while those aged 20–24 reported the highest rate (168 per 100,000 population).

During this period, there was a steady increase in the rates for both males and females aged 15–19, while rates for other age groups remained relatively stable (see Intentional self-harm hospitalisations among young people).
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Intentional self-harm hospitalisations by method

Understanding the methods used for intentional self-harm can play an important role in its prevention. These data are provided to inform discussion around restriction of access to means as a policy intervention for the prevention of suicide and self-harm.

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The classification system used to code hospital admissions data, ICD-10-AM, uses the term ‘mechanism’ to refer to the external cause of a self-inflicted injury. Throughout Suicide & self-harm monitoring ‘mechanism’ has been used in data visualisations, while the term ‘method’ has been used in the accompanying text.

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see Technical notes.

Hospitalisations for intentional self-harm, by age, sex and mechanism, Australia, 2008-09 to 2019-20.

The line graph shows the age-specific rates of intentional self-harm hospitalisations for persons of all ages from 2008-09 to 2019-20 by method of self-harm. Users can also choose to view age-specific rate, numbers and proportion of hospitalisations for intentional self-harm by sex for each age group. From 2008-09 to 2019-20, the highest rates of intentional self-harm hospitalisations by method were for self-poisoning by drugs in the anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs category, which for all years except 2016-17, were more than twice the rates of the second highest category, non-opioid analgesics, antipyretics and anti-rheumatics. The third highest rates during the 10-year period were for self-injury with sharp object.
Most intentional self-harm hospitalisations are due to poisoning by pharmaceutical drugs

Between 2008-09 and 2019-20, the 2 most common methods of self-harm resulting in hospitalisation were:

- **intentional self-poisoning by anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs (X61)**, responsible for 42% of hospitalisations for intentional self-harm in 2019-20. Benzodiazepines are included in this category.
  - In 2019-20, around 7,800 females were hospitalised as a result of this method of self-harm, compared with about 4,300 males.
- **intentional self-poisoning by non-opioid analgesics, antipyretics and anti-rheumatics (X60)**, responsible for 19% of intentional self-harm hospitalisations in 2019-20.
  - This category includes anti-inflammatory drugs, such as ibuprofen, antipyretics (for example, aspirin and acetaminophen) and anti-rheumatics (some of which are used to treat arthritis).
  - More than 3 times as many females were hospitalised due to this method of self-harm in 2019-20 compared with males (almost 4,200 and almost 1,200 hospitalisations, respectively).

Contact with sharp objects (X78) was another common method of self-harm resulting in hospitalisation.

- Contact with sharp objects accounted for 12% of all intentional self-harm hospitalisations in 2019-20, with more females than males hospitalised for this method of self-inflicted injury (almost 1,900 and over 1,500 hospitalisations, respectively).

Hanging (X70) and Gas (X67) were the only methods of intentional self-harm that resulted in more hospitalisations of males than females in 2019-20 (551 and 287 hospitalisations, and 129 and 35 hospitalisations, respectively).

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Suicide & self-harm monitoring: Populations & age groups

Suicide and self-harm can affect people of all ages (except very young children), races, ethnicities, sexual orientations and occupations. However, a number of subgroups are particularly important to examine in depth because their risk of suicide or self-harm is higher than that of other populations, the impact on the community is different or they have specific requirements for culturally appropriate suicide prevention or postvention services.

- Although deaths by suicide occur more often in older age groups, it is the leading cause of death in Australian children and adolescents. Deaths by suicide at any age have profound effects on the families, friends and communities of those that die, but arguably, these effects are even greater when the person is young (see Suicide among young people).
- Similarly to employment in general, serving in the Australian Defence Force (ADF) seems to be protective against suicide as rates in both serving and reserve men are lower than that of all Australian men. However, for ex-servicemen suicide rates are higher than the general population (see Australian Defence Force suicide monitoring).
- The suicide rate in Aboriginal and Torres Strait Islander peoples is twice that of the non-Indigenous population (see Suicide & Indigenous Australians)—although rates vary by community, age group and sex. The high rates experienced by Indigenous Australians are due to multiple, complex and interrelated social, cultural and historical influences, including colonisation, relocation of people to missions and reserves, transgenerational grief and trauma resulting from the removal of children, racism and continued socioeconomic disadvantage. However, it is important to acknowledge that Indigenous Australians may never experience suicidal behaviours or thoughts and aspects unique to their culture can be important protective factors against suicidal or self-harming behaviours.

Understanding differences in numbers and rates of suicide, intentional self-harm and suicidal behaviours in these populations is essential for more effective suicide prevention.

Other population groups identified as priority populations for suicide prevention in Australia include lesbian, gay, bisexual, transgender or intersex (LGBTI) populations and culturally and linguistically diverse (CALD) communities. It is currently not possible to discern these groups in the available suicide and intentional self-harm data sets; however, through the National Suicide and Self-harm Monitoring Project the AIHW is looking to expand data collection on these, and other population groups (see About for information on the project).

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Deaths by suicide among young people

Suicide is the leading cause of death among Australians aged 15-24 (See Deaths in Australia). The proportion of deaths by suicide is relatively high among children and young people due to the fact these age groups do not tend to die from other causes.

In 2020:
- 381 Australian young people (aged 18-24) took their own lives
- 99 deaths by suicide occurred among children and adolescents (aged 5-17) with the majority occurring in those aged 15-17 (74% in 2020)
- deaths by suicide represented 31% of all deaths in young people aged 15-17 and 39% of all deaths in those aged 18-24—up from about one-quarter (25%) of all deaths in these age groups in 2010. In children aged 14 and below the proportion of deaths by suicide is low compared with the 2 older age groups; in 2020 deaths by suicide represented 12% of all deaths in this age group.

Suicide deaths of children and young people, Australia, 2010 to 2020.

The line graph shows the age-specific rates of suicide for children and young people aged 14 and below, 15-17 and 18-24 from 2010 to 2020. Users can also choose to view the number of deaths by suicide and deaths by suicide as a proportion of all causes of death for each age group over the period. The highest rates of suicide across the period were for young people aged 18-24, which increased from 10.8 deaths per 100,000 population in 2010 to a high of 16.4 in 2020.

Source: AIHW National Mortality Database and ABS Causes of Death, Australia 2021
Supplementary table: YMD 56
Latest data: 2020 (annual release)
Throughout 2010 to 2020, age-specific suicide rates:

- were higher for young adults (aged 18-24) than adolescents (aged 15-17) and children (aged 14 and below)
- increased in young people aged 18-24 (from 10.8 deaths per 100,000 population in 2010 to 16.4 in 2020) while remaining relatively stable for those aged 15-17 (7.9 to 8.3 deaths per 100,000 population)
- ranged from 0.5 deaths per 100,000 population in 2010 to 0.8 in children aged 14 and below.
Intentional self-harm hospitalisations among young people

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see the Technical notes.

The data presented here are for children and young people aged between 0 and 24, grouped into 3 age ranges: 14 and below, 15–19 and 20–24 years. For children, especially those aged under 10, it is difficult to determine whether a self-inflicted injury was done with intent to self-harm.


The line graph shows age-specific rates of intentional self-harm hospitalisations for young people aged 14 and below, 15–19 and 20–24 from 2008–09 to 2019–20. Users can also choose to view age-specific rate, numbers and proportion of hospitalisations for intentional self-harm by sex for each age group. Between 2008–09 and 2019–20, rates of intentional self-harm hospitalisations were highest for young people aged 15–19 ranging from 245.6 per 100,000 population in 2008–09 to 426.6 in 2016–17 and down to 354.1 in 2019–20.

Young people have the highest rates of hospitalisation for intentional self-harm

In 2019–20:

- the age-specific hospitalisation rate due to intentional self-harm was lowest for children aged 14 and below (24 per 100,000 population)
the rate for young people aged 15–19 was 354 hospitalisations per 100,000 population, while the rate for 20-24 year olds was lower, 252 per 100,000 population

the age and sex-specific rate was highest for females aged 15-19 (552 hospitalisations per 100,000 population), followed by females aged 20-24 (340 per 100,000 population)

rates for young males were lower (165 and 168 per 100,000 population for males aged 15-19 and 20-24, respectively).

Rates of intentional self-harm hospitalisations for girls and young females are rising

From 2008-09 to 2019-20:

- the rate of intentional self-harm hospitalisations in females aged 14 and below doubled (from 19 hospitalisations per 100,000 population to 41, with a peak of 49 hospitalisations per 100,000 population in 2016-17)
- the rate of intentional self-harm hospitalisations in females aged 15-19 has risen from 374 hospitalisations per 100,000 population to 552, with a peak of 686 hospitalisations per 100,000 population in 2016-17
- rates of intentional self-harm hospitalisations for males have also increased over this period but not to the same extent as those of females; the greatest increase was in the 15-19 age group (from 124 per 100,000 population to 165).

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Deaths by suicide amongst Indigenous Australians

If at any point you feel worried about harming yourself while viewing the information on this website—or if you think someone else may be in danger—please stop reading and seek help.

For further information about Aboriginal and Torres Strait Islander peoples’ wellbeing, mental health and suicide prevention, see the Indigenous Mental Health & Suicide Prevention Clearinghouse (https://www.indigenousmhspc.gov.au/) managed by the AIHW. This website was developed in consultation with experts in Indigenous mental health and suicide prevention, practitioners and policy makers. It brings together key research to improve the evidence base on Indigenous mental health and suicide prevention.

Age-standardised suicide rates among Aboriginal and Torres Strait Islander people are substantially higher than those in non-Indigenous Australians. Reducing deaths by suicide and suicidal behaviour among Indigenous Australians is an issue of major concern for many Indigenous communities and a public health priority for all Australian governments.

Numbers of deaths by suicide and age-standardised rates are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only (see Technical notes for further information).

Suicide deaths by Indigenous status and sex, selected states and territories, Australia, 2001 to 2020.

The line graph shows the age-standardised rates of suicide for Indigenous and non-Indigenous people from 2001 to 2020. Users can also choose to view age-standardised rates, numbers of deaths by suicide and deaths by suicide as a proportion of all causes of death for Indigenous and non-Indigenous people by sex. Suicide rates for Indigenous people fluctuated more widely and were higher than those for non-Indigenous people over the period. In 2020, suicide rates for Indigenous Australians, at 27.9 deaths per 100,000 population were 2.4 times the rate for non-Indigenous people, at 11.8 per 100,000 population.
How do suicide rates differ between Indigenous and non-Indigenous Australians?

From 2001 to 2020, age-standardised rates:

- fluctuated in Indigenous males from a low of 25.1 deaths per 100,000 population (75 deaths) in 2008 to 42.9 (147 deaths) in 2020
- could not be reported for some years for Indigenous females due to small numbers of deaths by suicide; however, for those years that can be reported, rates fluctuated from 7.2 deaths per 100,000 population (22 deaths) in 2006 to 15.2 (58 deaths) in 2019
- for Indigenous people ranged from 1.4 to 2.4 times that of non-Indigenous Australians.

In 2020:

- suicide accounted for 5.5% of all deaths of Aboriginal and Torres Strait Islander peoples while the comparable proportion for non-Indigenous Australians was 1.9%
- one-quarter (25%) of all deaths by suicide in Indigenous people were female, this was greater than that seen in the non-Indigenous population (23% females).

Kreisfeld and Harrison (2020) found that over the period 2001–02 to 2015–16, there was an annual average rise of 0.4% in suicide rates for Indigenous males, while over the most recent 5-year period (2011–12 to 2015–16) the annual rate for Indigenous males increased by an average of 6.6%; however, these changes in rates were not statistically significant (see Glossary). For Indigenous females, over the period 2001–02 to 2015–16, modelling showed a statistically significant annual average rise in suicide rates of 5.8%; however, over the most recent 5-year period 2011–12 to 2015–16, rates fell by 2.5% per year, although this finding was not statistically significant (AIHW: Kreisfeld & Harrison 2020).

Caution should be exercised when analysing trends in deaths by suicide for Indigenous Australians due to data quality issues, including the under-identification of Aboriginal and Torres Strait Islander people in deaths data and the uncertainties in estimating and projecting the size and structure of the Indigenous population over time. Numbers of deaths by suicide and age-standardised rates are reported for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. Data for Victoria, Tasmania and the Australian Capital Territory have been excluded (see Technical notes for further information). It is also important to remember that age-standardised rates based on only a small number of deaths by suicide will exhibit a large amount of variation and that increases in numbers of deaths by suicide and rates should be treated with caution as improvements in identifying Indigenous status among deaths data may (at least in part) account for the rise in case numbers and rates.

Suicide rates are more than twice as high in young Indigenous Australians compared to non-Indigenous Australians.
Suicide contributes to premature mortality in Indigenous Australians, especially in the younger age groups. Data from the National Mortality Database and the Australian Bureau of Statistics Causes of Death from 2016 to 2020 showed the rates of suicide deaths per 100,000 people among Indigenous Australians were 16.7 and 45.7 in those aged 0-24 and 25-44 years respectively. These rates were 3.2 and 2.8 times as high as in non-Indigenous Australians in the respective age groups (5.3 and 16.4 per 100,000 respectively). This difference was less pronounced in the 45-64 age group, with a suicide rate of 20.4 among Indigenous Australians compared to 17.2 in non-Indigenous Australians. However, non-Indigenous Australians had a higher suicide rate in the 65 and over age group than Indigenous Australians (12.8 compared to 7.7 per 100,000).

Suicide deaths also represent a higher proportion of deaths in young Indigenous Australians age groups compared to non-Indigenous Australians. From 2016 to 2020, almost a quarter (24%) of deaths in Indigenous Australians aged 0-24 were due to suicide, compared to 17% in non-Indigenous Australians. However, in older age groups, non-Indigenous Australians had a higher proportion of death by suicide than Indigenous Australians. For instance, about 5% of all deaths were attributed to suicide in non-Indigenous Australians aged 45-64 years, compared to 2% in Indigenous Australians.

Suicide deaths by Indigenous status and age groups, selected states and territories, 2016-2020.

This bar chart shows the death by suicide crude rates (per 100,000), number and per cent of all cause of deaths for Indigenous and non-Indigenous, by age group, from 2016-2020. Users can also choose to view by 5-year aggregates from 2001-2005 to 2016-2020. The crude rate of suicide deaths was higher among the Indigenous age groups compared to non-Indigenous, except in the 65 years and over group where non-Indigenous rates were higher. The number of suicides was higher in non-Indigenous people compared to Indigenous, due to differences in population sizes. The proportion of suicide deaths to all causes of deaths was highest in the Indigenous 0-24 age group and lowest in the Indigenous 65 years and older group.

In 2016 to 2020, the highest Indigenous suicide rates were in those aged 25-34 in Western Australia and the Northern Territory (88.1 and 54.0 deaths per 100,000 population) and in those aged 35-44 in New South Wales, Queensland and South Australia (33.8, 52.0 and 54.1 deaths per 100,000 population). In Queensland, Indigenous suicide rates in the 25-34 age group were also high compared to other age groups within the same state (47.1 per 100,000), only slightly lower than the 35-44 age group (52.0 per 100,000). In contrast, the 45 years and over group had the lowest Indigenous suicide rates, except in South Australia and New South Wales where those aged 0-24 had the lowest suicide rates.


This bar chart shows the age-specific rates (per 100,000) for deaths from suicide, for Indigenous and non-Indigenous people by age group, from 2016-2020. Users can choose to view by 5-year aggregates from 2001-2005 to 2016-2020. Users can also choose to view by New South Wales, Queensland, Western Australia, South Australia, Northern Territory and the total of these states and territories. In WA and the NT, Indigenous Australians aged 25-34 years had the highest age-specific suicide rate; in NSW, QLD and SA Indigenous 35-44 year olds had the highest rate. Non-Indigenous 0-24 year olds had the lowest age-specific suicide rate in all states and territories.
According to the ABS Causes of Deaths data, the aged-standardised suicide rate was higher among both male and female Indigenous Australians compared to their non-Indigenous counterparts, across all states and territories in 2016 to 2020, except in South Australia where the suicide rate for Indigenous females could not be reported. Nationally, suicide rates in Indigenous males and females were around double that of non-Indigenous. In Western Australia, suicide rates in Indigenous males (45.6 deaths per 100,000 population) were about twice that in non-Indigenous males (20.4), but in Indigenous females (20.9) were 3 times that of non-Indigenous females (6.9). Indigenous suicide rates in Western Australia vary between different regions. To address this, the Western Australia Mental Health Commission developed the Western Australian Suicide Prevention Framework 2021–2025 (https://www.mhc.wa.gov.au/media/2718/draft-suicide-prevention-action-plan-2021_2025.pdf), to guide government, non-government organisations and communities in preventing suicide in Western Australia (Government of Western Australia Mental Health Commission 2020).

Deaths from suicide, by Indigenous status, sex and selected states and territories, 2016-2020.

This bar chart shows the age-specific rates (per 100,000) for death by suicide among Indigenous and non-Indigenous people, by selected states and territories, from 2016-2020. Users can choose to view by 5-year aggregates from 2001-2005 to 2016-2020. Users can also choose to view by NSW, Qld, WA, SA, NT and the total of these selected states and territories. Age-standardised suicide rates were higher among Indigenous Australians compared to non-Indigenous across all states and territories. In 2016-2020, WA had the highest suicide rates (33.3 per 100,000) among Indigenous Australians and NSW had the lowest (19.8). Among non-Indigenous Australians, Qld had the highest suicide rate (14.6) and NSW had the lowest (10.5). The difference in suicide rates between Indigenous and non-Indigenous Australians was most pronounced in WA, where rates were 2.4 times higher in Indigenous (33.3) than non-Indigenous (13.6) Australians.
Suicide deaths by Indigenous status, sex and selected states and territories, 2016–2020

Age-standardised rate (per 100,000)

Note: Only data for NSW, Qld, WA, SA and NT are presented.
Source: ABS Causes of Death, Australia 2021
Supplementary Table: INJCAT 210

References


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Intentional self-harm hospitalisations & Indigenous Australians

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see the Technical notes.

The quality of the hospital data provided for Indigenous status varies between states and territories. For further information, see the data quality statement (https://meteor.aihw.gov.au/content/index.phtml/itemId/72188) and the Technical notes.

Intentional self-harm hospitalisations, by age, sex and Indigenous status, Australia, 2008-09 to 2019-20.

The line graph shows age-specific rates of hospitalisations for intentional self-harm by age, sex and persons for Indigenous Australians. Users can choose to view age-specific rate, numbers and proportion of hospitalisations for intentional self-harm by sex and Indigenous status for each age group. Rates for young Indigenous females aged 15-19 increased steeply from 683.0 per 100,000 population in 2014-15 to 1164.7 in 2016-17, declined to 1041.8 in 2018-19, before increasing again to 1182.9 in 2019-20. This was the highest rate of all age-groups in 2019-20, well above the next highest rate of 785.0 per 100,000 population for Indigenous females aged 20-24. The rate for all Indigenous females generally increased across the period, with some fluctuations, from 235.5 in 2008-09 to 434.6 in 2019-20.

How common are hospitalisations for intentional self-harm among Indigenous Australians?

In 2019-20, the rate of intentional self-harm hospitalisations for Indigenous Australians (348 hospitalisations per 100,000 population) was about 3 times that of non-Indigenous Australians (104).
In 2019–20:

- the highest rate of hospitalised intentional self-harm for Indigenous Australians was in the 15–19 age group (772 hospitalisations per 100,000 population). The highest rate for non-Indigenous Australians was also recorded in the 15–19 age group but was less than half that of Indigenous Australians aged 15–19 (337)
- Indigenous females aged 15–19 recorded the highest rate of intentional self-harm hospitalisations (1,183 hospitalisations per 100,000 population), followed by those aged 20–24 (785)
- the highest rate of hospitalised intentional self-harm for Indigenous Australian males was in the 25-29 age-group (529 hospitalisations per 100,000 population), followed by those aged 45-49 (471) and 30–34 (465).

How have rates of intentional self-harm hospitalisations changed for Indigenous Australians?

From 2008-09 to 2019-20:

- the overall rate of hospitalised intentional self-harm for Indigenous Australians rose (from 203 hospitalisations per 100,000 population to 348)
- the rate of intentional self-harm hospitalisations for non-Indigenous Australians remained relatively steady over this period (from 114 hospitalisations per 100,000 population to 104).

Over this same period, the Indigenous suicide rate also rose (see, Suicide & Indigenous Australians).

Rates of hospitalisation for intentional self-harm have risen from 2008-09 to 2019-20 for both Indigenous females and males.

- Rates of hospitalised intentional self-harm for Indigenous females increased from 236 hospitalisations per 100,000 population in 2008-09 to 435 in 2019-20, while rates for Indigenous males rose from 170 hospitalisations per 100,000 population to 261.
- The greatest increase in rates was seen in Indigenous females aged 15-19 (more than doubling from 455 hospitalisations per 100,000 population in 2008-09 to 1,183 in 2019-20). Rates also increased more than 1.4 times for non-Indigenous females aged 15-19 during this period (from 365 per 100,000 population to 511), although have steadily dropped since 2016-17 (653 per 100,000 population).
- Rates also increased markedly in Indigenous females aged 20-24 (from 425 hospitalisations per 100,000 population to 785), 40-44 (from 331 to 732) and 50 and over (from 101 per 100,000 population to 233).
Australian Defence Force suicide monitoring

Historically, ex-serving ADF members have faced an increased risk of suicide. Reducing the rate of suicide remains a concern in the Australian community, and a priority for the Australian Government.

To increase understanding on the complex issue of suicide in serving and ex-serving ADF members, the AIHW has provided annual updates to monitor the incidence of suicide in permanent, reserve and ex-serving ADF members since 2017 (see Box 1). This work has been commissioned by the Department of Veterans’ Affairs.

Rate of suicide by service status and sex, 2002-04 to 2017-19.

The data can be viewed by selected veteran groups, with confidence intervals on or off, and up to two series can be compared at once. The graph shows the rate of suicide, per 100,000 population per year, for male permanent, male reserve, male ex-serving, and female ex-serving ADF members, for 3-year periods from 2002-04 to 2017-19. Of the four different data series, ex-serving males were consistently higher than the others in every year under analysis. Between the other three groups, these series are at a broadly similar level, with no one group being above the others.

Key findings

Permanent and reserve males are about half as likely to die by suicide as Australian males (51% and 48% lower respectively).
Overall, ex-serving ADF members are at a higher risk of suicide than other Australians, with males 24% more likely to die by suicide, and females 102% more likely (or about twice as likely). However, some subgroups of the ex-serving ADF members have different rates of suicide.

The suicide rate for ex-serving males who separate voluntarily is around one third of the rate of those who separate for involuntary medical reasons (73.1 compared with 22.2 per 100,000 population per year).

For more information see Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019.

Box 1: Who is included in this report?

**Permanent:** ADF members serving in a full time capacity in the Royal Australian Navy (Navy), Australian Army (Army) or the Royal Australian Air Force (Air Force) from 1 January 1985, and serving in a permanent capacity on 31 December 2019 or when they died.

**Reserve:** ADF members in the reserve forces for the Navy, Army or the Air Force from 1 January 1985 and who were in the reserve forces on 31 December 2019 or when they died. Most members leaving full-time service transition to the reserves (for a minimum of five years), unless prevented by medical or other reasons. The service status ‘Reserve’ includes members with a wide range of different experience and relationships to the ADF. For example, it includes personnel who have transitioned from full time service as well as both those who have joined in reserve capacity. Members provide service across a service spectrum that is based on their availability to render service. Some members may not render service in any capacity due to their personal circumstances, however they are liable to be called on by Government.

**Ex-serving:** ADF members in the fulltime or reserve services between 1 January 1985 and 31 December 2019, but who subsequently transitioned from Defence.
The use of mental health services, psychological distress, loneliness, suicide, ambulance attendances and COVID-19

While there has been a rise in the use of mental health services and an increase in psychological distress during the COVID-19 pandemic, COVID-19 has not been associated with a rise in suspected deaths by suicide in 2020 and 2021, see Suspected deaths by suicide. Preliminary national mortality data published by the Australian Bureau of Statistics for 2019 and 2020 show that the rate of death by suicide in Australia was lower in 2020 (12.1 per 100,000 population) than in 2019 (12.9 per 100,000 population), see Deaths by suicide over time.

Deaths referred to the coroner where initial investigation points to suicide are referred to as ‘suspected deaths by suicide’. It can take a number of years for the coronial process to determine if suicide was the cause of death in a particular case. These data are not directly comparable with coroner-certified deaths as reported in Deaths by suicide in Australia or published by the Australian Bureau of Statistics as ‘Causes of Death, Australia’.

Use of mental health services

Since April 2020, the AIHW has compiled and reported mental health-related data, as part of the National Suicide and Self-harm Monitoring Project. Data from the Medicare Benefits Schedule (MBS), Pharmaceutical Benefits Scheme (PBS), and crisis and support organisations (Lifeline, Beyond Blue, Kids Helpline) were collected weekly in 2020, fortnightly in 2021 and monthly in 2022. These data are shared within government to inform the mental health response to the COVID-19 pandemic. The most current data are available at Mental health services in Australia.

Increased demand for mental health services and crisis and support organisations in 2020 and 2021

These data show that since the onset of COVID-19, there has been a substantial increase in the use of crisis and support organisations (as measured by the number of calls or other contacts, such as webchat or email) and mental health services (as measured by MBS claims processed). The extent to which this increase in demand has been driven by a rise in psychological distress (rather than an increase in people seeking assistance for other reasons, such as loneliness or concern about contracting COVID-19) is unclear. However, given a range of survey data indicate that the average level of psychological distress rose in Australia in 2020 and 2021 from pre-pandemic levels (see psychological distress below), increased demand for mental health services and crisis and support organisations is almost certainly indicative of an increase in the need for mental health support and assistance as a result of the pandemic.

Psychological distress

Psychological distress is commonly measured using the Kessler Psychological Distress Scale—10 items (K10). The K10 questionnaire was developed to yield a global measure of psychological distress, based on questions about people’s level of nervousness, agitation, psychological fatigue and depression in the past 4 weeks. The Kessler 6 Scale is an abbreviated version of K10.

There is a correlation between high levels of psychological distress and common mental health disorders. As a result, instruments such as K10 and K6 can be used in representative sample surveys to track changes in the prevalence of these disorders in the Australian population. This is important, as there is an association between mental health issues and deaths by suicide. Data from the Queensland Suicide Register for 2015–17 based on police and coroners reports, show that 46.1% of people who died from suicide were reported to have a had a mental health problem (Leske et al. 2021). Leske et al. (2021) note that this is likely to be an underestimate. Also, around 66% of people who died by suicide in 2020 had mental and behavioural disorders recorded as an associated cause of death (ABS 2021a).

There are several ways to gain insights into the level of psychological distress in the community, and monitor trends over particular time periods.

One way is to look at trends in the use of mental health services. The AIHW compiled data each week during 2020 and fortnightly in 2021 on the use of mental health services and crisis and support organisations during the COVID-19 pandemic. The most current data are available at MHSA. However, while this approach is useful, it is not a direct measure of the level of psychological distress in the population as it does not capture those who choose not to seek assistance or those who cannot access mental health services or crisis and support organisations.
Another way to analyse trends in the level of psychological distress since the onset of the pandemic is to use sample surveys. This approach has been challenging since the onset of COVID-19 due to the fact that face-to-face surveys are very difficult to undertake at this time and pose a potential health and safety risk to interviewers and interviewees. This has led to a number of online surveys being conducted but many of these surveys are not based on probability sampling. In some cases, samples are drawn by inviting all members of the public above a certain age to respond, with unknown response rates. Other samples are drawn from panels where individuals opt-in online. While this sort of approach can provide some useful information, especially regarding associations between factors that may affect outcomes for respondents, results may not be representative of the Australian population and therefore cannot be used, even with reweighting, to derive estimates for the Australian population. A major report on online panels for the American Association for Public Opinion Research (AAPOR 2010) noted that:

Researchers should avoid nonprobability online panels when one of the research objectives is to accurately estimate population values. There currently is no generally accepted theoretical basis from which to claim that survey results using samples from nonprobability online panels are projectable to the general population. Thus, claims of “representativeness” should be avoided when using these sample sources. Given the need for representative data, the AIHW collaborated with the Centre for Social Research and Methods at the Australian National University to include questions on loneliness and levels of psychological distress in the ANUpoll surveys, which collect data from the Life in Australia Panel. Importantly, this panel uses random probability-based sampling methods and covers both online and offline populations (that is, people who do and do not have access to the internet). In addition, as a panel it is possible to obtain longitudinal data from the same respondents prior to the spread of COVID-19, which provides richer information than a series of cross-sectional snapshots, especially with regards to changes over time. Data on psychological distress were collected in April, May, August, October and November 2020, January, April, August and October 2021 and January 2022.

**Pre COVID–19 snapshot**

To understand how COVID–19 may have affected Australians’ levels of psychological distress, it is important to look at data from before the pandemic. It is particularly important to consider any existing trends prior to the pandemic—for example, if psychological distress was generally increasing among Australians in the years before COVID-19.

This is possible using results from the Australian Bureau of Statistics’ National Health Survey (NHS), which is conducted approximately every 3 years. Tables 1 to 3 show the proportion of males, females and people with high or very high levels of psychological distress as measured by the Kessler 10 Scale from 2004–05 to 2017–18. While the results vary by age, there is no consistent trend over this period. It is worth noting, however, that young women aged 18–24 generally have higher levels of psychological distress than other age groups. From 2011–12 to 2017–18 there have been small increases in the proportion of both males and females with high or very high levels of psychological distress, albeit with important fluctuations over time.

The National Drug Strategy Household Survey (NDSHS) also showed that the proportion of people who reported experiencing high or very high levels of psychological distress increased from 10% in 2010 to 14% in 2019 (AIHW 2020).

### Table 1: Proportion of persons with high/very high psychological distress, by age group and year

<table>
<thead>
<tr>
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<th>18-24</th>
<th>25-34</th>
<th>35-44</th>
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<th>65-74</th>
<th>75+</th>
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<tr>
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<td>11.8</td>
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<td>14.4</td>
<td>10.7</td>
<td>8.8</td>
<td>13.0</td>
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</table>

Source: ABS 4364.0.55.001 - National Health Survey

### Table 2: Proportion of males with high/very high psychological distress, by age group and year

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<tr>
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<th>18-24</th>
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<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
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<th>Total</th>
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<td>2017-18</td>
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<td>10.3</td>
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<td>11.3</td>
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Source: ABS 4364.0.55.001 - National Health Survey

### Table 3: Proportion of females with high/very high psychological distress, by age group and year

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<th>45-54</th>
<th>55-64</th>
<th>65-74</th>
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<td>14.9</td>
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<tr>
<td>2014-15</td>
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<td>9.7</td>
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<tr>
<td>2017-18</td>
<td>15.2</td>
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<td>14.4</td>
<td>10.7</td>
<td>8.8</td>
<td>13.0</td>
</tr>
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The initial results from the Australian Bureau of Statistics’ National Study of Mental Health and Wellbeing, 2020–21 showed that 15% of Australians aged 16-85 experienced high or very high levels of psychological distress as measured by the Kessler 10 scale in 2020-21 (ABS 2021b). However, being from a different survey, these results are not directly comparable with the pre-COVID-19 results from the NHS or NDSHS.

The ANUpoll collected data on psychological distress using the K6 scale prior to and during the COVID-19 pandemic. Data were collected from 2,500 respondents in 2017 (February), and over 3,000 respondents in 2020 (April, August, October and November), 2021 (January, April, August and October) and 2022 (January).

Prevalence of ‘severe’ psychological distress in 2020, 2021 and 2022

The K6 scale can be used to categorise those survey respondents experiencing ‘severe’ psychological distress, consistent with having a ‘probable serious mental illness’ according to their K6 score. Figure 1, below, shows the proportion of people experiencing severe psychological distress for each of wave of the ANUpoll during the COVID-19 pandemic as well as prior to the pandemic in February 2017.

Results of the surveys show that the proportion of the population experiencing severe psychological distress rose from 8.4% (of people aged 18+) in February 2017 to 10.6% in April 2020 (Biddle et al. 2020b) with a subsequent fall to 9.7% in May 2020 followed by an increase to 10.9% in October 2020, and a substantial decrease to 9.4% in January 2021 (Biddle & Gray 2021b). The proportion of people experiencing severe psychological distress in August 2021 (10.1%) was similar to April 2021 (9.7%) and continued to be significantly higher than in February 2017 (8.4%) (Biddle et al. 2021c). Between August and October 2021, there was a large and statistically significant increase in the proportion of Australians experiencing severe psychological distress from 10.1% to 12.5%. At 12.5% in October this proportion was at its highest level recorded since the onset of the COVID-19 pandemic (Biddle et al. 2021d). The Proportion of people experiencing severe psychological distress declined to 11.0% in January 2022, however the change was not statistically significant (Biddle & Gray 2022).

Figure 1: Proportion of Australians aged 18 years and over experiencing severe psychological distress, by survey month from February 2017 to January 2022
Another way of analysing trends in psychological distress is to look at how the average K6 score has changed over time. The data show some noteworthy changes in the level of psychological distress in 2020 and 2021 with marked differences by age and some variation by gender and jurisdiction. The K6 measure of psychological distress used in the analysis prepared by the ANU has been constructed to have a minimum value of 6 and a maximum value of 30 (Biddle et al. 2020c). Higher scores indicate higher average levels of distress. People with a sum of 11-18 out of a possible maximum of 30 are categorised as experiencing ‘moderate’ psychological distress. This group can be considered to be struggling with mental distress worthy of mental health support but are not at risk of clinical levels of mental health problems (Prochaska et al. 2012). Those with a K6 sum of 19 or higher out of a possible maximum of 30 are categorised as experiencing ‘severe’ psychological distress consistent with having a ‘probable serious mental illness’.

In February 2017, the average K6 score was 11.2. In April 2020, it increased to 11.9. Between April and May 2020 there was a significant reduction in psychological distress (to an average score of 11.5); however, the score remained above the pre-COVID-19 level of February 2017. The average score rose from 11.5 in May 2020 to 11.7 in August 2020 but showed very little change from August to October 2020 (11.8) (Biddle & Gray 2020). This was followed by a large and statistically significant fall in the average K6 score from October to November 2020 (11.4) (Biddle et al. 2020e). While the average score in November 2020 was quite a bit lower than it was in April 2020 it was higher than it was prior to the onset of COVID-19 in February 2017.

From November 2020 to January 2021, the average K6 score fell from 11.4 to 11.2 and continued to decline to 11.1 in April 2021 (Biddle & Gray 2021b). In August 2021, following the most recent outbreak of COVID-19, the average K6 score increased (worsened) to 11.3 but remained lower than scores recorded in April to October 2020. The increase in psychological distress between April and August 2021 was greater for women than men (after controlling for levels of psychological distress in April 2021). Also, after controlling for other factors, women had higher levels of psychological distress in August 2021 compared with men (Biddle & Gray 2021c).

The average level of psychological distress in August 2021 (11.3) was not significantly different to the pre-pandemic level (11.2) observed in February 2017 (Biddle & Gray 2021c). In other words, the average level of psychological distress had returned to pre-COVID-19 levels. That said, however, there were differences by age (Figure 2).

Between August and October 2021, the average level of psychological distress increased significantly from 11.3 to 11.7 but remained lower than the peaks April and October 2020 (11.9 and 11.8, respectively) (Biddle & Gray 2021d). The worsening of psychological distress between August and October 2021 was due to increases among people aged 18 to 44 years and 75 years and older (Figure 2). Between October 2021 and January 2022, there was a slight but not statistically significant decline in average psychological distress from 11.7 to 11.6 (Biddle & Gray 2022).

**Psychological distress by age**

Figure 2 shows average K6 scores by age groups. The chart shows a clear gradient with younger people experiencing higher average levels of psychological distress than people in older age groups (Biddle et al. 2020c,d; Biddle & Gray 2020; Biddle & Gray 2021a,b,c,d). The chart also shows a very distinct pattern over time. For younger people (18-44), average levels of psychological distress were higher in 2020 and 2021 than they were before the pandemic, especially for those aged 18-24, while those aged 45 and above experienced either little change or improvements in their level of psychological distress. As an example, the average levels of psychological distress among those aged 18-24, 25-34 and 35-44 were significantly higher in April 2020 than in February 2017 (Biddle et al. 2020c). However, it is worth noting there were improvements during the course of 2020. For example, the level of psychological distress among those aged 18-24 showed a significant improvement from October to November 2020 (Biddle et al. 2020e).

**Figure 2: K6 measure of psychological distress, by age group and selected survey months from February 2017 to January 2022**

This figure shows the average K-6 measure of psychological distress by age group for February 2017, April 2020, October 2021 and January 2022. For young Australians (18 to 24 year olds in particular, but also all those aged under 45), there was a worsening in psychological distress between February 2017 and April 2020. Although there were improvements in psychological distress in these age groups psychological distress remained higher in October 2021 and January 2022 than it was in February 2017. For those aged 55 years and over, average levels of psychological distress were slightly lower in January 2022 than in February 2017.
What contributed to increased levels of psychological distress?

The heightened level of psychological distress in April 2020 coincided with the first wave of COVID-19 infections in Australia and the initial lockdown period, while the improvement from April to May 2020 coincided with the loosening of restrictions. The worsening in the level of psychological distress between May and August 2020 coincided with the second wave of COVID-19 in Victoria and the associated lockdown - with much of the worsening in the average K6 score over this period reflecting changes in Victoria (Biddle & Gray 2020).

To test whether outcomes worsened in Victoria relative to the rest of the country after the reintroduction of lockdowns in July 2020, Biddle et al. conducted a difference-in-difference analysis using linked data for May and August (that is, data across these months for the same people) (Biddle et al. 2020d). This showed a significant worsening in Victoria relative to the rest of the country on several outcomes including: psychological distress, loneliness, life satisfaction, satisfaction with direction of country, likely to be infected by COVID-19 and hours worked). On the other hand, the decrease in levels of psychological distress from October to November 2020 coincided with improvements in Victoria. According to Biddle et al. (2020e):

There has also been a continued convergence in psychological distress between Victoria and the rest of Australia. In October 2020, just as lockdown conditions had started to be eased, psychological distress in Victoria was more than 1-point higher in Victoria compared to the rest of Australia (12.67 compared to 11.52). By November 2020, however, this difference had declined to less than half of one point – 11.73 compared to 11.32.

In 2021, the worsening of psychological distress between April and August was greater for residents of Sydney and Melbourne than those living in the rest of Australia (Biddle & Gray 2021c). The increase in psychological distress from August and October 2021 did not show a clear geographic pattern.

One of the advantages of the data collected through ANUpoll is the fact that longitudinal data are available for a proportion of respondents. This makes it possible to model the factors that appear to be contributing to rises in the level of psychological distress during the pandemic using regression analysis (Biddle et al. 2020c). Modelling of ANUpoll data collected from the same respondents in February 2017, April 2020 and May 2020 showed that the strongest predictor of psychological distress (K6 score) was ‘increased (worsened) stress’ (this is not surprising as stress is a key predictor of poor mental health outcomes) (Biddle et al. 2020c). ‘Increased loneliness’ was also a strong predictor of K6 scores even when other factors like changes in employment status were controlled for. This suggests that increased loneliness during the pandemic is of concern and that increases in psychological distress are not only being driven by job loss.

Job loss itself was a predictor of K6 scores in the modelling (Biddle et al. 2020c). Controlling for other factors, people who were employed in February 2020 but not in May 2020 had higher levels of psychological distress than those who were employed. Interestingly, in all the models, those living outside capital cities had lower rates of psychological distress than those living in capital cities, after controlling for other factors (Biddle et al. 2020c). This is probably a reflection of the fact that infection rates and the economic impacts of lockdowns have been higher in major cities than they have been in regional or remote areas.

After controlling for factors such as ‘relationships worsening’, ‘increased stress’ and ‘loss of employment’, there was no significant difference in K6 scores between young people (18-24) and older people. This suggests that these factors were the drivers of higher levels of psychological distress among young people.
One final point worth noting is that in the regression analysis of K6 scores, previous K6 scores in February 2017 had a significant predictive effect on K6 scores for May 2020 (Biddle et al. 2020c). This shows that people who are already experiencing high levels of psychological distress can be particularly vulnerable when the situation worsens.

Loneliness

The ANUpoll also asked respondents whether 'In the past week, how often have you felt lonely?' Analysis summarised in Biddle et al. (2020c) shows that those who experienced loneliness had higher rates of psychological distress than those who did not.

Between April 2020 and May 2020, there was a significant decline in experiences of loneliness overall, with 36.1% of the sample saying that they experienced loneliness at least some of the time in May 2020, compared with 45.8% in April 2020 (Biddle et al. 2020c). Declines in loneliness were consistent by age and sex, with the exception of young people (aged 18-24) who did not have a statistically significant reduction in the level of loneliness from April to May 2020 - despite the fact that they had the highest proportion of respondents saying that they felt lonely at least some of the time in April 2020 (63.3%) (Biddle et al. 2020c).

There was a rise in reported loneliness from 36.1% in May 2020 to 40.5% in August 2020 (Biddle et al. 2020d). However, this rise only occurred in Victoria where the proportion of the population who were lonely at least some of the time increased from 35.7% in May 2020 to 44.5% in August 2020; in ‘the other seven States and Territories, there was no significant difference between loneliness in May 2020 (37.1%) and August 2020 (38.8%)’ (Biddle et al. 2020d). The increase in loneliness from May 2020 to August 2020 in Victoria coincided with the lockdown associated with the second wave of COVID-19 infections.

Females were more likely to report experiencing loneliness than males (44.8% of females compared with 35.7% of males in August 2020). The proportion of young people aged 18-24 years who were experiencing loneliness in August 2020 was also higher than for other ages groups (Biddle et al. 2020d).

The proportion of Australians who said that they had experienced loneliness at least some of the time declined from 40.5% in August 2020 to 35.2% in November 2020 (Biddle et al. 2020e). This is the lowest value observed over the COVID-19 period so far. In addition, according to Biddle et al (2020e):

There has been a very large decline in the proportion of Australians who said that they ‘never met socially with friends, relatives or work colleagues’ since the early days of the pandemic. In April 2020, 49.4% of Australians said they ‘never met socially’. This declined to 26.5% by May 2020, and even further to 6.8% in November 2020. While this is a dramatic change over a reasonably short period of time, the level of social isolation in November 2020 is still above the pre-pandemic level of 2.0 per cent [recorded in February 2020].

The proportion of Australians who said that they had experienced loneliness at least some of the time remained fairly consistent from November 2020 (35.2%) to January 2021 (36.1%) and April 2021 (35.5%), and increased slightly in August 2021 (37.6%) (Biddle & Gray 2021a & c). However, the increase in loneliness in August 2021 was mainly due to a large increase in Sydney, with the proportion of Sydney residents experiencing loneliness at least some of the time increasing from 35.3% in April 2021 to 44.3% in August 2021, while the rest of Australia reported little change in this period (34.6% in August 2021 compared with 34.0% in April 2021). At the time of the August 2021 survey, Sydney had been in lockdown for the longest amount of time during COVID-19 Delta strain outbreak. The proportion of Australians who said that they had experienced loneliness at least some of the time increased in October 2021 (39.1%) (Biddle 2021) and then decreased in January 2022 (38.1%) (Biddle 2022) but remained above the lows from November 2020 to April 2021 (Biddle & Gray 2022).

Loneliness has a clear impact on levels of psychological distress and life satisfaction. In a regression analysis of data from the November 2020 ANUpoll (that controlled for psychological distress in April 2020) those who felt lonely ‘some’, ‘occasionally’ or ‘most’ of the time all had significantly higher levels of psychological distress than others (Biddle et al 2020e). This suggests that reductions in loneliness may contribute to reductions in levels of psychological distress. Similar results are evident for life satisfaction - that is, after controlling for life satisfaction in April 2020, people who reported feeling lonely at least some of the time had significantly lower levels of life satisfaction than others.

Life satisfaction

Another way of tracking wellbeing is to analyse changes in life satisfaction. In the ANUpoll surveys life satisfaction is measured on a scale of 1 to 10, with higher scores indicating higher levels of satisfaction. Average life satisfaction scores fell substantially during the early stages of the pandemic from 6.9 in January 2020 to 6.5 in April 2020, before rising to 6.8 in May 2020 as infection rates fell and lockdown conditions started to be eased (Biddle et al. 2020d). The average level of satisfaction then fell to 6.6 in August 2020. However, between October and November 2020, life satisfaction improved substantially from an average score of 6.7 to 7.0. Importantly, the average life satisfaction score was no longer significantly different to that recorded in October 2019 (7.1), and was slightly higher than that recorded during the Black Summer Bushfire crisis (6.9 in January 2020) (Biddle et al. 2020e).

Although the overall level of life satisfaction in November 2020 had returned to pre-COVID levels (October 2019) there was a substantial reduction in life satisfaction scores during 2020. A regression analysis conducted in November 2020 using the longitudinal nature of the ANUpoll data, suggested that after controlling for the level of life satisfaction in January 2020, the total loss of life satisfaction over 2020 was:

- significantly higher for people living in Victoria compared with the rest of the Australian population
- lower for those aged 55 years and over compared with those aged 35-44
- lower for those who were living outside the capital cities (Biddle et al. 2020e).
This is consistent with what you would expect given the greater impact of, among other things, lockdowns (through, for example, their impact on employment) for younger people, people in Victoria and people living in capital cities.

Nationally, the average life satisfaction score showed little change from November 2020 (7.0) to January 2021 (7.0), and then declined slightly to 6.9 in April 2021, although the difference was not statistically significant (Biddle & Gray 2021a,b).

In August 2021, the average life satisfaction score in Australia decreased substantially to 6.5, to a level similar to that reported in April 2020 at the peak of the first wave of COVID-19 in Australia and was lower than all other time points measured by ANUPoll (Biddle & Gray 2021c). In order to illustrate the magnitude of the decline in life satisfaction between April and August 2021, Biddle & Gray (2021c) converted the decline into income equivalents, based on the relationship between life satisfaction and household income prior to the pandemic. This model estimated that the decrease in life satisfaction reported between April and August 2021 was equivalent to a loss of $827 in average weekly household income (Biddle & Gray 2021c).

There was a slight increase in life satisfaction between August 2021 and October 2021, from 6.5 to 6.6. The October ANUPoll was conducted in mid-October when COVID-19 restrictions were beginning to be lifted. Life satisfaction remained at 6.6 in January 2022, still lower than the levels observed pre-COVID-19 and from November 2020 to April 2021 (Biddle & Gray 2021d, 2022).

Data on deaths by suicide

There has been considerable commentary since the start of the pandemic on its potential to impact on the incidence of deaths by suicide. Much of this commentary has been based on modelling using previous experience including the relationship between unemployment and deaths by suicide. However, evidence to-date does not indicate an increase in suicide deaths in Australia during the COVID-19 pandemic.

National mortality data published by the Australian Bureau of Statistics show that the rate of death by suicide in Australia was lower in 2020 (12.1 per 100,000 population) than in 2019 (12.9 per 100,000 population), see Deaths by suicide over time. That said, Australian Bureau of Statistics coding of psychosocial risk factors associated with deaths by suicide in 2020 determined that 3.2% of these deaths had the COVID-19 pandemic mentioned in either a police or pathology report or a coronial finding. In most of these cases, other risk factors for suicide were also present, see Psychosocial risk factors and deaths by suicide.

Internationally, a ‘living systematic review’ (John et al. 2021) based on evidence until 19 October 2020, has concluded that:

- There was no consistent evidence of a rise in suicide but many studies noted adverse economic effects were evolving. There was evidence of a rise in community distress, fall in hospital presentation for suicidal behaviour and early evidence of an increased frequency of suicidal thoughts in those who had become infected with COVID-19. This living review provides a regular synthesis of the most up-to-date research evidence to guide public health and clinical policy to mitigate the impact of COVID-19 on suicide risk as the longer term impacts of the pandemic on suicide risk are researched.

A study on trends in suicide deaths during the first 4 months of pandemic (1 April to 31 July 2020), which included Australian data from suicide registers in New South Wales, Queensland and Victoria, found that (Pirkis et al. 2021):

- In high-income and upper-middle-income countries, suicide numbers have remained largely unchanged or declined in the early months of the pandemic compared with expected levels based on the pre-pandemic period.

Since 2020, suicide registers in Victoria and New South Wales have regularly published data on suspected deaths by suicide in 2019, 2020 and 2021. The Suicide in Queensland: Annual Report 2021 (Leske et al. 2021) included data on suspected deaths by suicide from the interim Queensland Suicide Register (IQSR) from 2018 to 2020. The number of suspected deaths by suicide recorded in suicide registers fluctuates from year to year and, while there have been increases and decreases in some jurisdictions in 2020 and 2021 compared with 2019, there is no evidence to-date that COVID-19 has affected the overall number of suicide deaths. For more information see Suspected deaths by suicide.

While COVID-19 does not appear to have affected suicide rates in Queensland compared with previous reports, the following is worth noting (Leske et al. 2021):

The 2020 IQSR data show that between 1 March and 31 December 2020, COVID-19 appeared to affect 53 of 639 suspected suicides (8.3%), according to police reports. COVID-19 may have influenced suspected suicides through effects on employment (22 people); affecting mood, coping, stress and anxiety (15 people); social isolation (9 people); impacts on finances (7 people); changes in access to healthcare support and items (5 people); relationship breakdown or activity interruption (less than 5 people). These reported influences overlapped and are associated with known risk factors for suicide.

It is true that some key risk factors associated with deaths by suicide did worsen following the onset of COVID-19. For example, there were considerable job losses and rises in the level of psychological distress. On the other hand, it is possible that a general sense of 'we are all in this together' could have a protective impact. From February to April 2020 there were rises in the level of trust in others and in governments in Australia (Biddle et al. 2020a). In addition, the vast majority of people who experience unemployment or high levels of psychological distress or mental health issues will never experience a suicide attempt. That said, it is very important to monitor trends in risk factors and trends in deaths by suicide in real time.

Another factor that should be considered is the impact of both JobKeeper and the JobSeeker supplement. This is important given the association between the risk of dying by suicide and socioeconomic outcomes. Modelling undertaken by the ANU suggests that not only were levels of poverty and housing stress lower than they otherwise would have been as a result of these payments, they were also lower than they were prior to the spread of COVID-19 (Philips et al. 2020). Households who mainly relied on the JobSeeker payment prior to COVID-19 and the introduction of the JobSeeker supplement saw their poverty rate fall from 67% prior to COVID-19 to 6.8% (Philips et al. 2020). On a similar note Biddle et al. (2020d) found that real incomes actually rose for those in the bottom decile of the income distribution from...
February to August 2020. Using data from the Taking the Pulse of the Nation Survey, Botha et al. (2020) have shown that the level of psychological distress among the unemployed has fallen since May 2020. The ANU modelling suggests that the protective impact of JobKeeper and the JobSeeker supplement on housing stress and poverty were reduced somewhat by the changes to these payments announced in July (Phillips et al. 2020).

**Ambulance attendances**

A key part of the National Suicide and Self-harm Monitoring Project is the compilation and coding of data from ambulance attendances. The National Ambulance Surveillance System (NASS), established in 2020, provides data on ambulance attendances for suicidal and self-harm behaviours for New South Wales, Victoria, Queensland, Tasmania and the Australian Capital Territory. The NASS is a partnership between Turning Point, Monash University and jurisdictional ambulance services across Australia. Comprehensive data from the NASS are reported in *Ambulance attendances: suicidal and self-harm behaviours*.

In 2020, prior to the establishment of the NASS, the AIHW asked Turning Point if they could prioritise the coding of data for Victoria. Victoria was chosen as monthly data on ambulance attendances were already being compiled for the Victorian Government and there were concerns about the impact of the Melbourne lockdown on suicide and self-harm behaviours.

Monthly data on the number of ambulance attendances related to suicide attempts in Victoria from 2018 to 2020 are shown in Figure 3. As the figure shows, there is no clear difference from 2018 to 2020. The total number of ambulance attendances related to suicide attempts in Victoria in 2020 was 4% lower than in 2019 but 8% higher than in 2018.

Interestingly, in 2020, there was an 11% increase in the total number of ambulance attendances in Victoria relating to suicidal ideation (thinking about suicide), compared with 2019, with the increase more pronounced in the second half of 2020. There was also an increase in the total number of mental health attendances (16% higher in 2020 than in 2019). This is consistent with the overall greater use of mental health services in 2020 that is evident in other data. This highlights the fact that greater use of, and need for, mental health services does not necessarily equate to trends in the number of suicide attempts. The vast bulk of people who use mental health services will never have a suicide attempt but timely access to mental health services may reduce the number of deaths by suicide. The total number of ambulance attendances for self-injury in Victoria in 2020 was considerably higher (33%) than in 2019. This highlights the fact that self-injury and suicide attempts are not the same thing.

**Figure 3: Monthly ambulance attendances for suicide attempts, Victoria, 2018-2020**

![Graph showing monthly ambulance attendances for suicide attempts in Victoria, 2018-2020](image)

**References**


Suicide & self-harm monitoring

Suicide & self-harm monitoring: Geography

Reporting deaths by suicide and hospitalisations for intentional self-harm at smaller, more ‘localised’ geographical areas, can reveal information that may be masked by reporting for the whole of Australia or by states and territories—allowing for a better understanding of suicidal behaviours for local communities, policymakers and researchers.

Although suicide has a significant impact on the community, it is a relatively rare cause of death in Australia meaning that depending on the level of geography considered, there may be areas where there are very few—or even no—deaths by suicide recorded in a given year. The number of hospitalisations for intentional self-harm are approximately 10 times that of deaths by suicide; however, further disaggregation (or breakdown) of the data by age or sex reduces the numbers of events able to be reported for each group in each small geographical area in a single year. Strict privacy and confidentiality controls or concerns regarding statistical reliability mean that small numbers (or rates based on them) cannot be publicly reported, thereby reducing the coverage of reportable data as smaller geographical areas are considered.

Numbers and age-standardised rates (where they could be reliably calculated) of deaths by suicide and hospitalisations for intentional self-harm have been reported by PHN area and Statistical Areas level 3 and 4. For the reporting of suicide and hospitalised intentional self-harm data by Statistical Area, the smallest possible geographical area has been used while still allowing for maximum coverage of reportable data across these small geographical areas.

This section also contains global statistics on suicide—intended to provide a broad view of the issue across the world.
Deaths by suicide by remoteness areas

About 28% of the Australian population live in regional and remote areas—areas outside Australia’s major cities. There are many positive aspects about living in regional and remote areas, including higher levels of life satisfaction compared with those in urban areas (Wilkins 2015), increased community interconnectedness and social cohesion, and higher levels of community participation, volunteering and informal support from their communities (Ziersch et al. 2009). However, Australians living in these areas face unique challenges due to their geographic isolation, and often have poorer health and welfare outcomes than those living in major cities.

For further information on how the statistics reported here were calculated see Technical notes.

Suicide deaths by remoteness area, Australia, 2010 to 2020.

The line graph shows the age-standardised rates of suicide for Very Remote, Remote, Outer Regional and Inner Regional areas and Major Cities from 2010 to 2020. Users can also choose to view age-standardised rates and numbers of deaths by suicide for remoteness areas by sex. Between 2010 and 2020, residents of Very Remote areas had the highest rates of suicide, except for 2015, when the highest rates were in Remote areas, followed by Outer Regional areas and then Very Remote areas. Major Cities recorded the lowest rates of deaths by suicide over the period. Very Remote areas had 2.2 times the rate of Major Cities in 2020 (10.3 deaths per 100,000 population compared with 22.9).

Are people in regional and remote areas at greater risk of deaths by suicide?

From 2010 to 2020:
numbers of deaths by suicide were highest in Major Cities and fell as remoteness increased, while age-standardised suicide rates tended to increase with the increasing remoteness.

- suicide rates for residents of Major Cities were the lowest of all 5 remoteness areas each year and remained relatively stable over the period (ranging from 9.5 deaths per 100,000 population in 2011 to 11.7 in 2017).
- suicide rates in Very Remote areas generally increased from 22.2 deaths per 100,000 population in 2010 to 29.4 in 2019, falling to 22.9 in 2020. Fluctuations in rates are due largely to the small population and small numbers of deaths by suicide in these areas.
- suicide rates for residents of Inner Regional, Outer Regional and Remote areas also fluctuated over the period from 12.6, 14.4 and 17.5 deaths per 100,000 population to 15.1, 19.3 and 18.0, respectively.
- the greatest proportion of deaths by suicide occurred in Major Cities and remained relatively stable at 61-65% over the period.

In 2020:

- the age-standardised suicide rate for residents of Major Cities (10.3 deaths per 100,000 population) was lower than the national rate of 12.1 deaths per 100,000 population.
- rates for residents of all other remoteness areas were above the national rate.
- the rate for residents of Very Remote areas (22.9 deaths per 100,000 population) was 2.2 times that of the rate for residents of Major Cities (10.3 deaths per 100,000 population); however, numbers of deaths were small (46 deaths in Very Remote areas and 1,954 in Major Cities).
- the proportion of deaths by suicide occurring in Major Cities in 2020 was 63%.

References


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Intentional self-harm hospitalisations, by remoteness areas, Australia, 2012–13 to 2019–20

Are people in regional and remote areas at greater risk of intentional self-harm hospitalisations?

In 2019–20:
residents of Very Remote areas recorded a rate of 198 hospitalisations per 100,000 population, almost double that of residents in Major Cities (102) which recorded the lowest rate

the majority of intentional self-harm hospitalisations were residents of Major Cities (65%)

young people aged 15-19 had the highest rates of intentional self-harm hospitalisations in each remoteness area except Remote where 20-24 year olds had the highest rate

the highest rate of intentional self-harm hospitalisations overall was in the 20-24 age group in Remote areas (756 hospitalisations per 100,000 population), followed by those aged 15-19 in the same area (677).

A similar pattern was seen with deaths by suicide as age-standardised suicide rates tended to increase with remoteness of place of residence see Suicide by remoteness areas.

How have rates of intentional self-harm hospitalisations changed for remoteness areas?

Between 2012-13 and 2019-20:

overall rates of intentional self-harm hospitalisations tended to increase in Very Remote (from 172 to 198 hospitalisations per 100,000 population), Remote (from 146 per 100,000 population to 189) and, to a lesser extent, Outer Regional areas (from 136 per 100,000 population to 146)

rates fell in Inner Regional (from 126 to 119), and Major Cities (112 to 102) areas over this period

the highest increases in rates of intentional self-harm hospitalisations occurred in those aged 20-24 (from 341 hospitalisations per 100,000 population to 756), 15-19 (465 to 677) and 40-44 (195 to 378) in Remote areas however, the number of hospitalisations for intentional self-harm for each of these groups was relatively small.
Deaths by suicide, by Primary Health Network areas

Where people live can impact on their risk of suicide and also their access to services. Reporting rates or numbers of deaths by suicide at Primary Health Network (PHN) areas allows for more localised information that may provide a better understanding of the incidence of deaths by suicide in the local community and allow clinicians, policymakers and researchers to better plan services or suicide prevention activities.

PHNs are organisations that connect health services across a specific geographic area (PHN areas). There are 31 PHN areas that cover the whole of Australia with the boundaries defined by the Australian Government Department of Health (https://www1.health.gov.au/internet/main/publishing.nsf/content/phn-maps-aust). For further information on how the statistics reported here were calculated see Technical notes.

Suicide deaths by Primary Health Network areas, Australia, 2010 to 2020.

The line graph shows the age-standardised rates of suicide for Australia and the Adelaide Primary Health Network (PHN) area from 2010 to 2020. Unlabelled and greyed rates for other PHNs are also displayed on the graph to show the range of rates across all 31 PHNs in Australia from 2010 to 2020. Users can choose to view age-standardised rates and numbers of deaths by suicide by selected PHN. From 2010 to 2020, the age-standardised rates of deaths by suicide across PHN areas generally ranged between 5.5 and 22.3 per 100,000 population with the Australian rate ranging between 10.5 and 13.2 over the same period.
How do suicide rates vary among PHN areas?

In 2020:
- age-standardised rates and numbers of deaths by suicide varied across PHN areas, ranging from 5.9 deaths per 100,000 population in the Western Sydney PHN area to 20.9 in the Country Western Australia PHN area.
- the greatest number of deaths by suicide occurred in the Hunter New England and Central Coast PHN (194), which also had the highest number of deaths since 2016.

Data are not published for PHN areas where there are small numbers of deaths by suicide due to privacy and confidentiality concerns or other concerns about the quality of the data (for example, age-standardised rates cannot be published for Western Queensland for most years).
Suicide & self-harm monitoring

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Intentional self-harm hospitalisations by PHN areas

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see the Technical notes.

The reporting of rates of intentional self-harm hospitalisations by PHN areas can provide localised information to enable PHNs to identify and investigate areas requiring more coordination of care to patients, by working directly with key primary and secondary health care providers and hospitals.

Intentional self-harm hospitalisations, by age and sex, by Primary Health Network areas, Australia, 2019-20.

The distribution plot shows the age-specific rates of intentional self-harm hospitalisations for males and females by all ages and broad age groups (0-24, 25-44, 45-64, 65 and over) for Primary Health Networks (PHNs) in 2019-20. Users can also choose to view horizontal stacked bar charts showing numbers and proportion of intentional self-harm hospitalisations for PHNs by all ages and age groups by sex. Rates for all ages were lowest in the Northern Sydney PHN for males (37.8 per 100,000 population) and Western Sydney PHN for females (71.5). Rates for all ages were highest in Western Queensland PHN for males (235.8) and Brisbane North PHN for females (221.9).

How do rates of intentional self-harm hospitalisations vary across PHN areas?

The rates of hospitalisations for intentional self-harm in 2019-20 varied greatly by PHN area.
In 2019–20:

- the Western Queensland PHN area had the highest rate (317 hospitalisations per 100,000 population), while the Western Sydney PHN area had the lowest rate (56) (Supplementary table National Hospital Morbidity Database NHMD S7)
- the greatest number of intentional self-harm hospitalisations were in Brisbane South PHN (just over 2,000) and the fewest in Western Queensland PHN (around 200).

In 2019–20, rates of intentional self-harm hospitalisation for females tended to be highest in those aged 24 and below.

- The highest rate of hospitalisation for intentional self-harm for females aged 24 and below was in the Western Queensland PHN area (522 per 100,000 population; 52 hospitalisations).
- The next highest rate for females aged 24 and below was in the Northern Territory PHN (382 per 100,000 population; 155 hospitalisations).

The highest rates of hospitalisations for intentional self-harm for males tended to be in the older age group, 25-44.

- The Western Queensland PHN area reported the highest rate for males in the 25-44 age group (335 per 100,000 population; 29 hospitalisations) followed by Northern Territory PHN (280 per 100,000 population; 120 hospitalisations).

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Deaths by suicide, by local areas

Suicide incidence data in local communities provide insight into small populations and the variability of suicide rates across Australia. This is particularly pertinent for suicide prevention activities.

Deaths by suicide data have been aggregated (pooled) over two 5 year periods (2014–18 and 2015–2019) at Statistical area level 3 (SA3) to maximise coverage, while still addressing privacy concerns. To allow for further disaggregation by sex, these data are reported at the Statistical area level 4 (SA4).

Direct estimates of suicide rates based on small numbers can be highly variable from year to year. Rates based on 20 or fewer deaths over the 5-year period in each small geographic area have not been reported due to privacy and confidentiality issues and statistical concerns. See Technical notes to ensure the data are interpreted appropriately.

How to use these maps

Use the zoom and search functions to explore the map. Click on an area in the map to view additional information. Change maps by clicking on the folder icon in the top right. The colour shading indicates different rates of deaths by suicide, with darker shades indicating a higher rate.

For the best experience, use Chrome, Edge or Firefox browsers. For more information on browser compatibility, see Supported browsers.

Deaths by suicide by SA3 areas, Australia, 2015-19.

The map shows the crude rate and number of deaths by suicide for persons by all ages for SA3 areas in Australia aggregated over 5 years (2015-19). Users can also choose to view maps showing crude rates and numbers of deaths by suicide for males and females by SA4 areas.

Over the 5-year period 2015-19, reportable suicide rates in persons at SA3 level were highest in Kimberley in Western Australia (35.4 deaths per 100,000 population) and a number of Queensland regions including Burnett (29.1), Outback - South (27.3), and Tablelands (East) - Kuranda (26.8). Reportable suicide rates were lowest in the SA3 areas of Kogarah - Rockdale and Parramatta (all areas in Sydney, New South Wales) (all about 6 deaths per 100,000 population) and Keilor in Victoria (6.3).
Note: Data behind these maps are available on the Data downloads page: National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0).

Over the 5-year period 2015–2019, reportable age-standardised suicide rates in persons at the SA3 level, were:

- highest in the SA3 areas of Kimberley in Western Australia (35.4 deaths per 100,000 population), and a number of Queensland regions including Burnett (29.1), Outback - South (27.3), and Tablelands (East) - Kuranda (26.8)
- lowest in the SA3 areas of Kogarah - Rockdale and Parramatta (both areas of Sydney, New South Wales) (each 6 deaths per 100,000 population) and Keilor in Victoria (6.3).

Over the same period (2015–2019), reportable suicide rates in males, at the SA4 level, were:

- highest in the SA4 areas of Wide Bay in Queensland (37.3 deaths per 100,000 population), Cairns in Queensland (35.4), Northern Territory - Outback and Queensland - Outback (both 34.7)
- lowest in the SA4 areas of Sydney - Ryde, Sydney - Inner South West, and Sydney - Parramatta (all New South Wales) (9.9, 10.2 and 10.4 deaths per 100,000 population, respectively).

For females, suicide rates over the 5-year period 2015–2019, at the SA4 level, were:

- highest in the SA4 areas of Western Australia - Outback (North) (14.4 deaths per 100,000 population), Queensland - Outback (13.0), Western Australia - Outback (South) (12.4) and Northern Territory - Outback (12.3)
- lowest in the SA4 areas of Sydney - South West, Sydney - Parramatta and Sydney - Blacktown (all New South Wales) (3.1, 3.2 and 3.5 deaths per 100,000 population, respectively).

The AIHW is committed to continually improving the quality, ease-of-use, and timeliness of its products. In this product, we are using a new data visualisation tool to present results by geographical areas using maps. We welcome any feedback on this new presentation and hope that it will provide useful insights into the topic. As this tool is a relatively new addition to our website, we will be continuing to work to enhance its use and would welcome any feedback.
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Intentional self-harm hospitalisations by local areas

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information see the Technical notes.
The rates of hospitalisations for intentional self-harm in small geographic areas can provide insight into the incidence of intentional self-harm in local communities.

Statistical Areas Level 3 (SA3s) is a type of geographical classification (https://www.abs.gov.au/websitedbs/D3310114.nsf/home/Australian+Statistical+Geography+Standard+(ASGS)) defined by the Australian Bureau of Statistics (ABS) to provide a regional breakdown of Australia. There are 336 geographical areas covering Australia, with boundaries defined by the ABS. Each SA3 generally has a population of between 30,000 and 130,000 people. Allocation to an SA3 for hospitalisation data is based on the patient’s usual place of residence, rather than where they received treatment.

Variations in hospitalisation rates between geographical areas may be due to a range of factors. Crude hospitalisation rates at SA3s should be interpreted with caution as areas with small populations are more sensitive to changes in the number of hospitalisations.

How to use these maps
Use the zoom and search functions to explore the map. Click on an area in the map to view additional information. Change maps by clicking on the tab at the bottom. The colour shading indicates different rates of intentional self-harm hospitalisations, with darker shades indicating a higher rate.

For the best experience, use Chrome, Edge or Firefox browsers. For more information on browser compatibility, see Supported browsers (https://doc.arcgis.com/en/web-appbuilder/create-apps/supported-browsers.html).

Intentional self-harm hospitalisations by SA3 areas, Australia, 2019-20.

The map shows the crude rate and number of intentional self-harm hospitalisations for females by all ages for SA3 areas in Australia in 2019-20. Users can also choose to view maps showing the same data for males or for persons by broad age groups (0-24, 25-44 and 45 and over). In 2019-20, rates of hospitalisations for intentional self-harm for females ranged from 36 per 100,000 population in Shoalhaven (New South Wales) to 603 in Alice Springs (Northern Territory). For males, rates ranged from 15 hospitalisations per 100,000 population in Parramatta (New South Wales) to 605 in Caboolture Hinterland (Queensland).
Variation across local areas

In 2019-20, rates of hospitalisations for intentional self-harm across the more than 300 SA3s, varied widely.

- For females, rates of hospitalisation ranged from 36 per 100,000 population in Shoalhaven (New South Wales) to 603 in Alice Springs (Northern Territory).
- For males, rates ranged from 15 hospitalisations per 100,000 population in Parramatta (New South Wales) to 605 in Caboolture Hinterland (Queensland).

Rates of intentional self-harm hospitalisations for different age groups also varied widely between SA3s.

- Rates of hospitalisations for intentional self-harm for those aged 24 and below ranged from 34 hospitalisations per 100,000 population in Merrylands - Guildford (New South Wales) to 622 in Barkly (Northern Territory).
- For the 25-44 age group, rates ranged from 19 hospitalisations per 100,000 population in Parramatta (New South Wales) to 1,062 in Caboolture (Queensland).
- For those aged 45 and over, rates ranged from 23 hospitalisations per 100,000 population in Parramatta (New South Wales) to 255 in Alice Springs (Northern Territory).

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Suicide & self-harm monitoring

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International estimates of death by intentional self-harm

Global statistics on suicide provide a broad view of the issue across the world and provide a means of evaluation to allow governments, policy makers and researchers to learn from each other to improve suicide prevention planning and decision making. The intent in providing this information is to contribute to an informed, open debate about ways to prevent suicide in Australia—not to create comparisons ranking suicide rates around the world.

These data are estimates based on modelling assumptions from the most recent update to the Global Burden of Disease Study (GBD 2019) and are sourced from the Global Health Data Exchange (GHDx), a data catalogue created and supported by the Institute for Health Metrics and Evaluation (IHME). For further information see Global Health Data Exchange (http://ghdx.healthdata.org/) and IHME Global burden of disease (http://www.healthdata.org/gbd/2019).

The interactive data visualisation below allows you to view the most recent data (rates of suicide and years of life lost) from Australia, Organisation for Economic Co-operation and Development (OECD) member countries, G20 nations (19 member nations plus the remaining 24 European Union nations individually represented) and World Health Organization regions. You can view data for any country or region using the ‘multiple values’ selector.


This line graph shows the self-harm measures from 1990-2020, in OECD countries, G20 countries and WHO regions. Users can filter the graph in various ways, including viewing the age-standardised rate or Years of Life Lost (YLL) due to deliberate self-harm, viewing the latest year of data only and filtering by age groups and sex. Users can also compare Australia to OECD countries, G20 countries and WHO regions.

Overall, Australia tracks slightly above the averages of OECD countries, G20 countries and WHO regions in 2020. The average age-standardised suicide rate has declined steadily in OECD countries, G20 countries and WHO regions.
Data are presented as deaths or years of life lost due to death by intentional self-harm. The terms self-harm and suicide are used interchangeably. It should be noted that this terminology is different to that used in other sections of the Suicide & self-harm monitoring website, where the term self-harm refers to non-fatal injury rather than death. The ICD-10 codes used here include: X60-X64.9, X66-X84.9, Y87.0 which are slightly different to those reported in other sections of Suicide & self-harm monitoring.

International rates of deaths due to self-harm should be interpreted with caution as the quality of mortality data can vary between countries and there is a lack of consistency in methods of death registration. Also, due to stigma associated with suicide—and the fact that it is illegal in some countries—some countries are likely to underestimate suicide rates and this may bring into question the reliability of suicide-related statistics (particularly in countries with low reported suicide rates).

Overall, there has been a reduction in suicide rates since 1990 driven mostly by declines in Europe and South East Asia. Across other regions, suicide rates have remained relatively stable.

Suicide rates by country

Of OECD nations in 2019, age-standardised suicide rates ranged from 2.8 per 100,000 in Turkey to 23.9 per 100,000 in Lithuania. Australia’s 2019 estimated suicide rate (10.4 per 100,000 population) was in the middle of OECD countries (18 of 36) and was similar to those reported in Canada, Czech Republic, New Zealand, and Sweden. The suicide rates in Austria and the United States were higher at 11.3 and 11.7 per 100,000 of the population respectively. Suicide rates have been rising in the United States prior to 2020 (see Deaths of despair).

Similarly, in comparison with G20 nations in 2019, Australia was 23 of 43 (19 members nations plus remaining 24 European Union nations individually represented).

Suicide is more common in males than females in all countries

Suicide rates for males and females can be explored for any country or region on the interactive visualisations by selecting the drop down options for sex.

In 2019, in OECD countries, rates for males varied from 4.4 per 100,000 in Turkey to 42.2 in Lithuania, while female suicide rates ranged from 1.3 per 100,000 in Greece to 11.8 in the Republic of Korea. Again, Australia was in between with suicide rates of 16.2 per 100,000 for males and 4.8 per 100,000 for females.

Suicide rates by age

Suicide is one of the leading causes of death in young people in Australia; however, this does not necessarily mean suicide is more likely to occur in young people than in older age groups—it is largely a reflection of the fact that older Australians also die from many other causes.
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Suicide & self-harm monitoring: Behaviours & risk factors

Risk factors are behaviours or aspects of lifestyle, environmental exposures or inherited characteristics that can interact to influence people’s risk of suicidal behaviours. Therefore, looking at risk factors at a population level can help target assistance.

It is important to remember that the presence of one or more of these risk factors cannot predict or explain suicide or intentional self-harm as each person’s experience is unique. Experiencing any of these risk factors does not necessarily mean a person has—or ever will—attempt suicide, but establishing whether a person has any of these risk factors can help determine whether they are at increased risk. Also, some people will have suicidal thoughts without having a history of any risk factors.

Risk factors and behaviours can be modifiable (change over time; for example, illicit drug use) or non-modifiable (permanent or constant; for example, a personal history of self-harm). They can also be background factors (such as a childhood history of abuse) or recent stressful life events. The presence of these factors and their influence is different from person to person over their lifetime and can vary by sex, culture and other characteristics.

Information on these risk factors in Australians has been obtained from a number of sources by making greater use of existing data sets or by integrating multiple data sets. This includes:

- the presence of psychosocial factors (for example, a past history of self-harm; relationship problems; legal issues; bereavement; unemployment; homelessness; and disability) in deaths by suicide obtained by manual review of reports and coronial findings held by the National Coronial Information System (NCIS) by the Australian Bureau of Statistics
- the effect of differences in educational attainment and labour force status in deaths by suicide obtained by integrating the ABS Causes of Death data set with that of the Census 2011
- risk factors associated with suicide and self-inflicted injuries included in the Australian Burden of Disease Study 2015 (to be updated with 2019 data as soon as possible as per the recent AIHW report The health impact of suicide and self-inflicted injuries in Australia, 2019).
Suicide & self-harm monitoring

Behavioural risk factor burden for suicide and self-inflicted injuries

The National Suicide and Self-harm Monitoring Project provided funding for the AIHW to produce a report on The health impact of suicide and self-inflicted injuries in Australia, 2019. The report estimates the combined impact of people dying prematurely from suicide and the direct health impacts on individuals living with injury due to self-harm. Note that the estimates do not take into consideration the potential mental health issues associated with self-harm or the effects suicide and self-harm can have on people’s families, friends and communities. Through detailed data visualisations the report presents time series data for the Australian population by age, sex and key population groups. The contribution of various modifiable risk factors to disease burden is also estimated.

Data on risk factors associated with suicide and self-inflicted injuries from the Australian Burden of Disease Study 2015 are included below. These visualisations will be updated and other information added with new data from The health impact of suicide and self-inflicted injuries in Australia, 2019 in the near future. In the meantime, please see the full report.

According to the AIHW’s Australian Burden of Disease Study 2015, suicide and self-inflicted injuries was the third leading cause of premature death from injury or disease, accounting for an estimated 5.7% of the total years of life lost in Australia (AIHW, 2019). Moreover, suicide and self-inflicted injuries is the leading cause of premature death in young males and females aged 15-24 and in those aged 25-44. See Burden of disease for further information.

What is burden of disease?

Burden of disease analysis measures the impact of living with illness and injury and dying prematurely. The method uses the summary measure ‘disability-adjusted life years (or DALY) to measure the years of healthy life lost by combining premature death (years of life lost; YLL) with years lived with disability (YLD). For further information including a more comprehensive explanation of the methodology and data sources used, see Australian Burden of Disease Study: methods and supplementary material 2015.

The burden of suicide and self-inflicted injuries due to behavioural risk factors, known as attributable burden, has also been estimated in the Australian Burden of Disease Study. These estimates reflect the amount of burden that could have been avoided if all people in Australia were not exposed to the risk factor.


The horizontal stacked bar graph shows the estimated number of disability-adjusted life years (DALYs) of suicide and self-inflicted injuries attributable to various behavioural risk factors by age and sex in Australia in 2015. Users can also choose to view the attributable years of life lost (YLL), the attributable years lived with disability (YLD), and the results of previous studies in 2003 and 2011. ‘Child abuse and neglect’ during childhood was estimated to be responsible for the greatest number of attributable DALY for suicide and self-inflicted injuries in both males and females in Australia in 2015.
'Child abuse and neglect' during childhood was:

- consistently the leading behavioural risk factor contributing to the years of healthy life lost due to suicide and self-inflicted injuries in both males and females in 2003, 2011 and 2015
- associated with 23% of the years of healthy life lost due to suicide and self-inflicted injuries in males (about 24,000 DALYs) and 33% of the years of healthy life lost due to suicide and self-inflicted injuries in females (about 11,000 DALYs) in 2015 with the vast majority of these years of healthy life lost due to premature death.

In males, the second and third leading risk factors contributing to the years of healthy life lost due to suicide and self-harm were 'alcohol use' and 'illicit drug use' across all years of the Australian Burden of Disease Study 2015. In 2015:

- 'Alcohol use' was responsible for 17% of the years of healthy life lost due to suicide and self-inflicted injuries in males (about 17,000 DALYs).
- 'Illicit drug use' was responsible for 15% (about 16,000 DALYs).

For females, the second greatest contributor to the years of healthy life lost due to suicide and self-harm was 'intimate partner violence' (estimated in females only) which was consistent over time (2003, 2011 and 2015).

- 'Intimate partner violence' contributed 19% of the years of healthy life lost due to suicide and self-inflicted injuries in females (about 6,600 DALYs) in 2015.


This series of column graphs shows the same data as the previous visualisation with the data organised in a different way. The estimated number of disability-adjusted life years (DALY) of suicide and self-inflicted injuries attributable to selected behavioural risk factors is presented in males by age, in 2015. Users can also choose to view the data by sex, by attributable years of life lost (YLL), attributable years lived with disability (YLD) and by the results of previous studies in 2003 and 2011. The majority of attributable burden for each behavioural risk factor was experienced in ages 15-54, peaking at 25-34 years in males in 2015.
In 2015, ‘Child abuse and neglect’ during childhood was the greatest contributor to the years of healthy life lost due to suicide and self-inflicted injuries in both males and females in all age groups except those aged 85 and over; however, the majority of the burden was experienced in ages 15–54, with the number of DALYs for females being fairly similar across these age groups (about 2,000-2,500 DALYs) but peaking at age 25–34 for males (6,000 DALYs).

Similarly, the majority of the years of healthy life lost due to suicide and self-inflicted injuries attributable to ‘alcohol use’ or ‘illicit drug use’ was experienced in ages 15–54, peaking at 25–34 for males and 15–24 for females.

The years of healthy life lost due to suicide and self-inflicted injuries in females that were attributable to ‘intimate partner violence’ increased with age and peaked in the 45-54 age group.

Reference

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Psychosocial risk factors and deaths by suicide

Capturing information on risk factors relating to deaths by suicide can highlight areas of a person’s life experience that may need additional attention to provide the most effective suicide prevention interventions. However, it is important to note that the presence of one or more of these risk factors in an individual’s life does not necessarily mean they will have suicidal behaviours. The vast majority of people who experience these risk factors will not experience suicidal behaviours.

As part of the National Suicide and Self-harm Monitoring Project the AIHW has funded the Australian Bureau of Statistics (ABS) to identify and code (using ICD-10) psychosocial risk factors for deaths referred to a coroner, including deaths by suicide.

In 2020, the ABS added codes for the capture of the COVID-19 pandemic as a risk factor based on how it was described as part of the coronial investigation:

• F41.8 Pandemic-related anxiety and stress
• Z29.0 Isolation or quarantine (hotel or home), and
• Z29.9 Prophylactic measures put in place through health directives for pandemic response, including closure of business and stay at home measures.

Although there was a 5.4% reduction in the number of deaths by suicide from 2019 to 2020, there were 99 people who died by suicide in 2020 (3.2% of all suicides) who had the COVID-19 pandemic mentioned in either a police or pathology report, or a coronial finding. However, for people who died by suicide and had the COVID-19 pandemic mentioned as a risk factor, it did not appear as an isolated risk (they had, on average, 5 risk factors and 3 psychosocial risk factors). It is important to remember that circumstances relating to suicide are complex and multifaceted and a combination of multiple factors contribute to a person taking their own life rather than a single reason.

In 2020, of those who died by suicide with issues relating to the COVID-19 pandemic as a risk factor:

• almost 60% also had mood disorders, including depression
• over 50% also had problems relating to employment or unemployment
• 25 also had problems related to the social environment, including social isolation

When COVID-19 was mentioned as a risk factor it manifested in different ways. For some people direct impacts from the pandemic, such as job loss, lack of financial security, family and relationship pressures, and not feeling comfortable with accessing health care were noted. For others, a general concern or anxiety about the pandemic and societal changes were stated or anxiety about contracting the virus itself.

From 2017 to 2020, around two-thirds of all deaths by suicide had at least one or more psychosocial risk factor identified. The types of psychosocial risk factors associated with deaths by suicide were age dependent and differed throughout the lifespan.

Most frequently occurring psychosocial risk factors in coroner-certified suicide deaths by age and sex, Australia, 2020.

The horizontal bar graph shows the proportion of coroner-certified deaths by suicide with psychosocial risk factors identified in males in Australia in 2020. The user can choose to view the data by sex, by age groups, and by the number of deaths by suicide with psychosocial risk factors identified. The risk factor identified in the greatest proportion of coroner-certified deaths by suicide in males at all ages was a ‘personal history of self-harm’ followed by ‘disruption of family by separation and divorce’. Data for 2017, 2018 and 2019 are also available to view.
From 2017 to 2020:

- the most commonly identified risk factor for males and females in all age groups except those 65 and over was a ‘personal history of self-harm’.
- ‘Limitation of activities due to disability’ was the most commonly identified risk factor in males and females aged 65 and over.
- ‘Disruption of family by separation and divorce’ and ‘problems in relationship with spouse or partner’ were generally the second- and third-most common risk factors in males and females aged under 55.
- ‘Problems related to other legal circumstances’ was also a common risk factor in males aged 25–34, 35–44 and 45–54 (associated with more than 10% of deaths by suicide).
- ‘Other problems relating to economic circumstances’ also emerged as a common risk factor in middle-aged males (45–54 and 55–64; associated with more than 10% of deaths by suicide in these age groups).
- ‘Disappearance and death of a family member’ was also identified as a frequently occurring psychosocial risk factor in males and females.
- ‘Prophylactic measure for pandemic response’ (including closure of business and stay at home measures) appeared as a one of the most frequently occurring psychosocial risk factors in males aged 55-64 (associated with 4% of deaths by suicide in 2020) and females aged 25–34, 55–64 and 65 and older (associated with 4% to 6% of deaths by suicide in these age groups in 2020).

There is no national standard for the collection of data on psychosocial factors—each state and territory has its own legislation and processes relating to coroner-certified deaths meaning that the type of information collected and held by the NCIS database differs slightly by jurisdiction. Also, due to the method used for the collection of data, protective factors are not included.

The ABS reviewed and coded psychosocial risk factors (defined as social processes and social structures which can have an interaction with individual thought, behaviour and/or health outcomes) associated with deaths by suicide in 2017 through a review of police, toxicology and pathology reports and coronial findings held by the NCIS. The AIHW is working with the ABS to continue this work and embed psychosocial risk factors in future national mortality data sets.

References


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Social and economic factors and deaths by suicide

There is growing evidence that social factors, including education, employment status, income level and wealth, play an important role in determining the risk of suicide in high income countries (Blakely et al, 2003).

A combination of factors contribute to someone considering suicide. Although some social factors may be associated with an increased risk of suicide, they cannot be considered a direct cause.

Understanding how social factors affect the risk of suicide is important to better inform strategies to reduce suicide in Australia and may help in the planning of more effective evidence-based prevention and intervention programs.

Using linked data from the Multi-Agency Data Integration Project (MADIP), the AIHW has conducted two studies to identify social and economic characteristics associated with greater risk of death by suicide. While these pieces of work are distinct, together they add to the growing understanding of population-level influences on suicide deaths in Australia.

The MADIP is a partnership among Australian Government agencies to link administrative and survey data. These studies used de-identified Australian Census of Population and Housing (2011) data linked with 7 years of Death Registrations (2011 to 2017). For more detailed information on the MADIP data asset, data linkage and analytical methods used, see Technical notes.

Data linkage combines information from multiple sources, while preserving privacy. All linked data sets used for analysis at the AIHW comply with legislative and regulatory standards, are securely stored and accessed, and meet ethical standards and community expectations. Protocols are in place to prevent privacy breaches or the unauthorised identification of individuals, and to ensure data security and restricted access to information.

The initial analysis, Educational attainment, employment and deaths by suicide, found that the cumulative risk of suicide in Australia is higher in those with fewer years of education and is lower among those who are employed. These results have been reported previously on Suicide and self-harm monitoring.

A further analysis, Association between socioeconomic factors and deaths by suicide: a modelling study, developed statistical regression models to examine the association between 10 identified predictive social and economic factors from the 2011 Census and deaths by suicide in Australia. The difference between this approach and the previous cumulative risk analysis, is that regression allows for adjustment for the various risk factors for suicide, which may make estimates more precise.

The multivariate (multiple variables) regression model showed that the strongest associations with deaths by suicide (relative to respective reference groups, and after adjusting for other variables in the model) included:

- being male (HR = 3.12; 95% CI 2.93 to 3.32)
- being widowed, divorced or separated (HR = 1.95; 95% CI 1.79 to 2.12)
- being in a lone person household (HR = 1.72; 95% CI 1.57 to 1.87)
- being unemployed (HR = 1.75; 95% CI 1.55 to 1.99) or not in the labour force (HR = 1.80; 95% CI 1.64 to 1.99)

Results for other variables are reported below.

Univariate and multivariate competing risk models were used (Fine and Gray, 1999). Results of sex stratified models are also reported, these are multivariate models split by males and females to investigate the interactions within the sex.

See Technical notes for further information on the data and methods used.

Association between socioeconomic factors and deaths by suicide: a modelling study

Generally, results from the modelling show important differences in the relationship between deaths by suicide and the different socioeconomic factors, relative to comparison groups, as seen in the forest plot below.

Estimates presented are hazard ratios for the group of interest compared with a reference group. Reference group values are indicated as the dotted line at 1. A hazard ratio (HR) indicates how many times higher the probability of an event is in one group of people with a particular characteristic than in another group without that characteristic, after adjusting for other factors in the model. The size of the reported hazard ratio indicates the strength of the relationship a social factor has to deaths by suicide, relative to the reference group.
Ninety-five per cent (95%) confidence intervals are also presented to indicate the statistical precision and significance. The result is interpreted as having a statistically significant impact (that is, not due to chance) if the interval does not cross the value of 1.

This chart shows the output from competing-risk regression models to explore the association between socioeconomic factors and deaths by suicide. For simplicity and ease of understanding, the model estimates are reported as hazard ratios.

Results from four models: univariate, multivariate, stratified: males and stratified: females can be displayed in this chart. The univariate model does not adjust for the other socioeconomic factors, while multivariate model adjusts for all other factors. The stratified: males and stratified: females models are multivariate models for only males and females, respectively.

Which social factors are associated with an increased risk of death by suicide?

The modelling carried out includes only a subset of known factors that may influence deaths by suicide. Results from this analysis need to be interpreted with caution and within the context of the information provided. For example, due to data quality and availability, associated factors such as ‘mental health status’, ‘acute or chronic substance use’, and ‘past-history of self-harm’ are not included in this modelling. Results of the multivariate analysis showed that from September 2011 to December 2017, when adjusting for other factors in the model:

- males had a higher risk of death by suicide than females (hazard rate of suicide among males was 3.1 times higher than females).
- those who were widowed, divorced or separated (HR = 1.95; 95% CI 1.79 to 2.12), and those who never married (HR = 1.82; 95% CI 1.69 to 1.96), as well as those in lone person households (HR = 1.72; 95% CI 1.57 to 1.87), had a higher risk of suicide compared with people who were married or in a de facto relationship and couples with no children, respectively.
- the hazard rate of suicide among people who were unemployed or not in labour force were both 1.8 times higher compared with those who were employed.
- The univariate analysis estimated that Indigenous Australians had approximately double the risk of death by suicide when compared to non-Indigenous Australians (HR = 2.05; 95% CI 1.81 to 2.31). This is consistent with the 2.06 ratio of age-standardised death rates between Indigenous and non-Indigenous Australians reported by the ABS Causes of death Table 11.4. However, when controlling for the sociodemographic factors included in the multivariate analysis the relative risk of death by suicide for Indigenous Australians was estimated to be 1.3 times the rate for non-Indigenous Australians (HR = 1.31; 95% CI 1.13 to 1.51). The 74% reduction in the difference in suicide risk for Indigenous Australians between the multivariate and the univariate model demonstrates the significant effect of the sociodemographic factors for suicide risk that are included in the multivariate model on Indigenous Australians.
• the hazard rate of suicide among people whose highest educational attainment was secondary education or lower (including no education) or diploma and certificate were both 1.3 times higher than those who had at least a bachelor degree.

• those with lower incomes had higher risk of suicide, with HRs of 1.59 (95% CI: 1.45 to 1.74), 1.70 (95% CI: 1.57 to 1.85) and 1.28 (95% CI: 1.19 to 1.38) for low, medium-low and medium-high income earners compared with high income earners, respectively.

• people who worked as machinery operators and drivers (HR = 1.51; 95% CI 1.36 to 1.69) or labourers (HR = 1.36; 95% CI 1.22 to 1.52) were more likely to die by suicide compared with managers and professionals those aged 35-44 (HR = 1.95; 95% CI 1.79 to 2.12) and 45-54 (HR = 1.82; 95% CI 1.69 to 1.96), had a higher risk of deaths by suicide compared with the reference age group (25-34 years); however, there was no difference for those aged 55-64.

When separated by sex and adjusting for other factors, important differences were:

• females who needed help with core activities of daily living had 2.4 times higher hazard rate of suicide compared with females who did not need help with core activities of daily living (Stratified: female model). There was no significant difference observed for males.

• males who were single parents had 1.3 times higher hazard rate of suicide compared with males in a couple without children (Stratified: male model); however, there was no difference between females with the same household compositions.

This analysis was carried out in consultation with the Australian National University, the University of Melbourne and the University of Western Sydney.

References


Educational attainment, employment and deaths by suicide

Educational attainment

The estimated suicide risk (measured as the age-adjusted cumulative incidence (risk) from 2011-2017) is higher among those with fewer years of education, as reported at Census 2011.

Among males with only secondary school or no education the cumulative suicide risk is 2.6 times higher than among males with a university degree (Table 1).

The education gradient in female suicide mortality was consistent with that seen for males, but the ratio is smaller (1.6 times) between the highest and lowest levels of educational attainment. These estimates are the first for Australia, and like other countries, show a strong relationship between educational attainment and the risk of suicide.

The estimated suicide risk is higher among males than females at all levels of educational attainment.

Among males with only secondary school or no education the cumulative suicide risk is 3.5 times higher than among females with the same level of educational attainment (Table 2).

The gap is smallest for those with a university degree with the suicide risk for males 2.2 times higher than females.

Estimated suicide risk, by highest educational attainment and labour force status, by sex, aged 25-54 years, Australia, 2011 to 2017.

The vertical bar chart shows age-adjusted cumulative risk of suicide for males and females by highest level of educational attainment (secondary school or lower; diploma, certificate; and bachelor degree or higher). Users can also choose to view age-adjusted cumulative risk or proportion by labour force status. The lowest age-adjusted cumulative suicide risk among males was in those with a bachelor degree or higher while the highest age-adjusted cumulative suicide risk was seen in those with secondary school or lower as their highest level of educational attainment.
Employment status

Estimated suicide risk (measured as the age-adjusted cumulative incidence from 2011-2017) is lower among those with a job, as reported at Census 2011.

Among males of prime working age (25-54 years) who were not in the labour force (people who are neither working nor looking for work):

- cumulative suicide risk is 3.2 times higher than among males employed
- for males unemployed the risk is 2.5 times higher than those employed (Table 1).

For males who were not in the labour force the cumulative suicide risk was actually a little higher (rate ratio of 1.3) than for males who were unemployed at the time of the 2011 Census. This reminds us that in thinking about the relationship between labour force status and suicide, it is important to focus on people of workforce age who are not employed, regardless of whether they are classified as being unemployed.

Among females, employment is also associated with the lowest suicide risk but did not vary greatly between those not in the labour force and those unemployed.

The cumulative suicide risk for females not in the labour force was:

- 2.6 times higher than those employed
- for females unemployed the risk was 2.7 times higher than those employed.

Table 1: Rate ratio of estimated suicide risk, by educational attainment or labour force status, by sex, 2011-2017

<table>
<thead>
<tr>
<th>Educational attainment or labour force status</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 12 and below : Bachelor degree and higher</td>
<td>2.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Unemployed : employed</td>
<td>2.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Not in labour force : employed</td>
<td>3.2</td>
<td>2.6</td>
</tr>
<tr>
<td>Not in labour force : unemployed</td>
<td>1.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>
1. Estimated suicide risk is measured as the age-adjusted cumulative incidence (risk) from 2011–2017.
2. Level of Highest Educational Attainment (HEAP) and Labour Force Status (LFS) is at Census 2011; death by suicide occurred between 2011 and 2017.
3. Analysis includes prime working age group (age at Census 2011): 25-54 years.
4. Year 12 and below includes no education.

A social gradient describes a spectrum from high to low socioeconomic position and shows that, in general, the lower an individual’s socioeconomic position the worse their health (WHO, 2020). While a social gradient was evident in both male and female employment circumstances, the estimated suicide risk is considerably higher for males than females across all 3 labour force categories (Table 2).

Among males not in the labour force the cumulative suicide risk is 4.4 times higher than among females not in the labour force.

<table>
<thead>
<tr>
<th>Educational attainment or labour force status</th>
<th>Males : Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 12 and below</td>
<td>3.5</td>
</tr>
<tr>
<td>Diploma or Certificate</td>
<td>3.1</td>
</tr>
<tr>
<td>Bachelor degree and higher</td>
<td>2.2</td>
</tr>
<tr>
<td>Employed</td>
<td>3.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>3.4</td>
</tr>
<tr>
<td>Not in labour force</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Notes
1. Estimated suicide risk is measured as the age-adjusted cumulative incidence (risk) from 2011–2017.
2. Level of Highest Educational Attainment (HEAP) and Labour Force Status (LFS) is at Census 2011; death by suicide occurred between 2011 and 2017.
3. Analysis includes prime working age group (age at Census 2011): 25-54 years.
4. Year 12 and below includes no education.

Monitoring and analysing suicide risk by education and employment status can be very informative. Sweden regularly publishes data on suicide rates by level of education (e.g. Sweden; Socialstyrelsen National Board of Health and Welfare, 2017) and Case and Deaton (2015, 2017, 2020) and Phillips and Hempstead (2017) have shown that rises in suicide rates in the US are being driven by rises among people with a high school or lower level of education. That said, care is required in drawing causal inferences from the data. Education and employment are clearly associated; for example—adults of working age with a degree or higher level of education are considerably more likely to be employed than those with a high school or lower level of education. This means that some of the apparent association between education and suicide risk is explained by the association between education and employment status. These associations will be drawn out in data modelling.

Blakely et al. (2003) found similar associations between the risk of death by suicide by labour force status for New Zealand using linked data. However, they argue that while being unemployed was associated with a 2- to 3-fold increased relative risk of death by suicide compared with being unemployed, around half of this association might be explained by confounding mental illness.

Addressing socioeconomic inequalities in mortality within countries is a key public health priority globally (WHO 2008). Analyses of education inequalities in Australia in both chronic disease mortality (AIHW 2019) and all-cause mortality (Korda et al. 2019) reveal a clear gradient across differing levels of education with the probability of dying in 2011-12 decreasing as education levels increase. Quantifying inequalities for specific mortality causes will provide a broader understanding of the experience of population groups, the relationships between health and welfare, and insights into underlying reasons for these inequalities.

References


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Deaths by suicide, by socioeconomic areas

There is a strong association between socioeconomic status and deaths by suicide. Age-standardised rates and numbers of deaths by suicide tend to be higher for those living in lower socioeconomic areas (more disadvantaged areas). However, it is important to remember that suicide can affect all Australians and each person’s experience is unique; not everyone who lives in these areas will experience suicidal behaviours.

Socioeconomic status classifies individuals according to the socioeconomic characteristics of the area in which they lived prior to their death by suicide. These areas are defined using the ABS Index of Relative Socio-Economic Disadvantage (IRSD), which reflects the average level of socioeconomic disadvantage of the area, rather than individuals (see Technical notes for more information). Variables used in calculating the IRSD index include household income, unemployment and levels of education.

Suicide deaths by socioeconomic area and mechanism, Australia, 2010 to 2020.

The series of line graphs show age-standardised suicide rates for socioeconomic areas (Quintiles 1 to 5) from 2010 to 2020 for all mechanisms combined. Users can also choose to view age-standardised suicide rates and numbers of deaths by suicide by mechanism, and specified mechanisms as a proportion of all mechanisms, for each socioeconomic area. For all mechanisms combined, suicide rates from 2010 to 2020 generally declined as the level of disadvantage lessened, from Quintile 1 to 5. In the lowest socioeconomic area (with most disadvantage; Quintile 1), rates ranged between 13.0 deaths per 100,000 population (in 2010) and 19.4 in 2017, falling to 18.1 in 2020. In the highest socioeconomic areas (least disadvantaged; Quintile 5) rates fluctuated from 7.5 to 10.1 deaths per 100,000 population over the period 2010 to 2020. In 2020, the age-standardised suicide rate for the lowest socioeconomic area (Quintile 1) was 18.1 deaths per 100,000 population and 8.6 in the highest socioeconomic area (least disadvantaged; Quintile 5).
From 2010 to 2020, age-standardised suicide rates were highest for those who lived in the lowest socioeconomic areas (most disadvantaged areas), and generally decreased as the level of disadvantage lessened.

In 2020, the overall suicide rate for people living in the lowest socioeconomic (most disadvantaged) areas (18.1 deaths per 100,000 population; Quintile 1) was twice that of those living in the highest socioeconomic (least disadvantaged) areas (8.6 deaths per 100,000 population; Quintile 5).

As for rates, the number of deaths by suicide for the 5 socioeconomic areas generally declined as socioeconomic disadvantage decreased.

**Suicide rates increased over time in lowest socioeconomic areas**

Age-standardised suicide rates increased for those living in the lowest socioeconomic areas (Quintile 1) from 13.0 deaths per 100,000 population in 2010 to a peak of 19.4 in 2017, before falling gradually to 18.1 deaths per 100,000 in 2020. In contrast, little change was observed for those living in the 2 highest socioeconomic areas (Quintiles 4 and 5).

Henley and Harrison (2019) found that over the period 2009-10 to 2015-16, suicide rates increased significantly for those living in the lowest socioeconomic areas (most disadvantaged) by an average 3.5% per year while little change was observed for those in the highest (least disadvantaged) socioeconomic areas (0.2% change per year).

**Methods of suicide vary by socioeconomic area**

Understanding the methods used for suicide can play an important role in suicide prevention. These data are provided to inform discussion around restriction of access to means as a policy intervention for the prevention of suicide.

Please consider your need to read the following information. If this material raises concerns for you or if you need immediate assistance, please contact a crisis support service, available free of charge, 24 hours a day, 7 days a week.


The classification system used to code causes of deaths data, ICD-10, uses the term ‘mechanism’ to refer to the external cause of death. Throughout Suicide & self-harm monitoring ‘mechanism’ has been used in data visualisations, while the term ‘method’ has been used in the accompanying text.

Throughout 2010 to 2020, age-standardised suicide rates generally decreased with decreasing socioeconomic disadvantage for hanging (ICD-10 X70) and firearms (ICD-10 X72–X75). However, there was little difference in suicide rates between socioeconomic areas for poisoning excluding gas (ICD-10 X60–X66, X68–X69), poisoning by gas (ICD-10 X67) or other methods (ICD-10 X71, X76–X84, Y87.0).

In 2020, the rate of suicide by hanging for those living in the lowest socioeconomic areas (Quintile 1) was 2.7 times higher than that of those living in the highest socioeconomic areas (Quintile 5) (12.1 vs 4.5 deaths per 100,000 population). For firearms, poisoning by gas, exposure to poisonous substances excluding gas and other methods of suicide there was little variation between the highest and lowest socioeconomic areas in 2020.

The proportion of deaths by suicide by either exposure to poisonous substances excluding gas or other methods tended to increase with decreasing socioeconomic disadvantage while the proportion of deaths by hanging tended to decrease.

**Reference**

Intentional self-harm hospitalisations by socioeconomic areas

Hospitalisations data for patients with intentional self-harm injuries includes those with and without suicidal intent. For further information refer to the [Technical notes](#). Socioeconomic status classifies individuals according to the socioeconomic characteristics of the area in which they live. These areas are defined using the ABS Index of Relative Socio-Economic Disadvantage (IRSD), which reflects the average level of socioeconomic disadvantage of the area (see [Technical notes](#) for more information).

Intentional self-harm hospitalisations, by age, sex and socioeconomic areas, Australia, 2012-13 to 2019-20.

The line graph shows age-specific rates of intentional self-harm hospitalisations from 2012-13 to 2019-20 by socioeconomic areas from Quintile 1, the most disadvantaged, to Quintile 5, the least disadvantaged. Users can also choose to view age-specific rates, numbers and proportion of hospitalisations for intentional self-harm by socioeconomic areas by sex and specific age groups. For the period 2012-13 to 2019-20, rates of intentional self-harm hospitalisations were highest in the most disadvantaged areas (Quintile 1) with the lowest rates in the least disadvantaged areas (Quintile 5). Rates varied across the period for all Quintiles. All Quintiles, except Quintile 5, recorded lower rates in 2019-20 than in 2012-13.

Does socioeconomic status affect risk of intentional self-harm?

Rates of hospitalisations for intentional self-harm tend to be higher for those living in lower socioeconomic (more disadvantaged) areas.
In 2019–20:

- the rate for the most disadvantaged areas (Quintile 1) was 135 hospitalisations per 100,000 population, which is 1.6 times higher than the rate for the least disadvantaged areas (Quintile 5; 84 per 100,000 population).

A similar pattern was seen in suicide rates in 2019, see Suicide by socioeconomic areas.

**How have rates of intentional self-harm hospitalisations changed for socioeconomic areas?**

From 2012-13 to 2019-20:

- the highest proportion of intentional self-harm hospitalisations was for people living in the lowest socioeconomic (most disadvantaged) areas; this proportion has remained relatively stable over the period at around 25%
- rates for males in the lowest socioeconomic areas, Quintile 1 and 2, increased from 115 and 98 hospitalisations per 100,000 to 129 and 110 in 2016-17, respectively, and then decreased to 105 and 87 in 2019-20
- rates for females in lower (most disadvantaged) socioeconomic areas also increased to 2016-17 and then decreased to 2019-20.

For both males and females, the highest age-specific rates of hospitalisations between 2012-13 and 2019-20 were recorded for those aged 25-44 in the lowest socioeconomic areas (Quintile 1), with the highest age-specific rates recorded for females in this age group.

- Rates for females aged 25-44 in Quintile 1 increased from 243 per 100,000 population in 2012-13 to 272 in 2016-17 before falling to 213 in 2019-20.
- Rates for males aged 25-44 in Quintile 1 fluctuated from 197 in 2012-13 to 213 in 2016-17 then fell to 172 in 2019-20.

An increase in the rate of hospitalisations due to intentional self-harm for all socioeconomic areas was reported in 2016-17, which may be due to increases in hospitalisations in 3 states. Variation in hospital admission policy and practices between states and territories may have contributed to differences in the reporting of hospitalisation data. For further information, see the data quality statement [here](https://meteor.aihw.gov.au/content/index.phtml/itemId/724188).

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Suicide & self-harm monitoring

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Deaths of despair

Since the late 1990s, there has been a marked increase in the overall mortality of middle-aged white non-Hispanic males and females in the United States (Case and Deaton 2015, 2017, 2020). This increase in mortality was largely attributed to increases in deaths by suicide, drug and alcohol poisonings (both accidental and undetermined intent) and deaths due to chronic liver diseases and cirrhosis—together termed ‘deaths of despair’ by Case and Deaton (Case and Deaton, 2015, 2017, 2020). They linked this trend to a decline in economic security, a lack of universal health care and the widespread availability of opioids (Case and Deaton 2015, 2017, 2020). In 2017, Case and Deaton suggested that a similar increase in mortality from deaths of despair may be emerging in other countries (Case and Deaton 2017).

Selected causes of death, by sex, Australia, 1997 to 2020.

The line graph shows age-standardised rates of death by suicide, alcoholic liver disease and cirrhosis, accidental poisoning, and all of these causes combined from 1997 to 2020. Users can also choose to view age-standardised death rates and numbers of deaths for this period by sex and cause of death. Rates of deaths by these selected causes of death show no clear trend over the period 1997–2020. Since 2014, the rate has remained around 23–25 deaths per 100,000 population which was similar to rates at the start of the period (1997 to 1999). Between these dates rates were lower (around 20.0 deaths per 100,000 population).

An analysis of Australian mortality data using methods similar to those used by Case and Deaton shows that Australians are not increasingly dying due to these ‘deaths of despair’ over time. The rates of combined deaths by suicide, alcoholic liver disease and cirrhosis, and accidental poisoning (deaths of despair) over the period 1997 to 2020 show no clear trend. Over the past 5 years the rate has remained
around 23 to 25 deaths per 100,000 population (from 2016 to 2020), similar to rates at the start of the period 1997 to 1999; between these dates rates remained lower (around 20 deaths per 100,000 population).

Males are more likely than females to die by these selected causes of death (suicide, alcoholic liver disease and cirrhosis, and accidental poisoning). At the start of the period, rates of combined deaths by suicide, alcoholic liver disease and cirrhosis, and accidental poisoning in males were at a high of around 36–38 deaths per 100,000 population from 1997 to 1999 and female rates were around 11 deaths—about 3.2 to 3.4 times lower than males. In the past 5 years from 2016, death rates for both males and females have shown little variation with male rates ranging between 34 and 37 deaths per 100,000 population and female rates around 13 to 14 deaths—that is, these causes of death are about 2.7 times more common in males than females.

For males, deaths by suicide accounted for the majority (53.67%) of these ‘deaths of despair’ over the period 1997 to 2020. In contrast, deaths by suicide tended to account for less than half (43.48%) of these deaths in females.

References
Suicide & self-harm monitoring

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Technical notes
This section contains more detailed information about the data sources, codes and classifications, and analysis methods used in compiling data for Suicide & self-harm monitoring.
Suicide & self-harm monitoring

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**Data sources**

**National Mortality Database (NMD)**

The AIHW National Mortality Database (NMD) contains records for deaths in Australia from 1964 to 2020. The database comprises information about causes of death and other characteristics of the person, such as sex, age at death, area of usual residence and Indigenous status.

The Cause of Death Unit Record Files are provided to the AIHW by the Registries of Births, Deaths and Marriages in each state and territory and the National Coronial Information System (managed by the Victorian Department of Justice). The cause of death data are compiled and coded by the Australian Bureau of Statistics (ABS) to the International Statistical Classification of Diseases and Related Health Problems (ICD) and maintained at the AIHW in the NMD. Registration of deaths is the responsibility of the Registry of Births, Deaths and Marriages in each state and territory.

To improve the quality of data, the ABS annually revises the causes of death for coroner-referred deaths to reflect the latest available information. This process applies to deaths registered after 1 January 2006. Deaths registered in 2017 and earlier are based on the final version of cause of death data; deaths registered in 2018 are based on the revised version; and deaths registered in 2019 and 2020 are based on the preliminary version. Revised and preliminary versions are subject to further revision by the ABS. For a more detailed description of the coverage and processing of deaths data, including deaths certified by the coroner, refer to the Explanatory Notes in ABS Causes of death, Australia (ABS Catalogue No. 3303.0), which is available from the ABS website (https://www.abs.gov.au/)

In the NMD, both the year in which the death occurred and the year in which it was registered are provided. Year of registration has been used for the purposes of monitoring deaths by suicide. Deaths based on the year the death occurred have also been presented; however, as some deaths at the end of each calendar year may not be registered until the following year, year of death information for the latest available year (2020) is generally an underestimate of the actual number of deaths that occurred in that year.

The data quality statements underpinning the AIHW NMD can be found on the following ABS internet pages:


For more information on the AIHW NMD see National Mortality Database and About National Mortality Database.

**Quality of Indigenous status data**

The Aboriginal and Torres Strait Islander status of a deceased person is captured through the death registration process; however, it is recognised that not all such deaths are captured through these processes, leading to under-identification. Also, data on deaths by suicide in Indigenous people have been compiled by jurisdiction of usual residence for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. Data for Victoria, Tasmania and the Australian Capital Territory have been excluded in line with national reporting guidelines.

**National Hospital Morbidity Database (NHMD)**

Data for patients who were hospitalised with intentional self-harm injuries are sourced from the AIHW’s National Hospital Morbidity Database (NHMD). Most of the data used for the monitoring of hospitalisations for intentional self-harm are from 2008-09 to 2018-19. For each reference year, the NHMD includes all hospitalisations for patients who were discharged between 1 July and 30 June.

The NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. It is a comprehensive data set that has records for all episodes of admitted patient care from essentially all public and private hospitals in Australia.
The data supplied are based on the National Minimum Data Set (NMDS) for Admitted Patient Care and include administrative, demographic, clinical and length of stay data, as well as data on the diagnoses of the patients, the procedures they underwent in hospital and external causes of injury and poisoning.

The purpose of the NMDS for Admitted Patient Care is to collect information about care provided to admitted patients in Australian hospitals. The scope of the NMDS includes episodes of care for admitted patients in all public and private acute and psychiatric hospitals, free standing day hospital facilities, and alcohol and drug treatment centres in Australia. Hospitals operated by the Australian Defence Force, corrections authorities and in Australia’s off-shore territories are not in scope but may be included. Hospitals specialising in dental, ophthalmic aids and other specialised acute medical or surgical care are included.

**episode of care**: The period of admitted patient care between a formal or statistical admission and a formal or statistical separation, characterised by only one care type (see care type and separation). METoR identifier: 268956.

**separation**: The process by which an episode of care for an admitted patient ceases. A separation may be formal or statistical. METoR identifier: 327268.

**formal separation**: The administrative process by which a hospital records the cessation of treatment and/or care and/or accommodation of a patient.

**statistical separation**: The administrative process by which a hospital records the cessation of an episode of care for a patient within the one hospital stay.

The criteria used to describe intentional self-harm hospitalisations reported in *Suicide & self-harm monitoring* is described in the Codes and classifications section.

**Data limitations**

States and territories are primarily responsible for the quality of the data they provide. However, the AIHW undertakes extensive validations on receipt of data, checking for valid values, logical consistency and historical consistency. Where possible, data in individual data sets are checked with data from other data sets. Potential errors are queried with jurisdictions, and corrections and resubmissions may be made in response to these queries. Except as noted, the AIHW does not adjust data to account for possible data errors or missing or incorrect values.

The most recent Data quality statement for Admitted Patient Care is available in METoR. The Data Quality Statement contains information on other changes that may affect interpretation of the data for the relevant year.

**Quality of Indigenous status data**

While the Indigenous status data in the Admitted Patient Care NMDS for all states and territories are considered of sufficient quality for statistical reporting, separations for Aboriginal and Torres Strait Islander people are generally under-enumerated. In 2011–12, about 88% of Indigenous Australians were identified correctly in hospital admissions data, and the ‘true’ number of separations for Indigenous Australians was about 9% higher than reported. Caution should be used in the interpretation of Indigenous status data because of the under-enumeration overall and differences in under-enumeration among the states and territories. The quality of the data for private hospitals is not known, but likely to be poor.

**National Ambulance Surveillance System (NASS)**

The National Ambulance Surveillance System (NASS) is a new public health monitoring system providing timely and comprehensive data on intentional self-harm (including suicidal behaviours with self-injurious intent), mental health, and alcohol and drug harms in the community. Data for the National Ambulance Surveillance System (NASS) are compiled by Turning Point in partnership with Monash University and are sourced from paramedic electronic patient care records provided by Australian state and territory-based ambulance services. As part of the National Suicide and Self-harm Monitoring Project, the AIHW has contracted Turning Point through Monash University to develop the National Ambulance Surveillance System (NASS) for self-harm related attendances. Self-harm (suicidal ideation, suicide attempt, self-injury) related modules from the NASS are reported here.

The ambulance attendance data includes 1-month per quarter snapshots from New South Wales (NSW), Victoria (Vic), Tasmania (Tas) and the Australian Capital Territory (ACT) from 2018 to 2021, and Queensland (Qld) from 2020 to 2021. AIHW began receiving monthly snapshot data for NSW, Vic, Qld, Tas and the ACT from January 2021.

Information is obtained and coded through manual scrutiny of de-identified electronic patient care records (ePCRs), including paramedic clinical assessment, patient self-report, information from third parties and other evidence at the scene, such as written statements of intent (including social media, text messages and written notes), as recorded by paramedics. Intent of self-harm behaviours derived from the ePCR may be from either stated or physical evidence, or where there is evidence but the patient may have denied the behavioural intent (Rubman et al. 2020).

Self-harm related ambulance attendances are included if self-harm occurred in the preceding (past 24 hours) or during the ambulance attendance, with 4 categories of self-harm related ambulance attendances defined and coded as:

- **self-injury** (non-fatal intentional injury without suicidal intent)
suicidal ideation (thinking about killing oneself without acting on the thoughts)

- suicide attempt (non-fatal intentional injury with suicidal intent, regardless of likelihood of lethality)
- suicide (fatal intentional injury with suicidal intent).

Suicide, suicide attempt and suicidal ideation are considered mutually exclusive; however, self-injury could be simultaneously coded with any other self-harm case category.

The number of attendances related to suicide is under-represented as ambulances do not attend all deaths. Furthermore, when they do attend there may be insufficient information to determine suicidal intent at the scene.

Methods of suicide, suicide attempt or suicidal ideation are coded, as are methods of self-injury and categories of suicidal ideation preparation (planned, unplanned and unknown if planned) using a modified ICD-10 coding framework.

For more information see Lubman et al. 2020 (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0236344).

Data limitations

Data are collected for operational rather than monitoring or research purposes with paramedics only recording information that they either observe or is provided to them by the patient or bystanders, and which they deem clinically relevant to patient care. It is possible that relevant information with respect to self-harm or mental health variables is not recorded, or similar events may not be recorded consistently by different paramedics over time.

Multi-Agency Data Integration Project (MADIP)

The Multi-Agency Data Integration Project (MADIP) is a partnership among Australian Government agencies to develop a secure and enduring approach for combining information on healthcare, education, government payments, personal income tax, and demographics (including the Census) to create a comprehensive picture of Australia over time (ABS 2018). The key MADIP datasets used in this analysis were:

- Person Linkage Spine (Australian Bureau of Statistics)
- 2011 Census of Housing and Population (Australian Bureau of Statistics)
- Causes of Death (Australian Bureau of Statistics)
- Personal Income Tax (Australian Taxation Office)
- Social Security and Related Information (Department of Social Services)
- Synthetic income data developed by the Australian National University using personal income tax data, social security payment information and Census (for more information see Biddle & Marasinghe 2021 (https://taxpolicy.crawford.anu.edu.au/publication/ttpi-working-papers/18706/using-census-social-security-and-tax-data-multi-agency-data)).

Linkage approach

In order to identify socioeconomic factors associated with deaths by suicide in Australia, 2011 Census and 2011 to 2017 Causes of Death data were linked to the ABS Person Linkage Spine (Spine). The Spine is comprised of all persons in the Medicare Enrolments Database, Personal Income Tax or Social Security and Related Information data sets at any point between 2006 and 2016 (ABS 2019). As the baseline population, 2011 Census was considered a closed population and several assumptions were made about this population. These include:

- everyone in the 2011 Census who did not die over the period were still in the population up to the end of 2017, that is, no migration occurred
- person information in the 2011 Census were held constant over the analysis period. However, in the modelling analysis conducted, time varying age and income of the year before suicide were calculated and applied.

Table 1 shows the linkage coverage of Census 2011 and deaths by suicide from the ABS Causes of Death. The Estimated Residential Population of Australia at 30 September 2011 was 22.43 million people (ABS 2021). Of these, 20,739,159 were accounted for in the Census 2011, noting that the Census 2011 started in August 2011. In total, the linked Census 2011 population was 16,700,062 (74.4% of the total Australian population of September 2011). According to the National Deaths Index, there are 17,306 deaths by suicide from September 2011 to December 2017, of which 11,580 (67%) deaths by suicide were linked to the linkable Census 2011 data. Suicide was defined by ICD-10 external cause codes X60-X84 and Y87.0

Table 1: Linkage coverage of 2011 Census population and deaths by suicide in ABS MADIP

<table>
<thead>
<tr>
<th></th>
<th>Total (n)</th>
<th>Linked (n)</th>
<th>Linked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERP(a) at Sept 2011</td>
<td>22,432,771</td>
<td>16,700,062</td>
<td>74</td>
</tr>
<tr>
<td>Deaths by suicide(b)</td>
<td>17,306</td>
<td>11,580</td>
<td>67</td>
</tr>
</tbody>
</table>

a. Estimated resident population. Linked records are from 2011 Census population.
b. Linked deaths by suicide weighted to all deaths by suicide from September 2011 to December 2017.

Estimated suicide risk by educational attainment and employment

Method

Imputing weights for unlinked suicide deaths and 2011 Census
To address the issue of unlinked deaths by suicide and 2011 Census records, an imputation weighting technique was used. This section describes the method used to develop these weights, which involved a three-staged approach.

First stage: imputing weights to scale up the Census population. The ABS historical ERP for 31 December 2011 by states, sex and 5-year age groups were used to derive weights by these demographic characteristics, based on the assumption that there were no significant differences in the age distribution of the population. The derived weight was applied at the person level for each record of Census that has ABS Person Linkage Spine (Spine) information to enable analysts to weight the analyses to the 31 December 2011 total ERP.

Unlike the original ABS research paper (ABS 2016) describing the creation of a linked data set between 2011 Census and deaths registered in the following 13 months, the imputation method did not calculate weights by Indigenous and non-Indigenous populations. Also, note that Diplomatic personnel resident in Australia have not been excluded from total ERP.

Second stage: suicide weights were calculated by using all deaths by suicide from 2011 to 2017 by states and territories, sex and 5-year age groups. Suicide weights were then applied at person level to only those linked Census records with suicide information. This made it possible to weight the analyses to all deaths by suicide (18,848) from 2011-2017.

An issue with applying suicide weights is that suicide weights are slightly higher when compared with population weights applied in the first stage. As such, the combined weights of the linked records with both 2011 Census and suicide information when aggregated, the weighted ER will be slightly higher than that of 31 December 2011. Hence the need for a scale down adjustment factor.

Third stage: Finally, a scale down adjustment factor, derived based on total ERP, linked deaths by suicide and all deaths by suicide, was applied at the person level to only Census records without linked death by suicide information. Hence the weights of the Census population with or without linked death by suicide information, aggregated to the 31 December 2011 ERP (22,340,025).

Cumulative suicide incidence

Australian residents in the 2011 Census, weighted to 31 December 2011 estimated resident population (ERP) and linked to ABS Causes of Death data from 2011 to 2017 created a binary outcome of either died by suicide (ICD 10 external cause codes X60-X84, Y87.0) or not. Note that deaths by suicide used in this analysis are based on year of occurrence. These may differ from deaths by suicide data used in other AIHW publications which are based on year of registration. In addition to the closed population assumptions noted above, due to data quality issues the age in this analysis is at the time of the 2011 Census except for those who have died by suicide.

Over the period 2011 to 2017, Australia recorded more than 18,800 deaths by suicide of people who were in the 2011 Census. This resulted in a cumulative incidence of about 84 per 100,000 people during the 7-year period. The cumulative number and incidence of deaths by suicide that occurred over the 7 years varies considerably by sex, educational attainment and labour force status.

Uncertainty in the estimates

All data are subject to some level of uncertainty. For the data presented in this analysis the sources of uncertainty include:

- Linkage error: Uncertainty is introduced when there is error in linking data sets. The data used in this report carries some risk of linkage error. An attempt has been made to reduce this error through imputation weighting process but some uncertainty remains.

- Timeliness of data: Some of the data used in this analysis is Census data collected in August 2011. A person’s education status and employment status can change over time, particularly for certain population groups. The use of out-of-date information introduces a source of error to the analysis.

- Randomness in the number of deaths by suicide that occur in a given time period, 2011–2017: The number of deaths by suicide that occur in a given time period fluctuate, even if the underlying population risk remains the same. The exact distribution of the counts is unknown. With deaths by suicide being a rare event it is often assumed that the counts follow a Poisson distribution. If this is the case then the relative level of uncertainty due to randomness decreases as the number of deaths by suicide increase.

Association between socioeconomic factors and deaths by suicide: a modelling study

The MADIP datasets used in this modelling are outlined in the Data section of these Technical notes. In this analysis, only people aged 25 to 64 years in the linked 2011 Census have been included, representing, over 9 million people in the 2011 Census and 7,000 deaths by suicide from 2011 to 2017. This age group was chosen because most deaths by suicide occur between these ages and because of the relative stability of socioeconomic factors over time (such as level of education) among this age group. While suicide is the leading cause of death among people aged 15 to 24 years, people in this age group were excluded from the modelling because of their lack of socioeconomic stability.

Missing values have been excluded from this analysis. Educational attainment has the highest proportion of missing values (5.5%). Unlike with the cumulative suicide risk estimations, the data used in the regression modelling has not been weighted.

To identify modelling predictors and explore their association with suicide deaths, an extensive literature review of social factors was carried out. This included earlier analyses published by AIHW, which showed deaths by suicide varied by factors such as employment and educational attainment.

Socioeconomic factors identified from the 2011 Census were used as predictors and deaths by suicide as the outcome variable. A total of 10 factors were included:

- Age (10-year age groups)
- Sex
- Indigenous status
- Registered marital status
- Family household composition
- Highest level of educational attainment
- Labour force participation
- Occupation
- Synthetic total income (quartiles, see Biddle & Marasinghe 2021)
- Need for assistance with core activities of daily living.

**Method**

Two modelling approaches were tested: Poisson regression and competing-risks regression (as described by Fine & Gray 1999). For Poisson regression, counts of the outcome variable with the value 1 for deaths by suicide and 0 for those who did not die by suicide were created and data aggregated by socioeconomic factor.

For the competing-risks regression, the influence of other causes of death is considered. This is because people who died from any other causes (such as cancer and coronary heart disease) are no longer at risk of dying by suicide.

Sex-stratified and Indigenous-stratified multivariate models were also fitted to investigate the associations within males and females, and within Indigenous and non-Indigenous people. Due to data quality issues including small sample sizes, Indigenous-stratified models have not been published. Univariate and multivariate models (including quasi-Poisson to deal with slight overdispersion) were also refitted. The coefficients obtained were back transformed so they could be interpreted as rate ratios (for Poisson models) and subhazard ratios (for competing-risks models). Analysis was conducted using R (glm package) and Stata (version 16) software.

Of the models tested, competing-risks regression, a method that accounts for people being censored from the risk set because of a competing cause, was used to estimate the risk of death by suicide and the selected socioeconomic factors. Univariate, multivariate and sex-stratified competing-risks models were developed. Generally, competing-risks regression models can be regarded as an extension of the Cox proportional hazards model, where subjects who experience competing events (deaths from other causes) are adequately counted as not having any chance of dying by suicide.

Estimated coefficients of competing-risks models can be interpreted in a similar way as coefficients estimated from a Cox model, except that they estimate the effect of certain covariates in the presence of competing events. Note that the transformed coefficients are known as subhazard ratios, similar to hazard ratios estimated in Cox regression. The subhazard ratio can be interpreted as a rate ratio (Henan 2010), but here we are considering the relative change in rates of the event in those subjects who are either currently event-free or who have previously experienced a competing event (Austin & Fine 2017). For simplicity and ease of understanding, coefficients in this report are referred to as hazard ratios.

**Australian Defence Force (ADF) Suicide Data Sources**

In addition to the NMD, the Australian Defence Force (ADF) suicide monitoring analysis used the following data sources:

**National Death Index (NDI)**

The NDI is managed by the AIHW and contains person-level records of all deaths in Australia since 1980 obtained from the Registrars of Births, Deaths and Marriage in each state and territory. Its use is confined to data linkage studies approved by the AIHW Ethics Committee for health and medical research. NDI records are supplemented with cause of death information from the NMD (AIHW 2018). The NDI is used in linkage with the Personnel Management Key Solution (PMKeyS) and Defence Suicide Database (DSD) to create the linked PMKeyS–NDI data set used in analysis of deaths by suicide in the ADF population.

**Personnel Management Key Solution (PMKeyS)**

PMKeyS is a Defence staff and payroll management system that contains information on all people with ADF service on or after 1 January 2001 (when the system was introduced). This database contains demographic and service information at a given point in time and is linked to the NDI to identify deaths, including deaths by suicide, in the 3 ADF service status groups.

**Defence Suicide Database (DSD)**

The DSD is maintained by Defence and contains information on suspected and confirmed deaths due to suicide of personnel serving full time since 1 January 2000. Suspected and confirmed deaths by suicide are included in the database only on the advice of the ADF Investigative Service. Cases are confirmed by receipt of a coronial finding of death by suicide. This database is linked to the PMKeyS and NDI and records with a status of ‘confirmed’ are used to supplement cause of death information from the NDI for numbers of deaths by suicide only.


**Australian Burden of Disease Study (ABDS)**

Estimates of fatal (years of life lost, YLL) and non-fatal burden (years lived with disability, YLD) were sourced from the Australian Burden of Disease Study (ABDS) 2015. The ABDS 2015 used burden of disease analysis to measure the impact of 216 diseases and injuries on the health of the Australian population. The study provides a detailed picture of the burden of disease and injury in the Australian population in 2003,
2011 and 2015. It also includes estimates of the contribution made by selected risk factors on the disease and injury burden in Australia, and by socioeconomic areas for some risk factors.

The ABDS 2015 uses and adapts the methods of global studies to produce estimates that are more relevant to the Australian health policy context. The chosen reference period (2015) reflects the data availability from key data sources (such as the National Health Survey, deaths data, hospital admissions data and various disease registers) at the time of analysis.

Results from the study provide an important resource for health policy formulation, health service planning and population health monitoring. The results provide a foundation for further assessments.

Full details on the various methods, data sources and standard inputs used in the ABDS 2015 are available in Australian Burden of Disease Study 2015: methods and supplementary material.

Data from suicide registers

**Victorian Suicide Register**

The Victorian Suicide Register (VSR) contains data on all suicide deaths reported to the Coroner's Court of Victoria (CCOV) since 2000 to the present. The Coroner's Prevention Unit, a specialist investigative service for Victorian Coroners, manages the VSR since its implementation in 2012. The VSR operates with funding from the Victorian Department of Health.

VSR data is used to inform investigations into suspected suicides and support coronial recommendations to prevent similar deaths. VSR data are regularly shared with the Victorian Department of Health, AIHW, Victoria Police and other organisations involved in suicide prevention.

Data on the VSR is obtained and coded from materials gathered throughout the course of coronial investigation, including police notification of death, forensic reports (autopsy and toxicology), witness statements and medical records.

CCOV releases a range of suicide data reports from the VSR on their website [www.coronerscourt.vic.gov.au/forms-resources/publications?combine=&field_audience_target_id=All&field_publication_type_target_id=All&year=&page=5](http://www.coronerscourt.vic.gov.au/forms-resources/publications?combine=&field_audience_target_id=All&field_publication_type_target_id=All&year=&page=5), including information on suspected deaths by suicide on a monthly basis, and overviews of Aboriginal suicides in Victoria.

**Queensland Suicide Register**

The Queensland Suicide Register (QSR) was established in 1990, containing records on all confirmed suicide deaths in Queensland from 1990 to 2017. The interim Queensland Suicide Register (iQSR) is a suicide surveillance system, providing real-time data on probable deaths by suicide from its development in 2011 to the present day. The Australian Institute for Suicide Research and Prevention (AISRAP) at Griffith University manages the databases, with funding from the Queensland Mental Health Commission.

The databases contain information from the Coroner's Court of Queensland and Queensland Police Service, and checked against the National Coronial Information System. Data sources include post-mortem examination report (including toxicology), report of death from police, and psychological autopsy report.


**New South Wales Suicide Monitoring and Data Management System**

The New South Wales (NSW) Suicide Monitoring and Data Management System contains data on all suspected and confirmed suicide deaths between 2019 to present. Established in October 2020, the system is a collaboration between the NSW Ministry of Health, Department of Communities and Justice, the State Coroner and NSW Police.

The suicide surveillance system contain initial police information of suspected suicide deaths from the JusticeLink information system, which is managed by NSW Department of Communities and Justice. The information is manually checked against other data sources, including coronial determination.


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Codes and classifications

International Statistical Classification of Diseases (ICD) and Related Health Problems

The ICD, which was developed by the World Health Organization (WHO), is the international standard for coding morbidity and mortality statistics. It was designed to promote international comparability in collecting, processing, classifying and presenting these statistics. The ICD is periodically reviewed to reflect changes in clinical and research settings.

For Suicide & self-harm monitoring, deaths since 1964 (included in the NMD) classified as 'intentional self-harm' according to the relevant revisions of the ICD classification were included:

Table 1: Versions of ICD and years applicable in Australia

<table>
<thead>
<tr>
<th>ICD version</th>
<th>Years applicable</th>
<th>Intentional self-harm codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th revision</td>
<td>1958–1967</td>
<td>E970–E979 and E963</td>
</tr>
<tr>
<td>8th revision</td>
<td>1968–1978</td>
<td>E950–E959</td>
</tr>
<tr>
<td>9th revision</td>
<td>1979–1996</td>
<td>E950–E959</td>
</tr>
<tr>
<td>10th revision</td>
<td>1997 to date</td>
<td>X60–X84 and Y87.0</td>
</tr>
</tbody>
</table>

For deaths prior to 1964, please see General Record of Incidence of Mortality (GRIM) books GRIM 2017 Intentional self-harm (suicide) X60-X84, Y87.0 for ICD versions and codes used.

ICD-10-AM

Diagnosis, intervention and external cause data are reported to the NHMD by all states and territories using the International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification (ICD-10-AM) and the Australian Classification of Health Interventions (ACHI). The Australian Coding Standards (ACS) are designed to be used in conjunction with the ICD-10-AM and ACHI to support sound coding convention.

The hospital separations reported were coded according to the applicable ICD-10-AM edition for the following years:

- 2010-11 to 2012-13: ICD-10-AM 7th edition

Records that satisfied the following criteria were included:

- a principal diagnosis in the ICD-10-AM range S00-T75, T79 (Injury, poisoning and certain other consequences of external causes)
- the first reported external cause code in the record in the ICD-10-AM range X60-X84, Y87.0 (external causes of morbidity).

Excluded from the criteria are:

- separations for which the care type was reported as Newborn (without qualified days), and records for Hospital boarders or Posthumous organ procurement
- separations with a mode of admission of ‘transfer from another hospital’
- separations with reported ICD-10-AM code Z50 (Care involving the use of rehabilitation procedures) in additional diagnosis.

Changes to the Australian Coding Standard for Rehabilitation in 1 July 2015 ICD-10-AM (9th Edition), means that the ‘reason’ for rehabilitation (codes S00-T98 Injury, poisoning and certain other consequences of external causes) will be assigned the principal diagnosis and the rehabilitation code (Z50) will be sequenced as the additional diagnosis. This change results in an increase in the number of
separations in principal diagnoses with codes from S00–T98 from 1 July 2015 onwards. In order to reflect the number of injury separations where the primary clinical intent is acute care and not rehabilitation, records with Z50 (Care involving the use of rehabilitation procedures) in principal diagnosis or additional diagnosis for all years are excluded in the data set before and after the coding change.

Intentional self-harm hospitalisations reported in *Suicide & self-harm monitoring* may differ from other publications. The differences are small and may reflect differences in the inclusion criteria (e.g., Y87.0 included here) and/or exclusion criteria. Data may also be subject to periodic updates occurring after the original publication date.
Suicide & self-harm monitoring

Methods

Crude rates
A crude rate provides information on the number of events relative to the population ‘at risk’ (for example, the entire population) in a specified period based on the Australian estimated resident population for the relevant analysis year. No age adjustments are made when calculating such a rate. Crude rates are used throughout this publication and expressed per 100,000 population.

Age-specific rates
Age-specific rates are calculated by dividing the number of events (for example, deaths) in each specified age group, by the total population at risk of the event in the same age group. Where age-specific rates are reported they are expressed per 100,000 population.

Age-standardised rates
Age-standardised rates are incidence rates that enable comparisons between populations that have different age structures and over time as the age structure of the population of interest may change. This effectively removes the influence of the age structure on the summary rate—it is the overall death rate that would have prevailed in the standard population if it had experienced at each age the death rates of the population under study.

Direct standardisation was used in this report. To calculate age-standardised rates, age-specific rates (grouped in 5-year intervals) were multiplied against a standard population. Directly age-standardised rates were adjusted using the current Australian standard population (that is, the non-recast Australian estimated resident population (ERP) as at 30 June 2001).

Rates are expressed as per 100,000 per population years.

Standardised Mortality Ratio
Standard mortality ratio (SMR) is a widely recognised measure used to account for differences in age structures when comparing death rates between populations. This method of standardisation can be used when analysing relatively rare events (i.e. where number of deaths is less than 25 for the analysed time period) (Curtin and Klein, 1995). The SMR has been used in the analysis of Australian Defence Force (ADF) deaths by suicide. It is used to control for the fact that the 3 ADF service status groups have a younger age profile than the Australian population, and rates of suicide vary by age in both the study populations and the Australian population. The SMRs control for these differences, enabling comparisons of suicide counts between the 3 service status groups and Australia without the confounding effect of differences in age. The SMR is calculated as the observed number of events (deaths by suicide) in the study population divided by the number of events that would be expected if the study population had the same age and sex specific rates as the as the comparison population.

Geography
Geographic location data are based on the area of usual residence of the deceased in the NMD or admitted patient in the NHMD. These data are specified using Statistical Area Level 2 (SA2) of the Australian Bureau of Statistics (ABS) Australian Statistical Geography Standard (ASGS) Edition 2016 for all states and territories. From 2016-17, the area of usual residence in the NHMD was voluntarily provided by some jurisdictions in the form of a Statistical Area level 1 (SA1).

Remoteness areas
Data for remoteness areas are based on a person’s usual residence, rather than where they died (NMD) or received treatment (NHMD). Data by remoteness are aligned to the 2016 Australian Statistical Geography Standard (ASGS) Remoteness Area Structure. Correspondence files are sourced from Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas (ABS cat. no. 1270.0.55.001). The 2016 ASGS Remoteness Structure categorises geographic areas in Australia into 5 classes of remoteness areas based on their relative access to services using the Accessibility/Remoteness Index of Australia which is, in turn, derived by measuring the road distance of a location from the nearest urban centre. The 5 classes are: Major cities, Inner regional, Outer regional, Remote, and...
Very remote. See the Australian Statistical Geography Standard (ASGS): Remoteness Structure, 2016 for further information on Remoteness areas including details of the nature of the changes between the ASGS 2011 and ASGS 2016.

**Socioeconomic status**

The Socio-Economic Indexes for Areas (SEIFA) is a suite of 4 summary measures, developed by the ABS based on Census data that ranks geographic areas across Australia in terms of their relative socioeconomic advantage and disadvantage. The SEIFA index used is the 2016 SEIFA Index of Relative Socioeconomic Disadvantage (IRSD) for use at Statistical Area Level 2 except for NHMD 2012-13 to 2016-17 data which uses the 2011 SEIFA IRSD.

The IRSD includes only measures of relative disadvantage. A low score indicates greater disadvantage in general (for example, an area has many households with low income, many people with no qualifications and many people working in low skill occupations). A high score indicates a relative lack of disadvantage in general (for example, an area has few households with low incomes, few people with no qualifications and few people working in low skilled occupations). It is important to understand that a high score reflects a relative lack of disadvantage rather than advantage and that the IRSD relates to the average disadvantage of all people living in a geographic area and does not reflect the socioeconomic status of all individuals living within the area.

Population-based Australian cut-offs for SEIFA quintiles have been used in this report. Population-based quintiles are calculated by dividing SEIFA areas into 5 equal groups in such a way that the population in each group is approximately equal. As SEIFA measures the characteristics of an area rather than individuals, the population in the most disadvantaged population-based quintile (‘1—Lowest’) is the 20% of the national population residing in the most disadvantaged areas, rather than the most disadvantaged 20% of the population.

See the Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA) Australia, 2016 for further information on SEIFA.

**Primary Health Network**

Primary Health Networks (PHNs) were established in 2015 by the Department of Health to commission medical services and improve the coordination of care for patients across specific geographic areas (PHN areas). There are 31 PHN areas that cover the whole of Australia.

Statistics for PHN areas are derived by aligning deaths or hospitalisations area of usual residence data at Statistical Area Level 2 (SA2) to the 2017 PHN structure using ABS correspondence files, sourced from Australian Statistical Geography Standard (ASGS): Volume 3 - Non ABS Structures, July 2018 (ABS cat. no. 1270.0.55.003).

**Statistical Areas**

Statistical Areas are a geographic classification defined by the Australian Bureau of Statistics. They encompass 4 levels, with increasing size and population: Statistical Areas Level 1 (SA1s); Statistical Areas Level 2 (SA2s); Statistical Areas Level 3 (SA3s); and Statistical Areas Level 4 (SA4).

Deaths by suicide and hospitalisations for intentional self-harm data at Statistical Area Level 2 (SA2) were aligned to Statistical Area Level 3 (SA3) and 4 (SA4) geographies based on the 2016 Australian Statistical Geography Standard (ASGS) structure. Correspondence files are sourced from Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas (ABS cat. no. 1270.0.55.001).

**Using confidence intervals to test for statistical significance**

Statistical significance is a measure that indicates how likely it is that an observed difference, or a larger one, would occur under the conditions of the null hypothesis.

In the analysis of deaths by suicide in Australian Defence Force personnel, 95% confidence intervals (CIs) are provided for each standardised mortality ratio to indicate the level of uncertainty around these estimates due to random fluctuations in the number of deaths by suicide over time. Estimates produced using low numbers can be sensitive to small changes in numbers of deaths over time and will therefore have wide CIs. 95% CIs are provided within this report as they may account for the variation in absolute numbers of deaths by suicide over time (related to the small sample size). It is important to note that there are other sources of uncertainty, such as linkage error, that are not captured by the provided CIs.

Use of CIs is the simplest way to test for significant differences between service groups and Australian comparison groups. For the purpose of this monitoring site, differences are deemed to be statistically significant if CIs do not overlap with 1.0 in the case of an SMR. The CIs in this report cannot be used to determine the significance of differences over time between overlapping 3-year time periods.

**References**


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### Data downloads

| Data tables: Australian suicide and self-harm monitoring: a scoping review of analytic methods |
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| Data tables: 2021 National Ambulance Surveillance System—self-harm behaviours |
| Data | 08 Dec 2021 |

| Data tables: Associations between socioeconomic factors and deaths by suicide |
| Data | 15 Oct 2021 |
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| Data tables: 2020 National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0) |
| Data | 30 Sep 2021 |
| Download Data tables: 2020 National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0). Format: XLSX 450Kb |

| Data tables: 2019 Global Burden of Disease—Deaths due to deliberate self-harm |
| Data | 20 Jul 2021 |

| Data tables: 2019–20 National Hospital Morbidity Database—Intentional self-harm hospitalisations |
| Data | 20 Jul 2021 |

| Data tables: National Mortality Database–Birth cohort analysis |
| Data | 29 Sep 2020 |
| From report: Suicide in Australia: Trends and analysis 1964 to 2018 |

| Data tables: National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0) monthly variation |
| Data | 29 Sep 2020 |
| From report: Suicide mortality in Australia: Estimating and projecting monthly variation and trends from 2007 to 2018 and beyond |
| Download Data tables: National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0) monthly variation. Format: XLSX 138Kb |
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Notes

Latest data updates
For information on future planned updates to the publication see Data update schedule.

27 Apr 2022
- Suspected deaths by suicide - Data from suicide registers
- COVID-19 - The use of mental health services, psychological distress, loneliness, suicide, ambulance attendances and COVID-19

3 Feb 2022
- Suspected deaths by suicide - Data from suicide registers

9 Dec 2021
- Suspected deaths by suicide - Data from suicide registers
- COVID-19 - The use of mental health services, psychological distress, loneliness, suicide, ambulance attendances and COVID-19
- Research & information | Releases | Featured Reports - A scoping review of analytic methods used within the peer reviewed literature
- Research & information | Releases | Featured Reports - Addendum | Suicide mortality in Australia: Estimating and projecting monthly variation and trends from 2007 to 2018 and beyond
- Research & information | Releases | Consultations - Consultation with young people - Suicide & self-harm monitoring website

8 Dec 2021
- Ambulance attendances: suicidal and self-harm behaviours
- Research & information | Releases | Featured Reports - Patterns of suicide in the context of COVID-19: Evidence from three Australian states

4 Nov 2021
- Suspected deaths by suicide - Data from suicide registers
- The health impact of suicide and self-inflicted injuries in Australia, 2019

15 Oct 2021
- Ambulance attendances: suicidal and self-harm behaviours
- Behaviours & risk factors - Social factors & suicide (MADIP data asset)
- COVID-19 - The use of mental health services, psychological distress, loneliness, suicide, ambulance attendances and COVID-19

30 Sep 2021
- Deaths by suicide in Australia, Populations & age groups, Behaviours & Risk Factors [ABS Causes of Death 3303.0]
- Populations & age groups - Australian Defence Force suicide monitoring
- Suspected deaths by suicide - Data from suicide registers
- Geography - Intentional self-harm hospitalisations by local areas

1 Sep 2021
- Suspected deaths by suicide - Data from suicide registers

20 Jul 2021
- Deaths by suicide in Australia - Deaths by suicide over time
- Suspected deaths by suicide - Data from suicide registers
- COVID-19 - The use of mental health services, psychological distress, loneliness, suicide, ambulance attendances and COVID-19
Ambulance attendances: suicidal and self-harm behaviours
Populations & age groups - Suicide & Indigenous Australians
Intentional self-harm hospitalisations (all pages excluding Intentional self-harm hospitalisations by local areas
Geography - International estimates of death by self-harm

30 Mar 2021

Victoria & New South Wales Suicide Register data - Suspected deaths by suicide
The use of mental health services, psychological distress, loneliness, suicide, ambulance attendances and COVID-19

18 Nov 2020

Mortality data; Geography - Suicide by PHN areas
Victoria and New South Wales Suicide Register data; COVID-19 - Data on suspected deaths by suicide

9 Nov 2020

Mortality data; Death by suicide in Australia; Populations & age groups; Geography; Behaviours & risk factors

9 Oct 2020

Populations & age groups - Australian Defence Force suicide monitoring

Amendments

9 Nov 2020

Populations & age groups - Suicide among young people.

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Glossary

Aboriginal or Torres Strait Islander: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also Indigenous.

Additional diagnosis: The diagnosis of a condition or recording of a complaint—either coexisting with the principal diagnosis or arising during an episode of admitted patient care (hospitalisation)—that requires the provision of care. Multiple diagnoses may be recorded.

ADF personnel: Serving, reserve and ex-serving members of the Australian Defence Force; civilian personnel employed by the Department of Defence are excluded.

Admission: An admission to hospital. The term hospitalisation is used to describe an episode of hospital care that starts with the formal admission process and ends with the formal separation process.

Administrative data collection: A data set that results from the information collected for the purposes of delivering a service or paying the provider of the service. This type of collection is usually complete (all in-scope events are collected), but it may have limitations for population-level analysis because the data are collected primarily for an administrative purpose.

Age structure: The relative number of people in each age group in a population.

Age-specific rate: The number of events for a specified age group over a specified period (e.g. calendar or financial year), divided by the total population in that age group. Reported as number per 100,000. The numerator and denominator relate to the same age group.

Age-standardised rates: are incidence rates that enable comparisons to be made between populations that have different age structures. The age structures of the different populations are converted to the same ‘standard’ structure, and then the rates that would have occurred with that structure are calculated and compared. Rates are expressed as per 100,000 per population years.

Associated cause(s) of death: All causes of death listed on the death certificate, other than the underlying cause of death. They include the immediate cause, any intervening causes, and conditions which contributed to the death but were not related to the disease or condition causing the death.

Attributable burden: The disease burden attributed to a particular risk factor. It is the amount of burden that could be avoided if the risk factor were removed or reduced to the lowest possible exposure.


Burden of disease: The quantified impact of a disease, injury or risk factor on a population, using the disability-adjusted life year (DALY) measure. One DALY is one year of ‘healthy life’ lost due to illness and/or death. The more DALY associated with a disease or injury, the greater the burden. The DALY is produced by combining the non-fatal and fatal burden together. People generally experience more burden as they age.

Cause(s) of death: All diseases, morbid conditions or injuries that either resulted in or contributed to death—and the circumstances that produced any such injuries—that are entered on the death certificate. The coding of causes of death produces an underlying cause of death and, for many deaths, one or more associated cause(s) of death. See also multiple causes of death.

Child: A person aged 0-14 years.

Comorbidity: The occurrence of 2 or more health conditions in a person at one time. While the coexistence of these multiple conditions may be unrelated, in many instances there is some association between them.

Confidence interval: A statistical term describing a range (interval) of values within which we can be ‘confident’ that the true value lies, usually because it has a 95% or higher chance of doing so.

Contemporary ex-serving (Australian Defence Force): Australian Defence Force members who have had at least 1 day of full-time or reserve service on or after 1 January 2001, and have since been discharged from the Australian Defence Force.
current serving (Australian Defence Force): Australian Defence Force members who have had at least 1 day of full-time service on or after 1 January 2001, and are still serving in the Australian Defence Force.

crude rate: The crude rate is the number of events recorded during a specified time period (e.g. calendar year) per 100,000 estimated resident population.

Daly: See disability-adjusted life year.

data linkage: The process of combining (linking) information from two or more different data sources that are believed to relate to the same entity (for example, the same individual or the same institution). This linkage can yield more information about the entity and, in certain cases, provide a time sequence—helping to ‘tell a story’, show ‘pathways’ and perhaps unravel cause and effect. The term is used synonymously with ‘record matching’ and ‘data integration’.

death: Any death which occurs in, or en route to Australia and is registered with a State or Territory Registry of Births, Deaths and Marriages.

determinant: Any factor that influences how likely a population or individual will stay healthy or become ill or injured. Factors that increase the chances of ill health are known as risk factors, while those that promote good health are protective factors. Services or other programs that aim to improve health are usually not included in this definition.

disability-adjusted life year (DALY): A measure of healthy life lost, either through premature death or living with disability due to illness or injury. It is the basic unit used in burden of disease and injury estimates.

episode of care: The period of admitted patient care between a formal or statistical admission and a formal or statistical separation, characterised by only one care type (see care type and separation).

estimated resident population (ERP): The official ABS estimate of the Australian population. The ERP is derived from the 5-yearly Census counts and is updated quarterly between each Census. It is based on the usual residence of the person. Rates are calculated per 1,000 or 100,000 mid-year (30 June) ERP.

external cause: The environmental event, circumstance, or condition that is regarded as the cause of injury, poisoning and other adverse effect.

fatal burden: The quantified impact on a population of dying prematurely due to disease or injury, measured by years of life lost (YLL).

hospitalisation: An episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (e.g. from acute care to rehabilitation).

incidence: Incidence is a measure of the number of new cases of a characteristic that develop in a population in a specified time period; whereas prevalence is the proportion of a population who have a specific characteristic in a given time period, regardless of when they first developed the characteristic.

incidence rates: Incidence rates for death by suicide refers to the number of suicides during a specified period over the population within the same period. Rates are expressed as per 100,000 per population years.

Index of Relative Socioeconomic Disadvantage (IRSD): One of the set of Socio-Economic Indexes for Areas (SEIFA) for ranking the average socioeconomic conditions of a population in a geographic area. The IRSD was developed by the ABS for use at Statistical Area Level 2 and summarises attributes of the population that indicate disadvantage, such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations.

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also Aboriginal or Torres Strait Islander.

intentional self-harm: Includes attempts to suicide, as well as cases where people have intentionally hurt themselves, but not necessarily with the intention of suicide (e.g. acts of self-mutilation).

International Statistical Classification of Diseases and Related Health Problems (ICD): The World Health Organization’s internationally accepted classification of death and disease. The 10th Revision (ICD-10) is currently in use. The ICD-10-AM is the Australian Modification of the ICD-10; it is used for diagnoses and procedures recorded for patients admitted to hospitals.

monitoring (of public health): A process of keeping a regular and close watch over important aspects of the public’s health and health services through various measurements, and then regularly reporting on the situation, so that the health system and society more generally can plan and respond accordingly. The term is often used interchangeably with surveillance, although surveillance may imply more urgent watching and reporting, such as the surveillance of infectious diseases and their epidemics.

morbidity: The ill health of an individual and levels of ill health in a population or group.

mortality: Number or rate of deaths in a population during a given time period.

multiple causes of death: All causes listed on the death certificate. This includes the underlying cause of death and all associated causes of death. This information is useful for describing the role of all diseases involved in deaths, where there is more than one cause contributing to the death. For deaths where the underlying cause was identified as an external cause multiple causes include circumstances of injury, the nature of injury as well as any other conditions reported on the death certificate.
non-fatal burden: The quantified impact on a population of ill health due to disease or injury, measured as years lived with disability (YLD).

non-Indigenous: People who have declared that they are not of Aboriginal or Torres Strait Islander descent.

prevalence: The number or proportion (of cases, instances, and so forth) in a population at a given time.

prevention (of suicide): Action to reduce or eliminate the onset, causes, complications or recurrence of suicide.

Primary Health Networks (PHNs): Primary Health Networks were established on 1 July 2015 by the Australian Government Department of Health. They are independent primary health care organisations that commission services and are operated by not-for-profit companies, informed by clinical councils and community advisory committees.

Primary Health Network (PHN) areas: PHNs connect health services across a specific geographic area (a PHN area), with the boundaries defined by the Australian Government Department of Health. There are 31 PHN areas that cover the whole of Australia.

principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care (hospitalisation). Diagnoses are recorded using the relevant edition of the International statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM).

protective factors: Factors that enhance the likelihood of positive outcomes and reduce the chance of negative consequences from exposure to risk.

psychological distress: Psychological distress is commonly measured using the Kessler Psychological Distress Scale—10 items (K10). The K10 questionnaire was developed to yield a global measure of psychosocial distress, based on questions about people’s level of nervousness, agitation, psychological fatigue and depression in the past four weeks. The Kessler 6 Scale is an abbreviated version of K10.

psychosocial factors: Social processes and social structures which can have an interaction with individual thought, behaviour and/or health outcomes.

public health: Activities aimed at benefiting a population, with an emphasis on prevention, protection and health promotion as distinct from treatment tailored to individuals.

quintile: A group derived by ranking the population or area according to specified criteria and dividing it into five equal parts. Commonly used to describe socioeconomic areas.

rate: A rate is one number (the numerator) divided by another number (the denominator). The numerator is commonly the number of events in a specified time. The denominator is the population ‘at risk’ of the event. Rates (crude, age-specific and age-standardised) are generally multiplied by a number such as 100,000 to create whole numbers.

remoteness area: A classification of the remoteness of a location using the Australian Statistical Geography Standard Remoteness Area Structure (2016) which divides Australia into 5 classes of remoteness based on their relative access to services using the Accessibility and Remoteness Index of Australia which is, in turn, derived by measuring the road distance of a location from the nearest urban centre. The 5 Remoteness Areas are Major cities, Inner regional, Outer regional, Remote and Very remote.

reserve (Australian Defence Force): Australian Defence Force members who have had at least 1 day of reserve service on or after 1 January 2001.

risk factor: Any attributes, characteristics or exposures that increase the likelihood of a person developing a health condition or experiencing an event.

separation (from hospital): An episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation). Separation also means the process by which an admitted patient completes an episode of care either by being discharged, dying, transferring to another hospital or changing type of care.

social determinants of health: The circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies and politics.

socioeconomic status: The social and economic position of an individual or group within the larger society. In this monitoring site, socioeconomic status is reported using the Socio-Economic Indexes for Areas, typically for 5 groups, from the most disadvantaged (lowest socioeconomic status areas) to the least disadvantaged (highest socioeconomic status areas).

Socio-Economic Indexes for Areas (SEIFA): A set of indexes, created from Census data, that represent the socioeconomic status of geographical areas in Australia according to their relative socioeconomic advantage and disadvantage. The SEIFA index used in this report is the Index of Relative Socioeconomic Disadvantage (IRSD). It is important to understand that the index value reflects the overall or average level of disadvantage of the population of an area; it does not reflect the socioeconomic status of individuals living within the area.

Socio-Economic Indexes for Areas (SEIFA) quintiles: Population-based quintiles are calculated by dividing SEIFA areas into 5 equal groups in such a way that the population in each group is approximately equal. As SEIFA measures the characteristics of an area rather than individuals, the population in the most disadvantaged population-based quintile (‘1—Lowest’) is the 20% of the national population residing in the most disadvantaged areas, rather than the most disadvantaged 20% of the population.
statistical areas: A geographical classification defined by the ABS. They encompass four levels, with increasing size and population: Statistical Areas Level 1 (SA1s); Statistical Areas Level 2 (SA2s); Statistical Areas Level 3 (SA3s); and Statistical Areas Level 4 (SA4s).

statistical significance: A statistical measure indicating how likely the observed difference or association is due to chance alone. Rate differences are deemed to be statistically significant when their confidence intervals do not overlap, since their difference is greater than what could be explained by chance.

suicidal ideation: Serious thoughts about ending one’s own life.

suicidal behaviours: The collective term for suicidal ideation, suicide plans and suicide attempts.

suicide: An action intended to deliberately end one’s own life.

total burden: The sum of fatal burden (YLL) and non-fatal burden (YLD).

underlying cause of death: The disease or injury that initiated the train of events leading directly to a person’s death, or the circumstances of the accident or violence that produced the fatal injury. See also cause(s) of death and associated cause(s) of death.

usual residence: The area of the address at which the deceased lived or intended to live, for 6 months or more prior to death.

years lived with disability (YLD): The number of years of what could have been a healthy life that were instead spent in states of less than full health. YLD represent non-fatal burden.

years of life lost (YLL): The number of years of life lost due to premature death, defined as dying before the ideal life span. YLL represent fatal burden.

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Suicide & self-harm monitoring

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Archived content
For the latest data, please see Data downloads.

The below data tables contain previously published data that have now been superseded.

Notes for archived data downloads

- National Hospital Morbidity Database—Intentional self-harm hospitalisations
  The estimated resident populations used in rates calculations throughout this data table have been revised in more recent updates.
- National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0)
  The estimated resident populations used in rates calculations throughout this data table have been revised in more recent updates.

Data tables: 2019 National Ambulance Surveillance System
Data
Source: National Ambulance Surveillance System for attendances related to self-harm behaviours and mental health

Data tables: 2019 National Hospital Morbidity Database—Intentional self-harm hospitalisations
Data
Source: National Hospital Morbidity Database
Download Data tables: 2019 National Hospital Morbidity Database—Intentional self-harm hospitalisations. Format: XLSX 394Kb XLSX 394Kb

Data tables: 2019 National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0)
Data
Download Data tables: 2019 National Mortality Database—Suicide (ICD-10 X60-X84, Y87.0). Format: XLSX 440Kb XLSX 440Kb

Data

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