



# Youth Suicide and Self-Injury Australia

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Supplement to Issue 15

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## Key Points

- 434 suicide deaths at ages 15 to 24 years were registered in Australia in 1995
- Suicide accounted for 25 percent (n=350) of all male deaths and 17 percent (n=84) of all female deaths in this age group in 1995
- Admission to hospital because of intentional self-injury is about 10 times as common as death due to suicide for young adults in Australia, and is more common for females than males.
- The rate of suicide among males aged 15 to 24 in 1990 was about 3 times higher than the rate in 1960. The rate has not risen further since 1990.
- Suicide rates for young Aboriginal males are higher than for non-Aboriginal males
- Hanging and shooting are the commonest methods of suicide by young males; poisoning by solid or liquid substances and hanging are commonest for females.
- The rate of suicide by means of hanging has risen greatly; shooting suicide has declined.
- When countries for which suicide data are published by the World Health Organization are ranked according to rates for young males, Australia ranks in the highest third.

## Introduction

This Supplement presents some descriptive data on youth suicide in Australia. It is largely based on Australian deaths data up to 1995, though some sections are also based on Australian hospital morbidity data and on international mortality data.

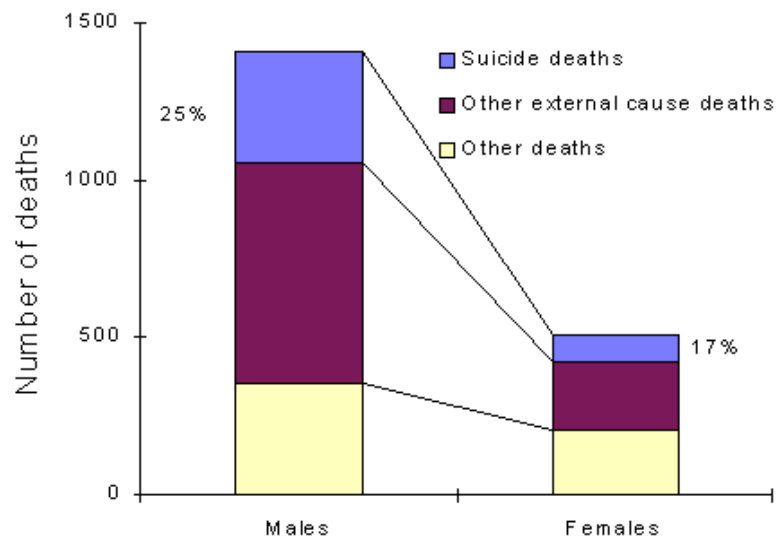
Issues considered are the overall size of the problem, and patterns of occurrence by some characteristics of the people involved (age, gender, Aboriginality), place (States and Territories, urban/rural regions, nations), method of suicide and self-harm, and time. The Supplement describes only some aspects of this complex topic. With further analysis, the same data sources can provide some information on a few other items (eg country of birth, marital status, and occupation). Other issues of great significance cannot be examined due to limitations of these data sources. An example is the role of psychiatric illness (particularly depression). The [References](#) and [Suggested Reading](#) sections provide starting points for further reading.

## Key indicators of suicide at ages 15 to 24 years in Australia: 1995 death registrations

Indicator	Males	Females	Persons
Suicide deaths	350	84	434
Percent of all deaths in the age group	25%	17%	23%
Crude rate/100,000 pop	25.2	6.3	16.0
All-ages rate/100,000 pop (adjusted)	20.9	5.4	13.0

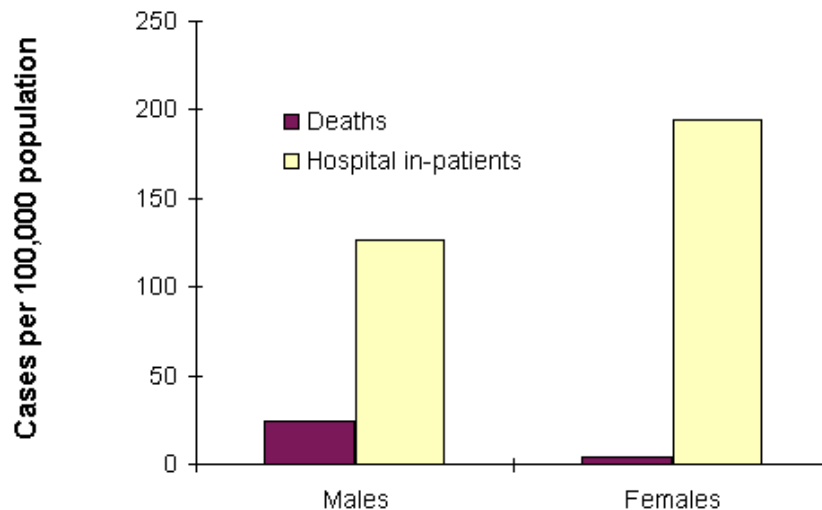
Figure 1: Causes of death, ages 15 to 24 Australia, 1995

- In 1995, 25 percent of all male deaths in Australia at ages 15 to 24 years were due to suicide. For females, the equivalent proportion was 17 percent.
- The number of suicide deaths registered in this age group was 434.
- 350 (81 percent) of these suicide deaths were males, and 84 (19 percent) were females.
- Only Motor Vehicle Accident deaths were more numerous than suicide (male: n=448, female: n=146).



**Figure 2: Hospital separation rates (1992/3, Australia except NT) and death rates (1993, Australia) due to suicide and self-injury at ages 15 to 24**

- Admission to a hospital because of intentional self-injury is about ten times more common than death due to suicide at ages 15 to 24 years.
- The ratio of admissions to deaths is higher for females (34 to 1) than males (5 to 1).
- The rate of suicide deaths is higher for young males than young females (5.6 times higher in the year charted) while the rate of admissions for self-injury is higher for females (1.5 times higher in the charted year). This reflects the more frequent use of lethal methods by males (see [Figure 13](#)).



**Figure 3: Suicide rates at 15-24 years, Australia: 1921-95**

- The rate of registered suicide in Australia among males aged 15 to 24 years trebled from 1960 to 1990.
- No further increase has been recorded since about 1990.
- There has been no parallel recent rise in the rate of suicide among young females. (However, the rate for females approximately doubled during the early 1960s).

Note: Burvill (1980) discussed the drop in male rates during WW2 in relation to explanations advanced for war-time reductions in suicide elsewhere.

(1) It is at least partly a data artefact [see [Data Issues](#)]

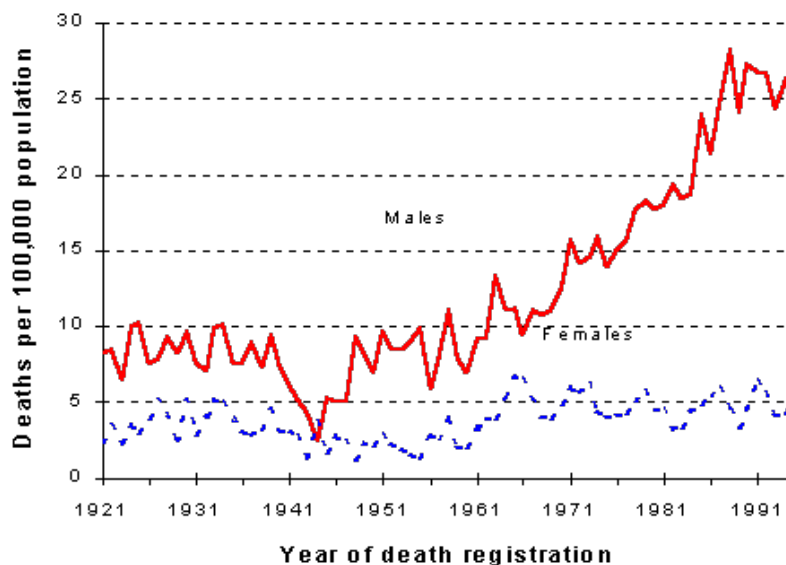
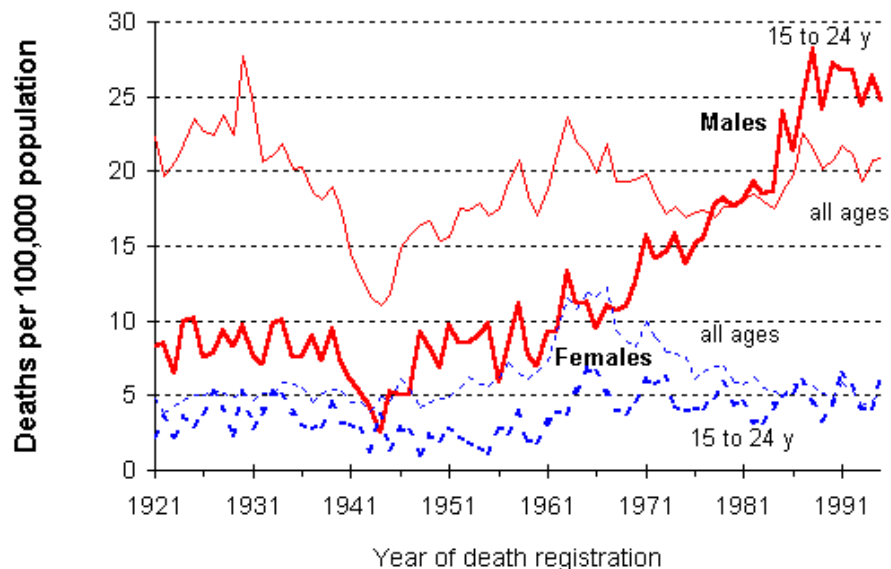


Figure 4: Suicide rates at ages 15 to 24 years and all ages, Australia: 1921-1995

- Suicide rates for males aged 15 to 24 years were much lower than all-ages rates for most of the twentieth century (Figure 4). In recent years, rates for the young age group have been higher than the all-ages rate.
- Rates for young females were similar to all-ages rates in the earliest and latest parts of the period charted.
- From the 1940s to the 1970s, rates for young women were lower than all-ages rates. In the first half of this period, rates for the young group were low; in the second half, all-ages rates were high, during the epidemic of suicide by means of sedatives. (2)



Note: the all-ages rates have been standardised by the direct method. The Australian population in 1991 is the standard.

Figure 5: Suicide and Motor Vehicle death rates at ages 15 to 24 Australia, 1924-1995: males

- For most of the twentieth century, road deaths have been much more common than suicides among young males in Australia.

- Road deaths rates have dropped sharply since about 1970, the period of vigorous road safety efforts.
- Rates of suicide and road death are now similar for young males.

Note: The sharp drop in road deaths in the 1940s is largely attributable to reduced road travel due to fuel rationing. It is partly due to a data artefact [see [Data Issues](#)]

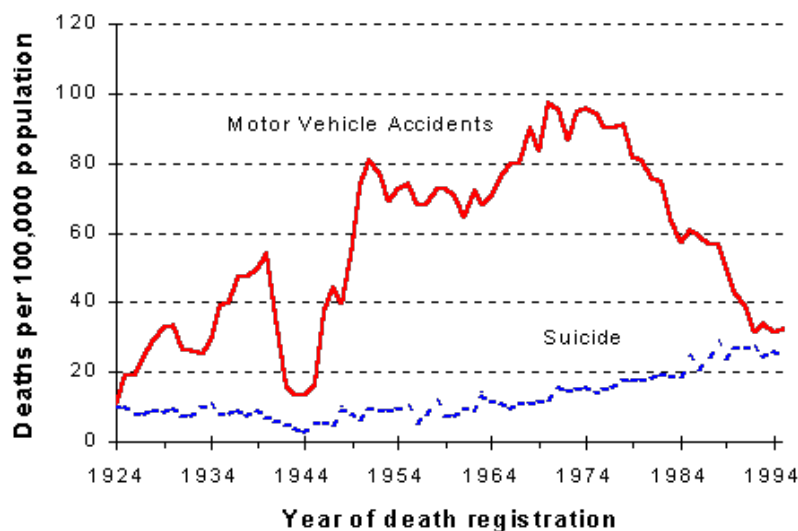


Figure 6: Suicide and Motor Vehicle death rates at ages 15 to 24 Australia, 1924-1995: females

- The road death epidemic has been less pronounced for young females than for young males, and suicide rates have not risen greatly in this group. However, rates of suicide and road death are more similar now than for several decades

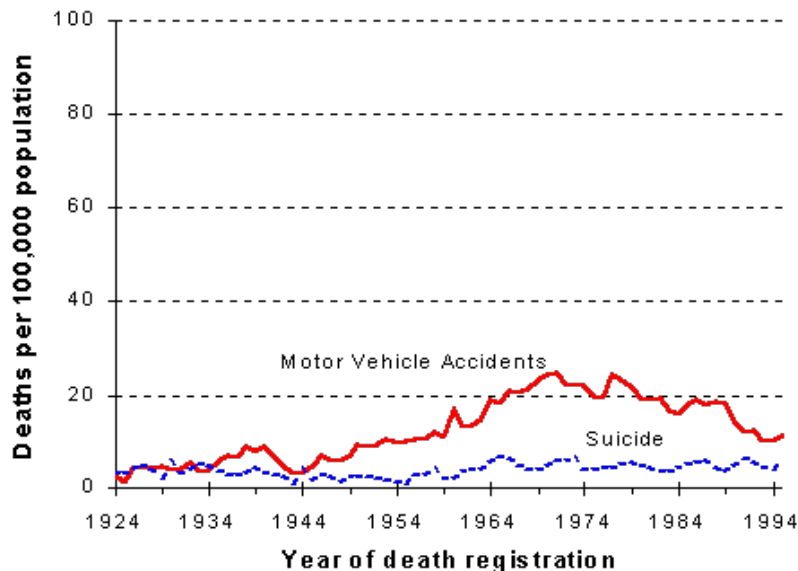


Figure 7: Suicide rates by age group in Australia 1930, 1960, 1990: males

- Earlier this century, male suicide rates in Australia generally rose with age. In recent years, rates have been similar throughout adult ages, though highest at its extremes.
- The drop in rates in middle age and older mainly occurred several decades ago. The rise in rates for young men has mainly occurred in recent decades.

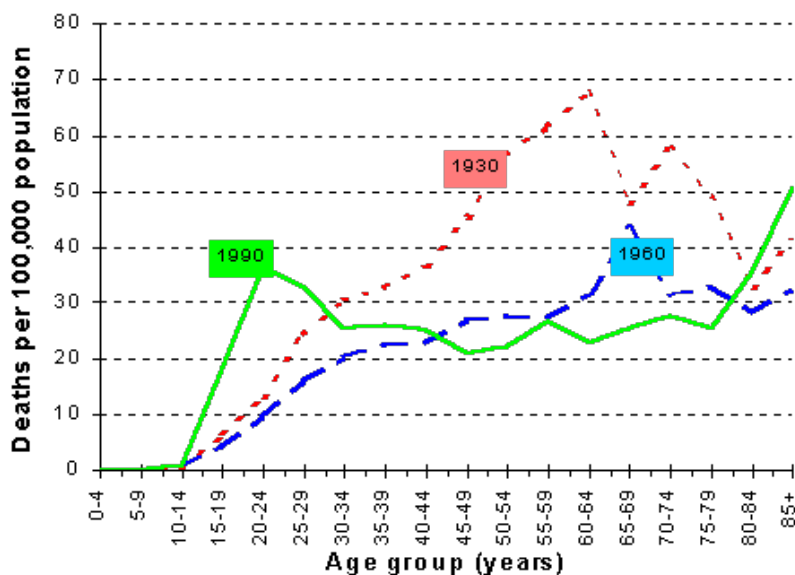


Figure 8: Suicide rates by age group in Australia 1930, 1960, 1990: females

- The main change in the age-pattern of female suicide in Australia has been the increased rate of suicide in middle age in the middle part of the century, due to suicide by sedative poisoning. (2)

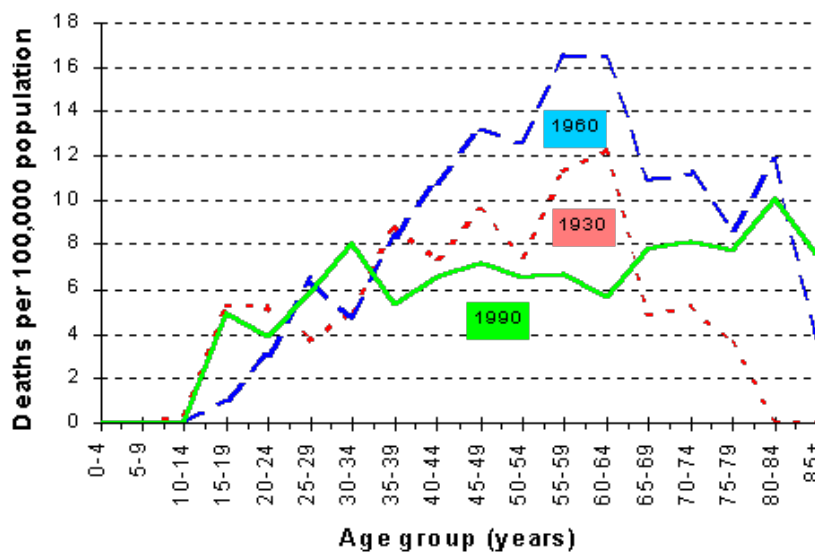
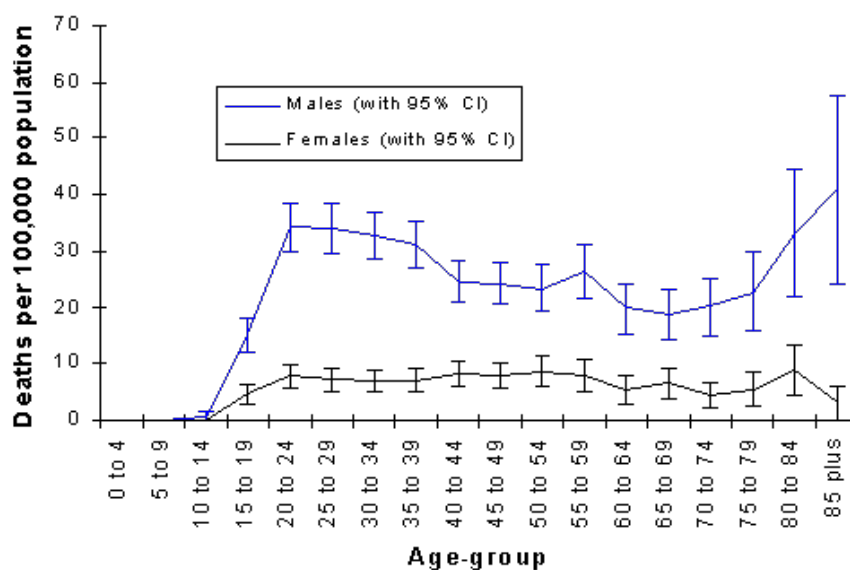


Figure 9: Suicide rates by age group and sex, Australia 1995

- For suicide deaths registered in 1995 (the latest year for which data are available), male rates in early adulthood were significantly higher than rates in middle age.
- Female rates did not vary significantly between adult age groups.



Note: Error bars indicate 95% confidence intervals for rates.

Figure 10: Suicide cases registered in Australia, 1995 by single year of age

- The prominence of young males among suicide deaths is striking when case numbers are charted, rather than age-specific rates.

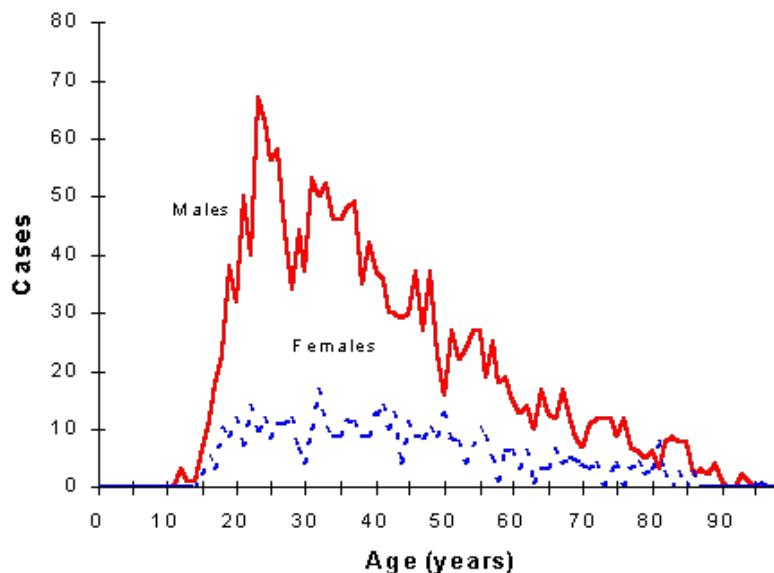


Figure 11: Hospital separation rates due to self-injury by age-group Australia (excluding NT), 1992/93

- Hospital admissions due to suicide-related behaviour are even more sharply concentrated at early adult ages than is the case for suicide deaths.

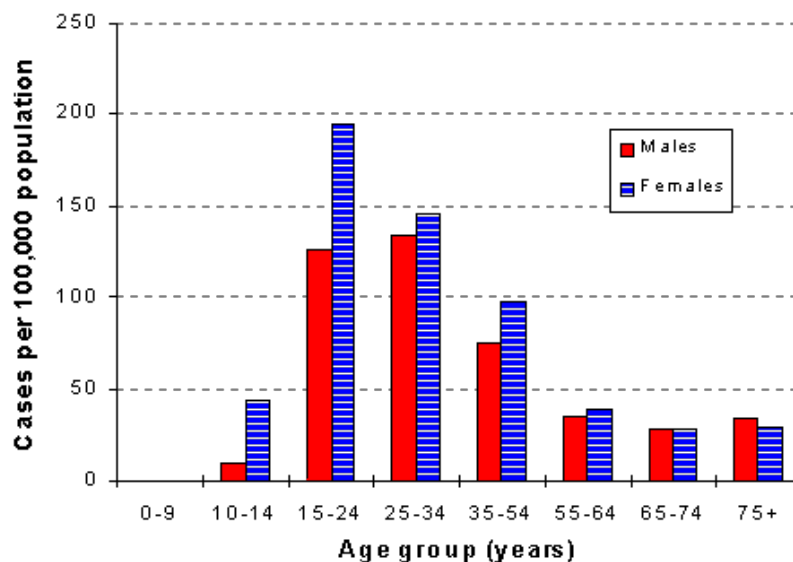
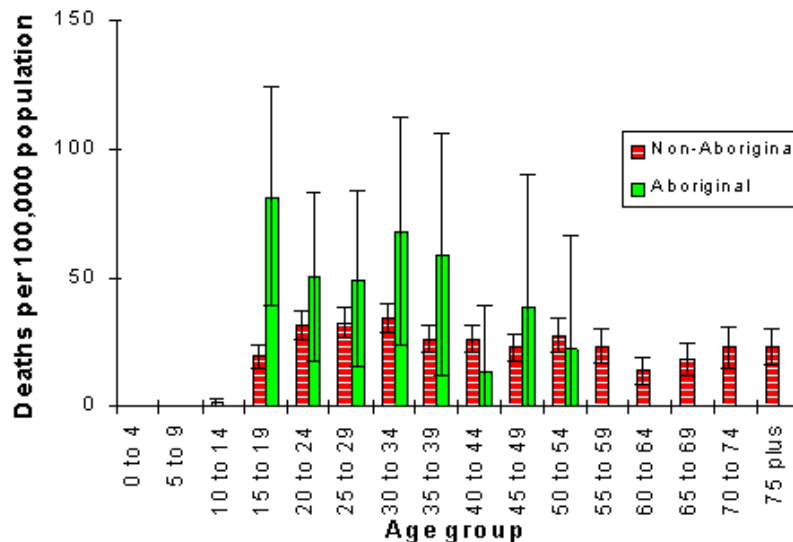


Figure 12: Suicide rates, Aboriginal and non-Aboriginal males, South Australia, Western Australia & Northern Territory, 1993-1995

- Suicide rates for young Aboriginal males are higher than for other young males, and suicide is more sharply concentrated in early adult years for Aboriginal than for non-Aboriginal Australians.
- This is particularly so for the three jurisdictions shown, where it may reflect the relatively high proportion of Aboriginal persons residing in remote-areas.



Notes:

- 1 Error bars indicate 95% confidence intervals for rates
- 2 The chart shows annual average rates over 3 years due to the small annual numbers of Aboriginal cases.
- 3 Identification of Aboriginal deaths is likely to be relatively good for the three jurisdictions shown. [see [Data Issues](#)]

Figure 13: Hospital separations (1992/3, Australia except NT) and deaths (1993, Australia) due to suicide and self-injury, ages 15 to 24: proportions by method

- Methods used differ greatly between suicide deaths and cases hospitalised for self-harm. Hanging, shooting and poisoning with vehicle exhaust are common among deaths. Poisoning by solid and liquid substances (mainly drugs) accounts for four-fifths of hospitalised cases.
- Smaller differences in methods are seen between males and

females than between the two categories of cases. Males tend to use hanging and shooting, while females tend to use drugs.

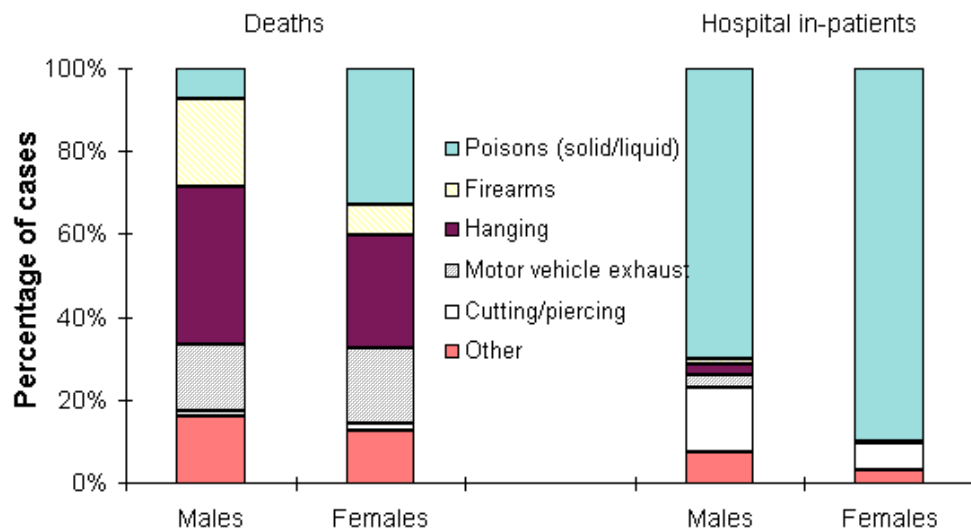


Figure 14: Suicide rates at ages 15 to 24 years in Australia, 1979-1995 by method: males

- The prominence of methods used by young males for suicide has changed substantially in recent decades.
- The rate of suicide by hanging has increased five-fold since 1979.
- The rate of suicide by shooting has dropped by about 50 percent, mostly in the latter part of the period.
- The "other and unspecified" group is tending to rise. This is due to increases in cases of jumping before a moving object, and of jumping from a height.

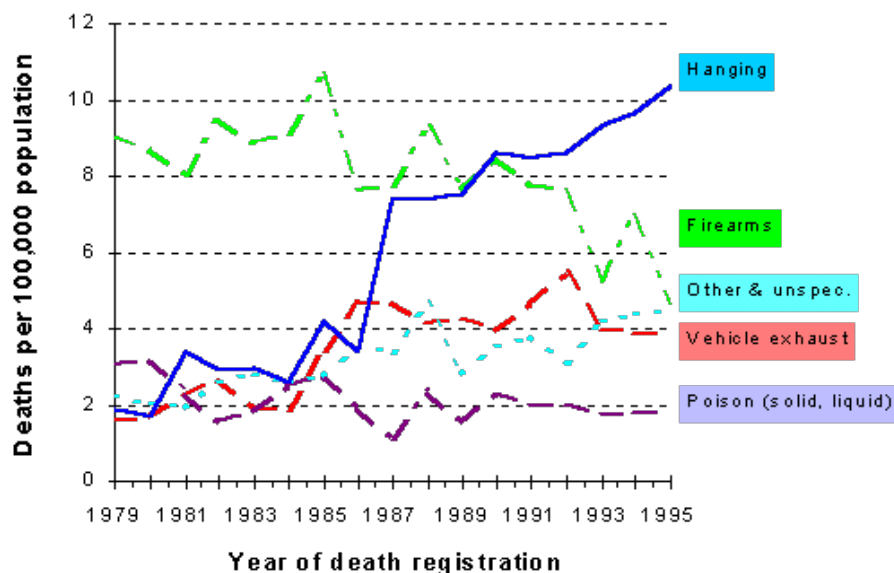
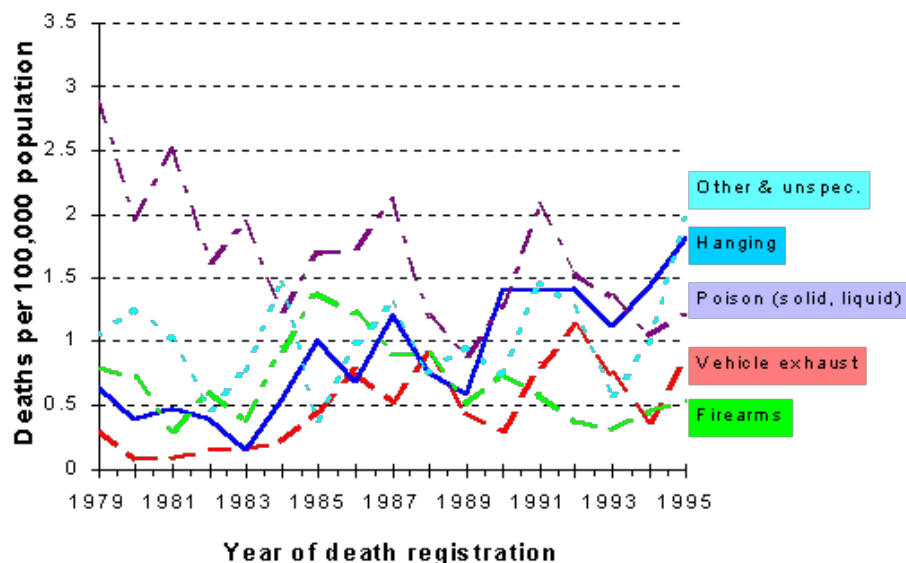


Figure 15: Suicide rates at ages 15 to 24 years in Australia, 1979-1995 by method: females

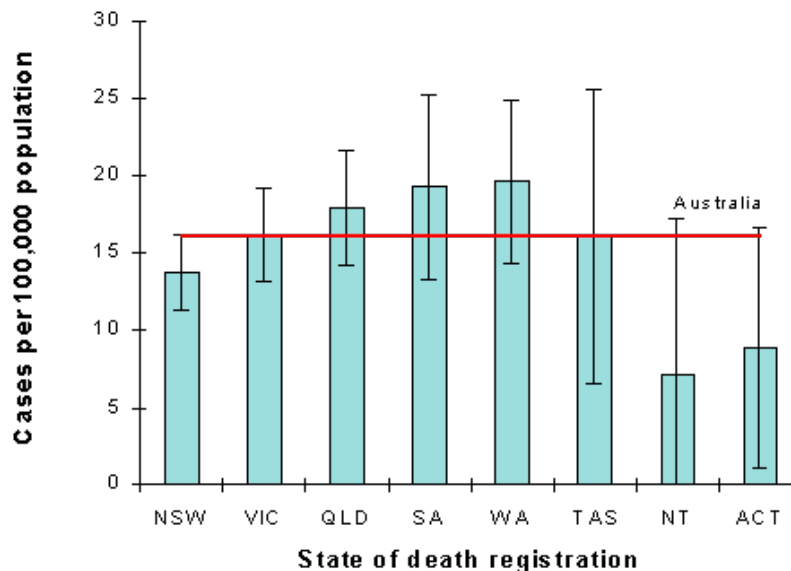
- The decline in the rate of suicide of young females by means of solid and liquid poisons is the tail end of the epidemic of suicide by means of sedatives, which peaked in the 1960s. (Available data for Australia cannot show whether the change was in the rate of self-poisoning episodes, or the proportion with a fatal result.)
- As for young males, the rate of suicide by means of hanging has increased.
- The rate for the "other and unspecified" group has fluctuated widely. It



was relatively high in 1995. As for males, cases of jumping before a moving object, and of jumping from a height are prominent.

Figure 16: Rates of suicide at ages 15 to 24 years, States, Territories and Australia 1995: persons

- Rates of suicide at ages 15 to 24 vary between States and Territories. Differences were not statistically significant in 1995, either for persons (shown in the Figure), or for either gender.

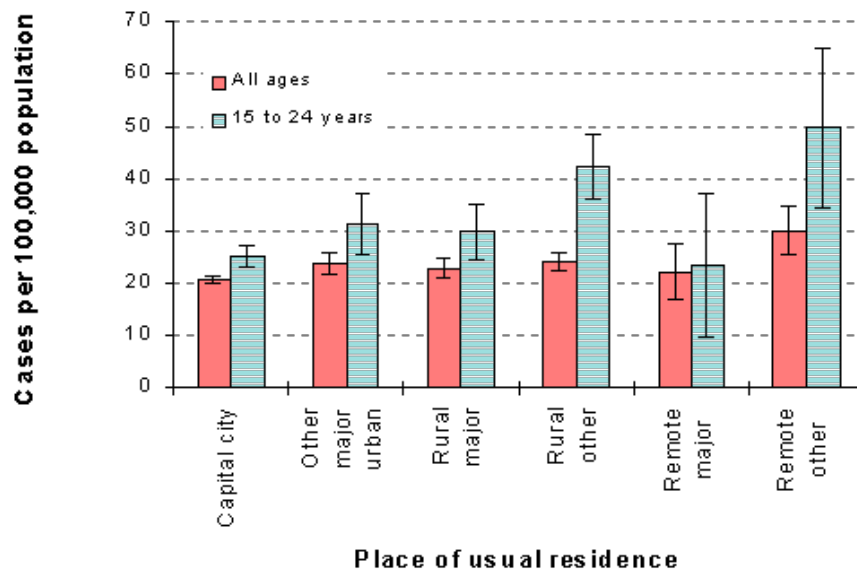


Error bars indicate 95% confidence intervals for rates.

Figure 17: Suicide rates by type of place of usual residence, Australia 1990-1992: males

- Suicide rates are higher for young males who normally reside in non-urban areas than for urban residents. The rates are high both in the "Rural other" areas and in the "Remote other" areas.
- This pattern is more pronounced for young men than for men of all ages.

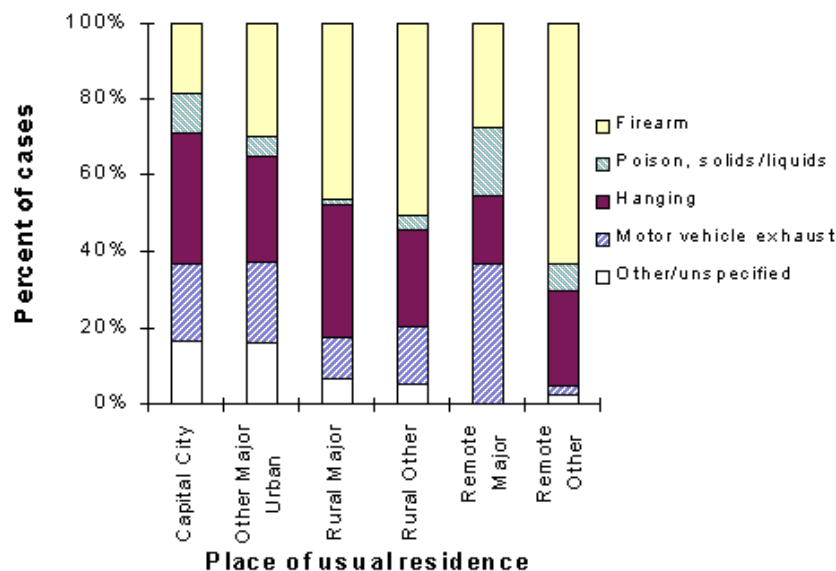




Error bars indicate 95% confidence intervals for rates.

**Figure 18: Method of suicide by place of usual residence, Australia 1990 to 1992: males, 15-24 years**

- Means of suicide also differed according to the place of usual residence for young males. The largest difference was in the proportion of suicides by means of firearms, which was highest among males usually residing in "Rural other" and "Remote other" areas.
- Although shooting accounted for a large proportion of young male suicides in non-urban areas, the number of firearm suicides in these areas during the three years charted (n=120) was almost the same as the number in capital cities (n=121).
- The suicide rate for young Australian males in 1994 was similar to that in the same (or closest available) year for several countries including Canada and Norway, lower than in New Zealand and Finland, and higher than in most European countries, Japan and Singapore. (3)
- The rise in suicide rates for young males has not been restricted to Australia. Rates have risen markedly in recent decades in countries including New Zealand, Canada, USA, and



certain European countries. (4, 5)

- Reported suicide rates for young females are lower than those for young males in nearly all countries for which data are readily available. China is an exception.
- For the period charted, the rate for Australian females aged 15 to 24 was similar to the rates reported for a wide range of European and other countries.

Figure 19: Suicide, males 15-24, 1994 (or nearest available year), all countries reported in World Health Statistics Annual, 1995.

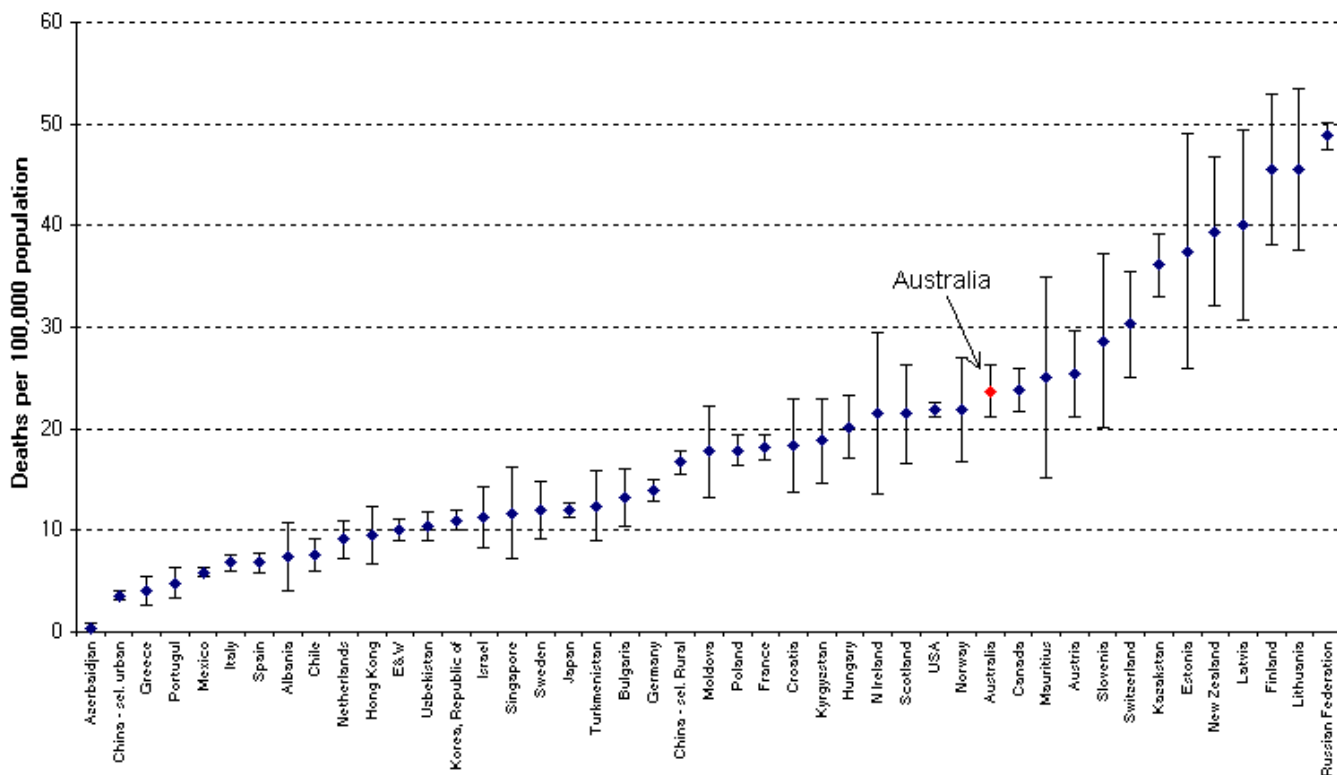
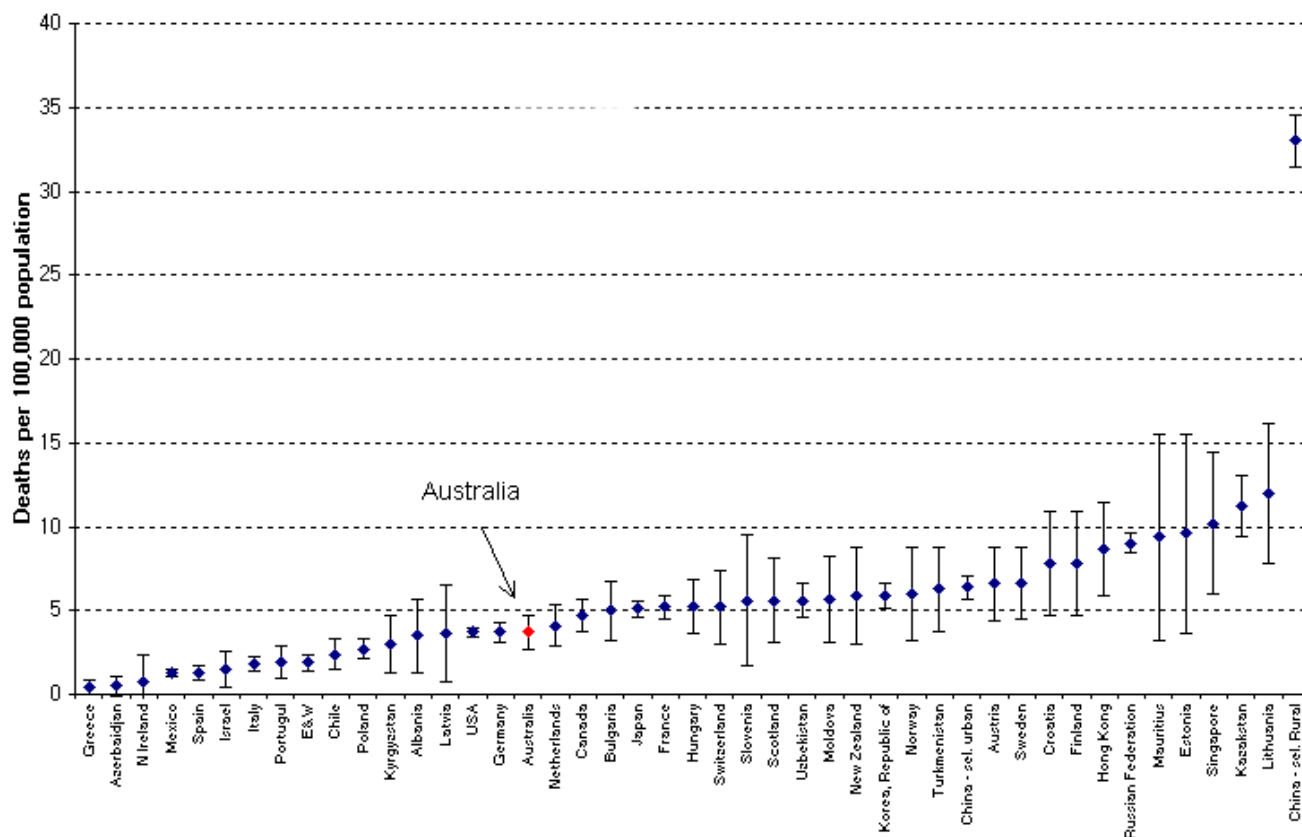


Figure 20: Suicide, females 15-24, 1994 (or nearest available year), all countries reported in World Health Statistics Annual, 1995.



## Data issues

### 1. Data sources

Australian deaths data and population data were obtained from the Australian Bureau of Statistics (ABS). The deaths data originate with coroners and Registrars of Births, Deaths and Marriages. Unit record hospital case data are from the AIHW National Hospital Morbidity Database, and originate from State and Territory health agencies. (Data were not available for the NT, or for private hospitals in some States.) International suicide deaths data are from the latest edition of the WHO World Health Statistics Annual. (3)

### 2. Case definitions and classification

"Deaths" are those registered in the nominated year and jurisdiction. "Hospital separation" is the end of an episode as a hospital in-patient (eg by discharge, transfer or death).

Cause of death is classified by the ABS according to the International Classification of Diseases (ICD). The 9th revision (ICD9) has been used for death registrations beginning in 1979 (6). A Clinical Modification of this classification, ICD9CM, was used for the hospital cases in this report (7). (Relevant categories are the same in both.)

The ICD9 "External Cause" code equivalents of groups presented in this Bulletin are:

- "Suicide" and "self-injury": E950-E959
- Suicide by poisoning (solid or liquid substance): E950
- Suicide by firearm: E955.0 to E955.4
- Suicide by hanging: E953.0
- Suicide by motor vehicle exhaust: E952.0
- Suicide by cutting or piercing: E956
- Motor vehicle accident: E810 to E825

Closest equivalent categories were used for deaths data coded according to earlier editions of the ICD.

ICD9 provides a category for deaths which were investigated (eg by a coroner) without determination of whether they were due to accident, suicide or homicide. This category (E980 to E989) is sometimes reported with suicide because cases in it may be suicides (8). Had this been done in the present report, "suicide" rates at ages 15 to 24 would be increased by about 5 percent for males and 8 percent for females.

The Rural and Remote Areas Classification (used in producing Figures [17](#) and [18](#)) allocates Statistical Local Areas according to population density and an index of remoteness. Cases are grouped according to the SLA of usual residence. ([9](#))

### 3. Confidence intervals

All deaths are supposed to be registered, so sampling errors do not apply to these data. However, the periods used to group the cases are arbitrary. Use of another can result in different rates. Where case numbers are small, the effect of chance variation on rates can be large. Confidence intervals (95%, based on a Poisson assumption about the number of cases in a period) have been placed around rates as a guide to the size of this variation. Chance variation alone would be expected to lead to a rate outside the interval only once in 20 occasions.

### 4. Data quality

Suicide and self-injury are complex concepts, subject to differences of interpretation ([10](#)). Key questions are whether all (or nearly all) suicide and self-injury cases were coded to the categories reported, and whether other types of cases might have been coded to them. There is little direct evidence about the quality of Australian suicide data. Assessments of official statistics on suicide deaths in several comparable countries conclude that there was a moderate degree of under-counting, and few cases falsely counted as suicide (eg [11](#), [12](#), [13](#)). Australian hospital data on "self-harm" for the year reported show signs of substantial differences of case inclusion criteria between jurisdictions.

Identification of Aboriginal and Torres Strait Islander people in population, death and hospital data is known to be imperfect. ([14](#)) Identification of deaths is probably relatively good in Western Australia, South Australia and the Northern Territory.

International data are derived from reports by national agencies to the WHO. Few formal studies of the comparability of international suicide data have been reported.

Lower male death rates in Australia during WW2 are at least partly a data artefact. Deaths overseas of Australians involved in the war, and which occurred from September 1939 to June 1947, were not registered in Australia. Available population estimates do not deduct those who were overseas. ([15](#))

### References

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### Suggested reading

There is a large and diverse literature on suicide. The following book provides a good overview from an Australian perspective:

Hassan, R. *Suicide explained: the Australian experience*. Melbourne: Melbourne University Press, 1995.