



National suicide monitoring of serving and ex-serving Australian Defence Force personnel: 2018 update

Web report | Last updated: 21 Sep 2018 | Topic: [Veterans](#)

About

From 2001 to 2016, there were 373 suicides in serving, ex-serving and reserve Australian Defence Force (ADF) personnel. Compared with all Australian men, the age-adjusted rate of suicide over the period was 51% lower for men serving full time in the ADF, 47% lower for men in the reserves and 18% higher for ex-serving men. In 2014-2016, ex-serving men aged under 30 had a suicide rate 2.2 times that of Australian men the same age.

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Findings from this report:

- In 2001-2016 there were 373 suicides in serving, reserve & ex-serving ADF personnel with 1 day of service since 2001
- In 2002-2016 the age-adjusted suicide rate was lower for serving and reserve men than for all Australian men
- For 2002 to 2016 ex-serving men had an age-adjusted suicide rate 18% higher than for all Australian men
- Ex-serving men aged under 30 had a suicide rate 2.2 times that of Australian men the same age, for 2014-2016

Summary

There is ongoing concern within the Australian Defence Force (ADF) and the wider Australian community about suicide in serving and ex-serving ADF personnel. In particular, ex-serving ADF personnel may face increased risk of suicide.

Recent government inquiries have highlighted the need to improve the integration of service responses to meet the health and wellbeing needs of serving and ex-serving ADF personnel (JSCFADT 2015). The need to invest in prevention and early intervention strategies to improve health and wellbeing outcomes for these groups has also been highlighted. The Government has introduced further suicide prevention and mental health support services for serving and ex-serving ADF personnel and their families (AG 2017).

In response to concerns about suicide amongst serving and ex-serving ADF personnel, the AIHW was commissioned by the Department of Veterans' Affairs (DVA) to report the number and rate of suicide deaths in three ADF service status groups - personnel serving full time, personnel serving in the reserves, and ex-serving personnel (see Box 1).

We acknowledge and pay our respects to those who have passed away, or been affected, by suicide. We are committed to ensuring our work continues to inform improvements in mental health, and suicide awareness and prevention.

What is in this report?

The new online report *National suicide monitoring of serving and ex-serving Australian Defence Force personnel* provides annual updates to information on the level of suicide among serving and ex-serving ADF personnel with at least 1 day of ADF service since 2001 across three service status groups (Box 1).

Box 1: ADF service status groups - definitions

Serving full time: ADF personnel serving in a regular capacity in the Royal Australian Navy (Navy), Australian Army (Army) or the Royal Australian Air Force (Air Force) on or after 1 January 2001, on continuous full-time service, or participating in a gap year program.

Reserve: ADF personnel in the active or inactive reserve forces for the Navy, Army or the Air Force on or after 1 January 2001. Most personnel leaving full-time service transition to the inactive reserve forces, unless prevented by medical or other grounds.

Ex-serving: ADF personnel in the serving or reserve population on or after 1 January 2001, who were subsequently discharged. The ex-serving population increases each year as more discharged personnel are added to that population.

This information is presented in two formats:

- **numbers** of suicides among the three ADF service status groups, in tables, for both men and women
- **comparisons of rates** of suicide across the three ADF service status groups and with the Australian population, in interactive graphs, for men only.

A brief summary of the latest information and analysis of results over time is provided for each of the service status groups.

While the proportion of women in the ADF is increasing, the number of women serving in the ADF has historically been low. For privacy and statistical reasons relating to the small number of women in the study, suicide rates and standardised mortality ratios (SMRs) for women are not reported.

The information in this report is based on fact of death information from the National Death Index (NDI), cause of death information from the National Mortality Database (NMD) and Defence Suicide Database (DSD), as well as information on the three ADF service status groups from Department of Defence personnel systems. For more detail, see [Data sources](#). Numbers of suicides are reported from 2001 onwards, based on the latest available cause of death data. Rates of suicide are reported from 2002 onwards, based on available population data for the three ADF service status groups. While some numbers of suicides can be reported on a yearly basis, 3-year rolling aggregations are used to report the more detailed information. Rates of suicide are reported in 3-year aggregations from 2007 onwards as changes to the Australian Bureau of Statistics (ABS) coding guidelines were applied for deaths registered from 1 January 2007 and comparable rates for prior years cannot be calculated.

This report establishes the basis for the ongoing annual monitoring of suicides in serving and ex-serving ADF personnel, following the more detailed work released previously by the AIHW: *[Incidence of suicide in serving and ex-serving Australian Defence Force personnel: detailed analysis 2001-2015](#)*.

Each annual release will update previously published numbers of suicides to incorporate any updates to the source data. The 2018 online report updates numbers and measures of suicide published earlier in the year in the [detailed study](#). These updates add more recently identified suicides to previously published data, leading to small increases in some suicide rates. The main reasons for changes to previously published results are: a lag in cause of death information for the most recent year of data, where a death is registered in the following year; revisions to cause of death data by the ABS; and improvements in information available to the study. More detail on these reasons for changes to previously published information is provided in the [Notes](#).

National suicide monitoring of serving and ex-serving ADF personnel: measures

The measures to be on reported annually are:

For the period from 1 January 2001 to the most recent year of available cause of death data:

- The total annual numbers of suicides for men and women across the three ADF service status groups (combined).
- The total numbers of suicides for men and women (combined) in the ex-serving population.

For 3-year periods, from 2001-2003 to the most recent 3-year period:

- Numbers of suicide deaths for:
 - all ADF personnel (for men and women across the three ADF service status groups combined)
 - ADF personnel by ADF service status group (for men and women combined)
 - all ADF women (for the three ADF service status groups combined)
 - all ADF personnel under 30 years of age (for men and women across the three ADF service status groups combined)
 - ex-serving personnel under 30 years of age (for men and women combined).

For the period from 2002 to the most recent year of available cause of death data:

- SMRs comparing suicide rates for men in each of the three ADF service status groups with rates for men in the Australian population, adjusted for age.

For 3-year periods, from 2007-2009 to the most recent 3-year period:

- Suicide rates for the three ADF service status groups (men only), with comparison to rates for all Australian men of the same age.
- SMRs comparing suicide rates for men in each of the three ADF service status groups with rates for men in the Australian population, adjusted for age.
- Age-specific suicide rates for ex-serving men aged under 30 and those aged 30 years and over, with comparisons to the rates for Australian men of the same age.

Important factors to consider when reading this report are outlined in Box 2.

Box 2: Factors to consider when reading this report

The reported suicide data are calculated from certified deaths information only; that is, official cause of death information recorded by the Registrars of Births, Deaths and Marriages in each state and territory and the National Coronial Information System.

Within Australia, cause of death information is coded by the ABS. Practices and guidelines for coding intentional self-harm (suicide) have changed over time. These changes have improved the data quality for suicides recorded in Australia. For these reasons, the key measures in this report are presented from 2007 onwards. See the [Notes](#) for further details of these changes.

This study may exclude an unknown number of deaths suspected to be suicides and attributed to another cause after a coroner's investigation.

Deaths data included in this report, or previously published, may be based on preliminary or revised data and as such are subject to further revision. See the [Notes](#) for further information on ABS cause of death revisions.

This report uses data from the NDI to identify fact of death, supplemented with cause of death information from the NMD. Analysis of the NMD for all Australian deaths shows a lag in the reporting of cause of death information for a small percentage of all deaths for the most recent year of published data. As such the most recent year of published data in this report is subjected to additional revision in the following year. These revisions may identify additional suicide deaths.

Differences between the results of this study and other publicly reported estimates may be due to the study scope and/or the source of cause of death information.

The data presented here cannot be used to estimate the number of suicides among people who left the ADF before 1 January 2001 and cannot be extrapolated to the broader ex-serving population. As only certain administrative information about individuals was available in the Defence Personnel Management Key Solution (PMKeyS) data used in this study, it was not possible to account for the wide range of social, demographic and psychological factors that may contribute to suicide risk.

Some results are based on low numbers. Rates produced using low numbers can be sensitive to small changes in numbers of deaths over time. See the [Notes](#) for more information.

If you need help or support, please contact:

- [Open Arms - Veterans & Families Counselling](#) 1800 011 046
- ADF All-hours Support Line 1800 628 036
- [Operation Life Online](#)
- [Lifeline](#) 13 11 14
- [Suicide Call Back Service](#) 1300 659 467

- [Beyond Blue Support Service 1300 22 4636](#)

For information on support provided by DVA see:

- [Mental health](#)
- [Fact sheet HSV 99 - Mental Health Support](#)

References

- JSCFADT (Joint Standing Committee on Foreign Affairs Defence and Trade) 2015. Review of the Defence Annual Report 2013-14. Canberra: Joint Standing Committee on Foreign Affairs, Defence and Trade.
- AG (Australian Government) 2017. Australian Government response to the Foreign Affairs, Defence and Trade Committee Report: The constant battle: suicide by Veterans. Tabled by the Minister for Veterans' Affairs.

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Numbers of suicides 2001 to 2016

Each annual release of this report will update previously published numbers of suicides, where updates have been made to the source data. Updates to these numbers may have an impact on the rates and ratios used for comparison to the broader Australian population, which are calculated from the suicide numbers.

For information on interpreting these results, including updates to previously published data, see [Box 2](#) and the [Notes](#).

Numbers of suicides by year (men and women)

From 2001 to 2016 there were 373 certified suicide deaths among men and women with at least one day of Australian Defence Force (ADF) service since 1 January 2001. Of these, 198 (53%) occurred in ex-serving personnel (Table 1).

From 2001 to 2016, the ex-serving population increased each year as more discharged personnel were added to that population. Changes in numbers of suicides over time need to be interpreted in the context of changes in the size of the population (particularly the increases in the size of the ex-serving group over the analysis period).

Table 1. Number of suicide deaths, ADF service status groups, 2001 to 2016

Year	All ADF ^(a)	Ex-serving ^(b)
2001	19	n.p.
2002	15	n.p.
2003	18	10
2004	15	n.p.
2005	9	n.p.
2006 ^(c)	13	6
2007 ^(d)	20	9
2008	20	11
2009	25	12
2010	27	14
2011	23	12
2012	24	17
2013	34	22
2014	32	20
2015	41	32
2016	38	23

n.p. Not published because of small numbers, confidentiality or other concerns about the quality of the data.

- Consists of suicide deaths in men and women, for all ADF status groups combined (serving, reserve and ex-serving personnel).
- Consists of suicide deaths in men and women for ex-serving ADF personnel only.
- From 2006 onwards, the ABS implemented a revisions process for coroner-certified deaths (such as suicides). This improved data quality by enabling additional suicide deaths to be identified beyond initial processing (ABS 2017}. For detailed information see [Notes](#).
- New ABS coding guidelines were applied for deaths registered from 1 January 2007. The new guidelines improve data quality by enabling deaths to be coded to suicide by ABS mortality coders if evidence indicates the death was from intentional self-harm (ABS 2017). For detailed information see [Notes](#).

Note: The ex-serving population increased each year in the study period (2001-2016), as personnel discharged from the ADF.

Source: AIHW analysis of linked PMKeyS–NDI data 2001-2016.

Number of suicides by service status: 3-year aggregation (men and women)

For confidentiality reasons relating to low numbers, total numbers of suicides are reported in 3-year rolling aggregations from 2001. Aggregation allows for reporting of a greater level of detail than is possible when reporting in single years (Table 2).

From 2001 to 2016, the ex-serving population increased each year as more discharged personnel were added to that population. Changes in numbers of suicides over time need to be interpreted in the context of changes in the size of the population (particularly the increases in the size of the ex-serving group over the analysis period).

Table 2. Number of suicide deaths, ADF service status groups, by 3-year aggregations, 2001-2003 to 2014-2016

	All ages: All service groups ^(a)	All ages: Serving ^(a)	All ages: Reserve ^(a)	All ages: Ex- serving ^(a)	All ages: Women	Under 30 ^(a) : All service groups	Under 30 ^(a) : Ex-serving
2001-03	52	27	13	12	n.p.	31	8
2002-04	48	22	12	14	n.p.	24	8
2003-05	42	16	8	18	n.p.	25	12
2004-06 ^(b)	37	13	10	14	n.p.	17	7
2005-07 ^{(b)(c)}	42	10	12	20	n.p.	22	11
2006-08 ^{(b)(c)}	53	12	15	26	n.p.	23	10
2007-09 ^(c)	65	15	18	32	n.p.	26	11
2008-10	72	17	18	37	n.p.	25	13
2009-11	75	22	15	38	n.p.	28	14
2010-12	74	18	13	43	n.p.	25	14
2011-13	81	16	14	51	8	28	17
2012-14	90	13	18	59	8	31	20
2013-15	107	18	15	74	10	35	24
2014-16	111	21	15	75	10	35	20

n.p. Not published because of small numbers, confidentiality or other concerns about the quality of the data.

- Consists of suicide deaths in men and women.
- From 2006 onwards, the ABS implemented a revisions process for coroner-certified deaths (such as suicides). This improved data quality by enabling additional suicide deaths to be identified beyond initial processing (ABS 2017). For detailed information see [Notes](#).
- New ABS coding guidelines were applied for deaths registered from 1 January 2007. The new guidelines improve data quality by enabling deaths to be coded to suicide by ABS mortality coders if evidence indicates the death was from intentional self-harm (ABS 2017). For detailed information see [Notes](#).

Notes:

- For privacy reasons, numbers of suicides for individual service status groups by year are not published. This table presents suicide deaths by 3-year aggregation, so suicide deaths recorded in any year will contribute to multiple rows in the table. As such, the sum of any column will be greater than the total number of suicide deaths recorded for that service group over the study period 2001 to 2016.
- The ex-serving population increased each year in the study period (2001-2016), as personnel discharged from the ADF.

Source: AIHW analysis of linked PMKeyS–NDI data 2001-2016.

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- [Beyondblue](#) Support Service 1300 22 4636

For information on support provided by DVA see:

- [Mental health](#)

References

- ABS (Australian Bureau of Statistics) 2018. [Causes of death, Australia, 2017. Explanatory notes](#). ABS cat. no. 3303.0. Canberra: ABS. Viewed 11 June 2019.



Comparing suicide rates 2002 to 2016

There are differences between the population profiles of the three Australian Defence Force (ADF) service status groups and the Australian population (Box 3). Because of these differences, comparisons of numbers of suicides between the ADF service status groups and the Australian population are not straightforward. To assist in making comparisons, this report presents rates of suicides and Standardised Mortality Ratios (SMRs) (comparisons of age-adjusted suicide rates).

Box 3: Differences between the ADF and Australian populations

The age and sex profiles of the ADF service status groups and the Australian population differ. The comparative Australian population is older on average and around 50% male, while the ADF service status groups are younger and around 85% male. These age and sex differences need to be accounted for when examining differences in suicide levels between these populations.

Further, the annual population size for each of the service status groups differs. While the serving and reserve populations are relatively stable over time, the ex-serving population in this study started at zero (0) on 1 January 2001 and increases each year as personnel discharge. Unlike the serving and reserve populations, the ex-serving population is also ageing over time.

Suicide rates and SMRs complement information on the [number of suicide deaths](#) by taking into account the size and age structure of the underlying population, to provide information on how often suicide death occurs in that population.

For this study, distinct comparison populations were used for each ADF service status group. Lower and upper ages were defined by ages observed within each ADF service status group.

Data for 2001 are not included in the calculation of rates in this report, as data for the serving and reserve populations were not available before 2002 due to a change in Defence personnel management systems at that time. Analysis of ex-serving personnel was restricted to data from 2002 onwards, in line with reporting for serving and reserve groups.

For information on interpreting these results, including changes to previously published data, see [Box 2](#) and the [Notes](#).

Analysis 2002 to 2016

The age-adjusted rate of suicide over the period 2002 to 2016 was 51% lower for current serving men, 47% lower for men in the reserves and 18% higher for ex-serving men, when compared with all Australian men of the same age.

Due to the small number of suicide deaths among women in the ADF in the period 2002 to 2016 it was not possible to perform any further analysis on this group.

Analysis by period 2007 to 2016

Rate of suicide by service status (men)

Observed rates for the three ADF service status groups are presented in this section. They can be validly compared with each other and over time, and can be compared with rates for the Australian population.

See [Age-adjusted suicide rates](#) for age-standardised rates, which account for differences in age structures between populations.

Description: This section reports the observed suicide rates for men in the three ADF service status groups, for 3-year periods from 2007 to 2016. Comparisons are made between rates for men in each of the service status groups and to rates for Australian men in the same age range.

While the proportion of women in the ADF is increasing, the number of women serving in the ADF has historically been low, and for privacy and statistical reasons, suicide rates for ADF women are not reported. For further information on interpreting this measure, see [Notes](#).

Results based on cause of death information that is not final are subject to greater change than those based on final cause of death information. However, estimates for all periods are subject to change as improvements to the underlying data are incorporated.

From 2007-2009 to 2014-2016, the rate of suicide among:

- serving men was between 8 and 13 per 100,000 population
- men in the reserves was between 10 and 15 per 100,000 population
- ex-serving men was between 25 and 33 per 100,000 population.

Suicide rates within each of the three ADF service status groups were largely consistent over the study period. Significance testing using confidence intervals (CIs) supports this finding. See [Notes](#) and [Data tables](#) for more detail.

Over the study period, the suicide rate among serving men was consistently lower than the rate for Australian men in the same age range. This is supported by the significance testing where, for each time point, the difference was found to be statistically significant.

For men in the reserves, the suicide rate was consistently lower than the rate for Australian men over the study period. This is also supported by the significance testing for the more recent 3-year periods where the difference was found to be significant.

For ex-serving men, the suicide rate was consistently higher than that for men in the Australian population, again supported by the significance testing with the difference found to be significant in recent 3-year periods.

The graph below presents the suicide rate for men in the ex-serving ADF service status group and the rate for the comparative population of Australian men, for all 3-year periods from 2007-2009. The comparison graphs for all other ADF service categories and Australian males are in the Appendix.

Figure 1: Rate of suicide by service status (men)

Rate of suicide (per 100,000 population), Ex-serving and Australian men, 2007-2009 to 2014-2016

Ex-serving and Australian men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016

Data underlying this graph are available in Supplementary tables S1.1 to S1.3. See [Data](#) for a link to the tables.

Please note, data are subject to change: see [Notes](#) for further detail.

Age-adjusted suicide rates (standardised mortality ratios) by service status (men)

This report uses SMRs to control for the difference in age structures between each of three ADF service status groups and its equivalent comparison (Australian) population.

Description: SMRs are used to compare suicide rates between the three ADF service status groups and the comparison (Australian) population, while controlling for the difference in age structures between these populations (age-adjusted suicide rate).

SMRs for men are presented by service status, for 3-year periods from 2007 to 2016.

Comparisons are made to men in the Australian population. SMRs greater than one indicate age- and sex-specific rates are higher in the ADF population than those in the Australian population; SMRs equal to 1.0 indicate equal rates; and SMRs less than 1.0 indicate lower rates for the ADF population.

SMRs cannot be compared with each other, because different weighting is used to generate each result.

While the proportion of women in the ADF is increasing, the number of women serving in the ADF has historically been low, and for privacy and statistical reasons, suicide rates for ADF women are not reported. For further information on interpreting this measure, see [Notes](#).

Results based on cause of death information that is not final are subject to greater change than those based on final cause of death information. However, estimates for all periods are subject to change as improvements to the underlying data are incorporated.

The age-adjusted suicide rate for ex-serving men was consistently higher than that for men in the Australian population over the study period. A significant difference was observed for the 3-year period 2013-2015 (see [Data tables](#) for more detail). When compared with the rate for Australian men, the age-adjusted rate for ex-serving men was between 11% higher (SMR = 1.11) in 2009-2011 and 37% higher (SMR = 1.37) in 2013-2015.

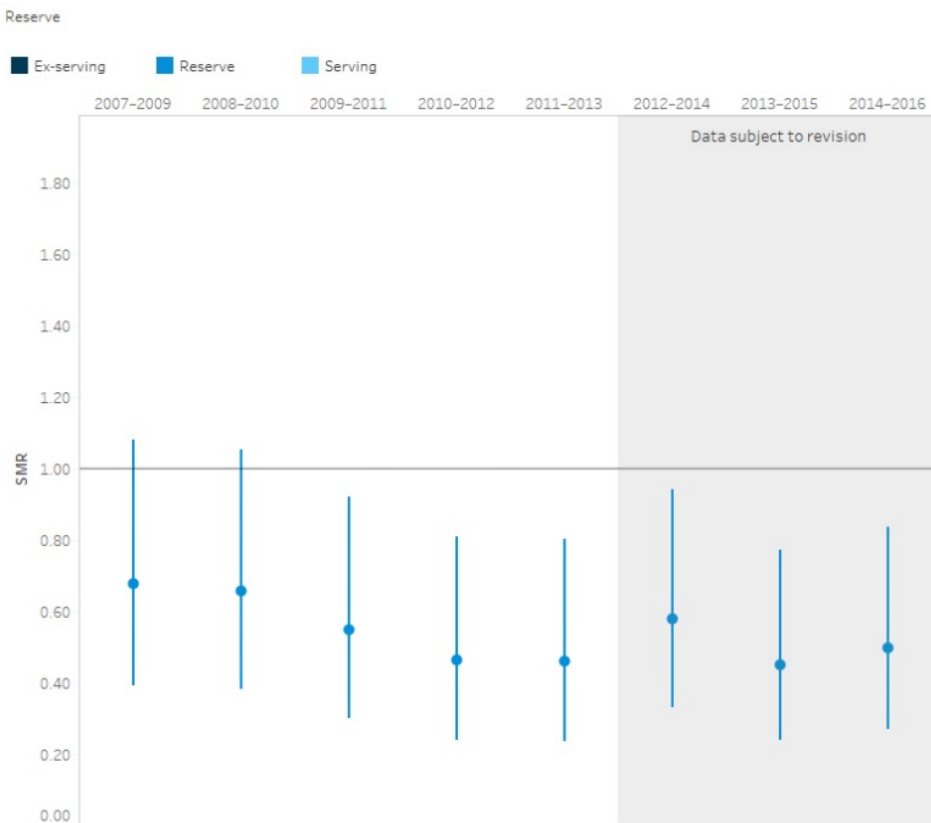
In 2007-2009 to 2014-2016, after adjusting for age, the suicide rate for men in the reserves was consistently lower than that for men in the Australian population. When tested, age-adjusted rates for men in the reserves were found to be significantly lower than rates for Australian men in each 3-year period from 2009-2011 onwards. Over the study period, and when compared with rates for Australian men, the age-adjusted suicide rate for men in the reserves ranged from 32% lower (SMR=0.68) in 2007-2009 to 55% lower (SMR=0.45) in 2013-2015.

After adjusting for age, the suicide rate for serving men was consistently lower when compared with an age-matched population of Australian men in each period between 2007-2009 and 2014-2016. For each 3-year period, the difference was found to be significant when tested. When compared with the rate for Australian men, the age-adjusted rate for serving men was between 63% lower (SMR=0.37) in 2012-2014 and 38% lower (SMR=0.62) in 2009-2011.

The age-adjusted comparisons of suicide rates for men in the reserve service status group and Australian men between 2007-2009 and 2014-2016 are presented in the interactive graph below. The graphs for serving and ex-serving males are in the Appendix.

Figure 2: Age-adjusted suicide rates (standardised mortality ratios) by service status (men)

Comparative rate of suicide, Reserve men, compared with all Australian men, 2007-2009 to 2014-2016



Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016.

Data underlying this graph are available in Supplementary tables S2.1 to S2.3. See [Data](#) for a link to the tables.

Please note, data are subject to change: see [Notes](#) for further detail.

Suicide rates by age (ex-serving men, aged under 30 and aged 30 years and over)

Description: This section presents suicide rates per 100,000 population for ex-serving men aged under 30 and those aged 30 years and over, for 3-year periods from 2007 to 2016. Comparisons are made to rates for men in the same age range in the Australian population.

While the proportion of women in the ADF is increasing, the number of women serving in the ADF has historically been low, and for privacy and statistical reasons, suicide rates for ADF women are not reported. For further information on interpreting this measure, see [Notes](#).

Results based on cause of death information that is not final are subject to greater change than those based on final cause of death information. However, estimates for all periods are subject to change as improvements to the underlying data are incorporated.

From 2007-2009 to 2014-2016 the suicide rate for ex-serving men aged under 30 was consistently higher than that for men in the same age range in the Australian population. When tested, the difference was significant from 2012-2014 onwards. The suicide rate for ex-serving men aged under 30 was 23 per 100,000 at the start of the study period and 43 per 100,000 at the end. The rate for all Australian men under 30 was steady at 17-19 per 100,000 over the same period.

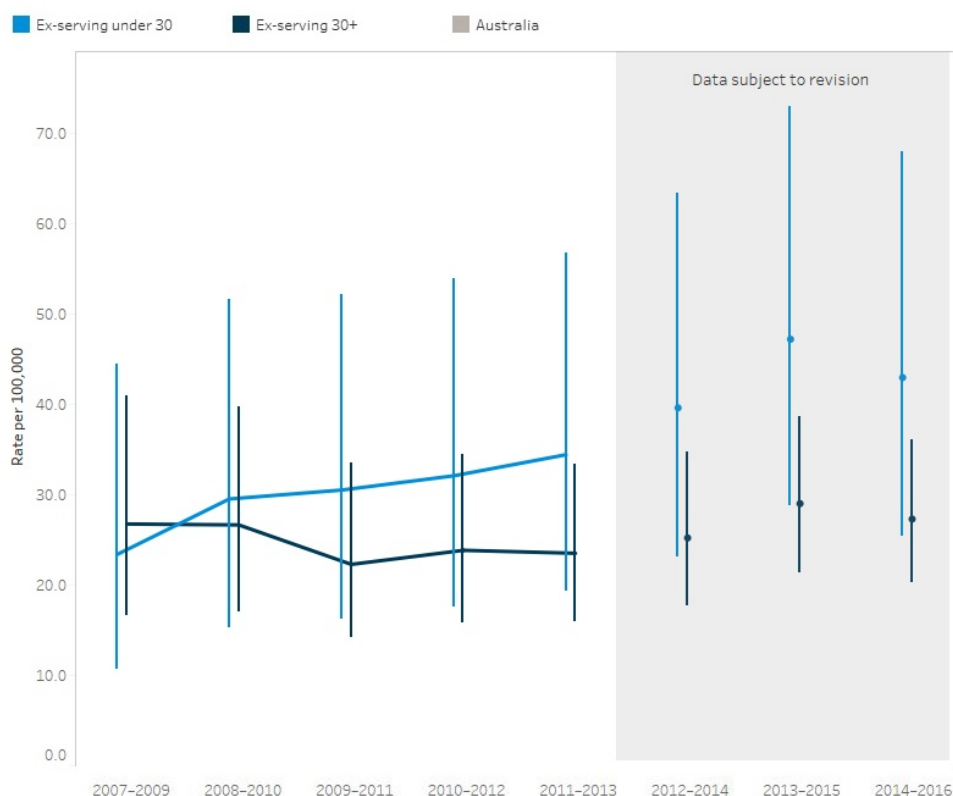
The suicide rate for ex-serving men aged 30 years and over ranged between 22 and 29 per 100,000 population over the study period. During this time, there was no evidence of a difference in suicide rates between ex-serving men aged 30 and over and men in the same age range in the Australian population.

The suicide rate for ex-serving men under 30 and 30+ years of age is compared in the graph below. Further comparisons between these groups and Australian males are given in the Appendix.

Figure 3: Suicide rates by age (ex-serving men, aged under 30 and aged 30 years and over)

Age-specific rate of suicide (per 100,000 population), Under 30 and 30+ Ex-serving men, 2007-2009 to 2014-2016

Under 30 and 30+ Ex-serving men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016.

Data underlying this graph are available in Supplementary tables S3.1 and S3.2. See [Data](#) for a link to the tables.

Please note, data are subject to change: see [Notes](#) for further detail.

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- [ADF All-hours Support Line](#) 1800 628 036
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For information on support provided by DVA see:

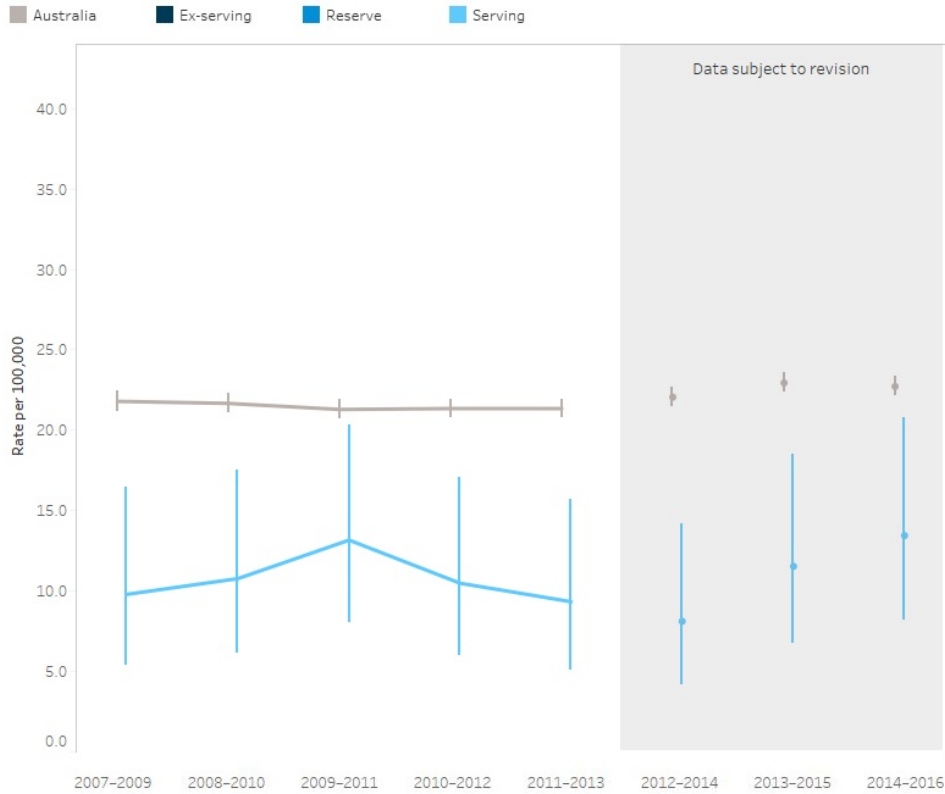
- [Mental health](#)
- [Fact sheet HSV99 - Mental Health Support](#)

Appendix: Images of supplementary suicide rate interactive graphs

Rate of suicide by service status (men)

Rate of suicide (per 100,000 population), Serving and Australian men, 2007–2009 to 2014–2016

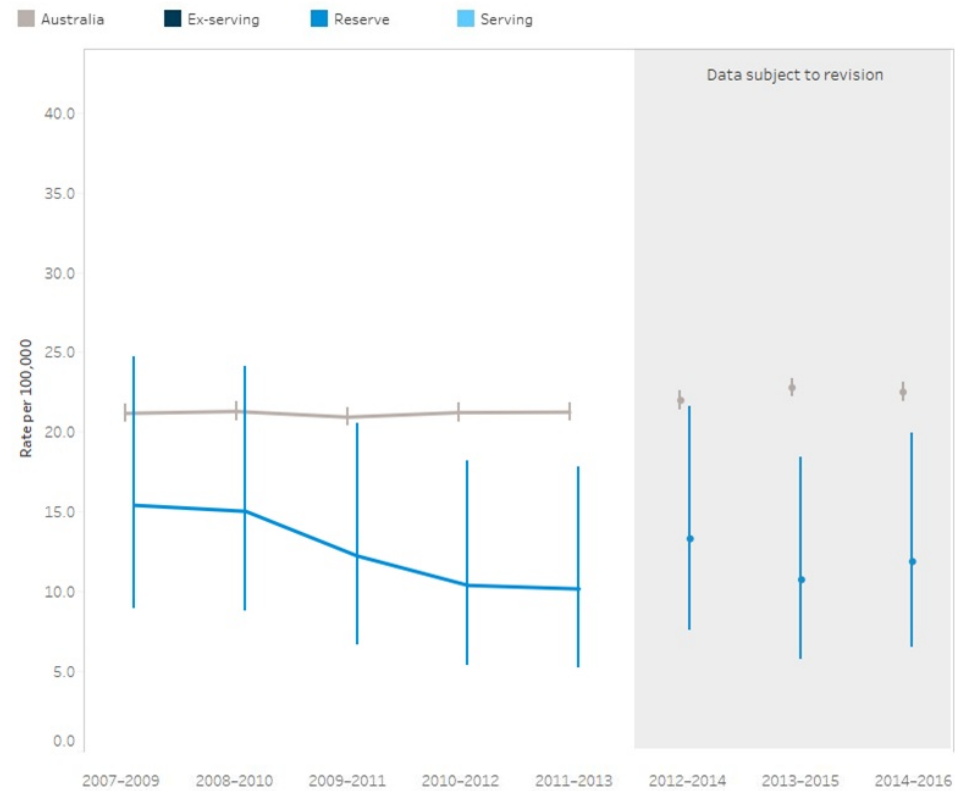
Serving and Australian men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007–2016; AIHW National Mortality Database 2007–2016

Rate of suicide (per 100,000 population), Reserve and Australian men, 2007–2009 to 2014–2016

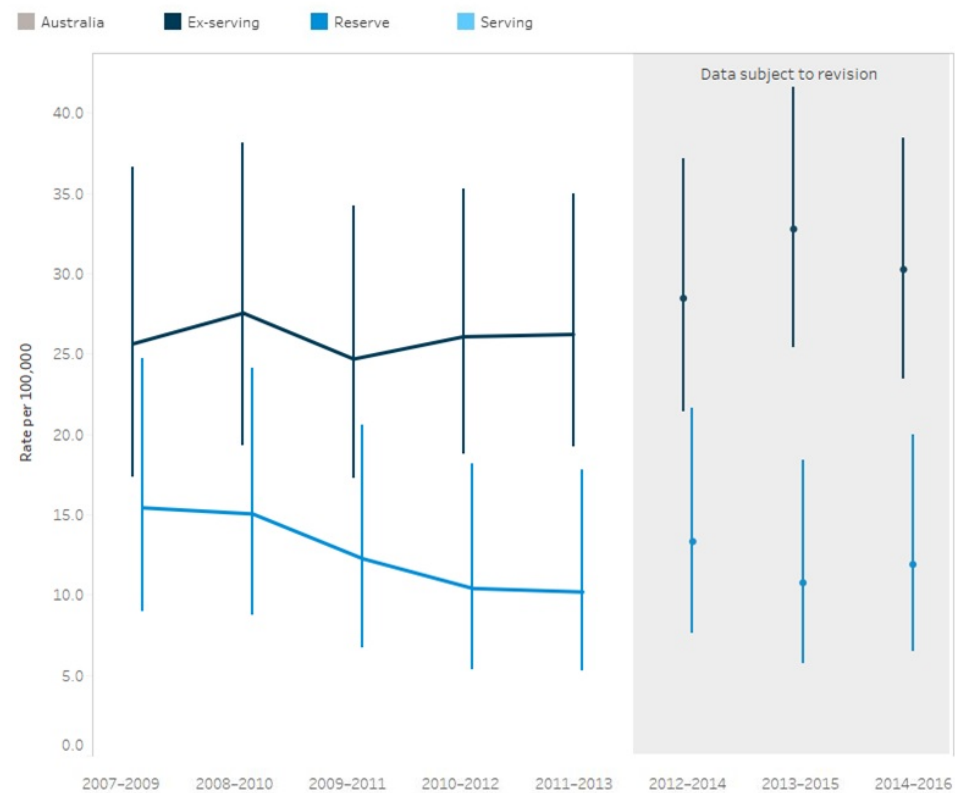
Reserve and Australian men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016

Rate of suicide (per 100,000 population), Ex-serving and Reserve men, 2007–2009 to 2014–2016

Ex-serving and Reserve men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016

Rate of suicide (per 100,000 population), Ex-serving and Serving men, 2007–2009 to 2014–2016

Ex-serving and Serving men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016

Rate of suicide (per 100,000 population), Serving and Reserve men, 2007–2009 to 2014–2016

Serving and Reserve men

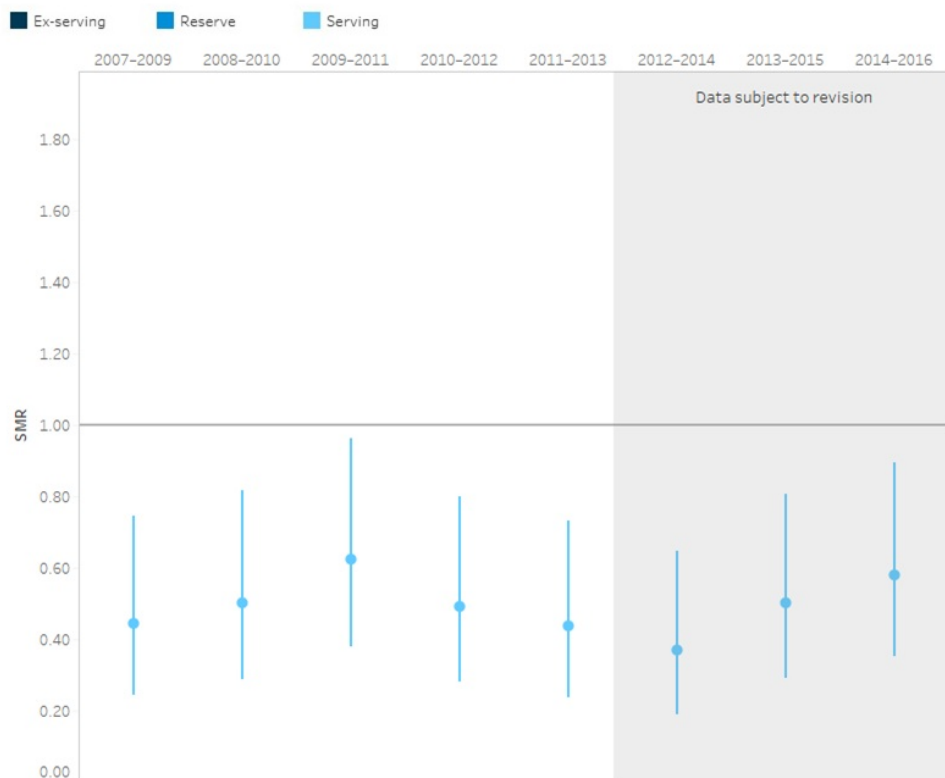


Sources: AIHW analysis of linked PMKeyS-NDI data 2007-2016; AIHW National Mortality Database 2007-2016

Age-adjusted suicide rates (standardised mortality ratios) by service status (men)

Comparative rate of suicide, Serving men, compared with all Australian men, 2007–2009 to 2014–2016

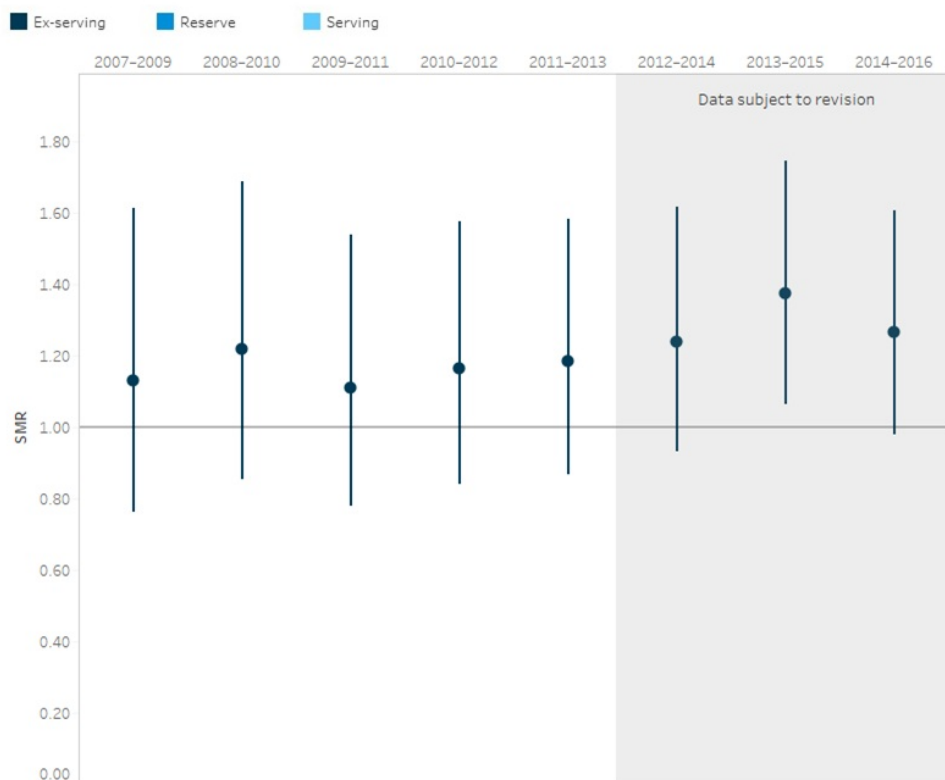
Serving



Sources: AIHW analysis of linked PMKeyS-NDI data 2007–2016; AIHW National Mortality Database 2007–2016.

Comparative rate of suicide, Ex-serving men, compared with all Australian men, 2007–2009 to 2014–2016

Ex-serving

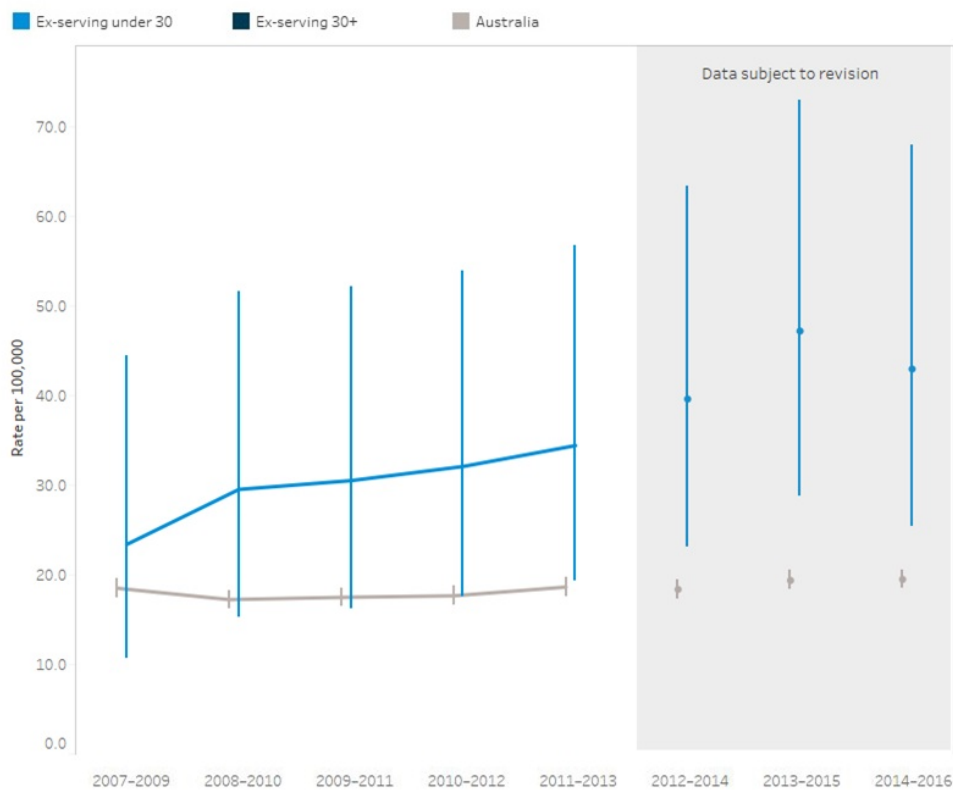


Sources: AIHW analysis of linked PMKeyS-NDI data 2007–2016; AIHW National Mortality Database 2007–2016.

Suicide rates by age (ex-serving men, aged under 30 and aged 30 years and over)

Age-specific rate of suicide (per 100,000 population), Under 30 Ex-Serving and Australian men, 2007–2009 to 2014–2016

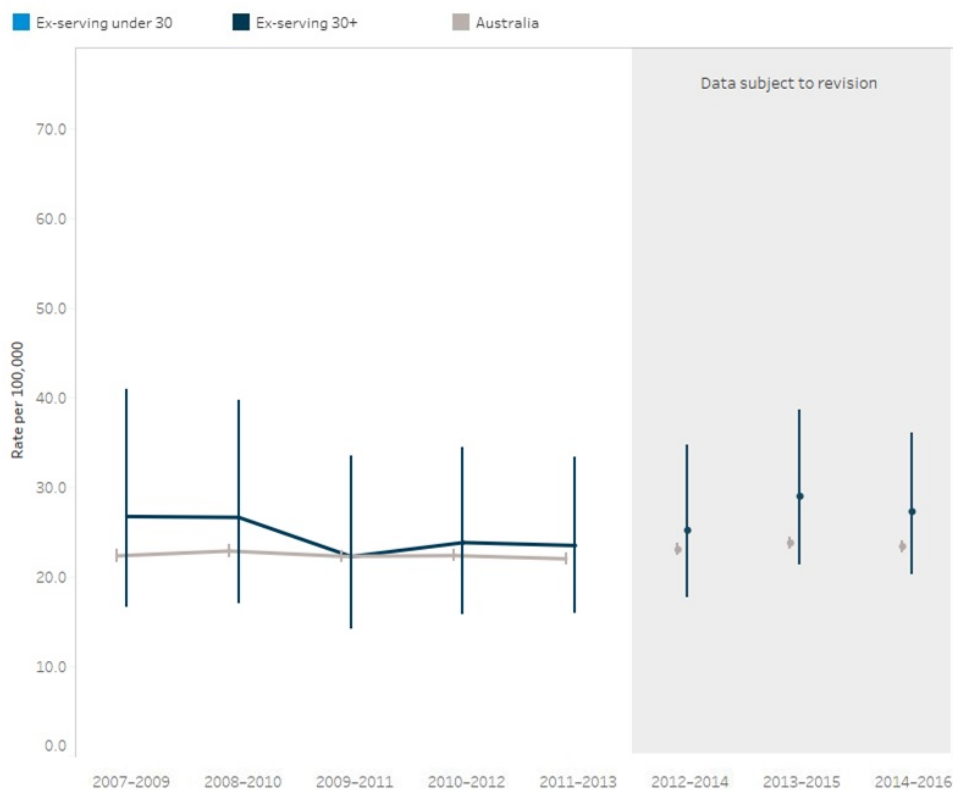
Under 30 Ex-Serving and Australian men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007–2016; AIHW National Mortality Database 2007–2016.

Age-specific rate of suicide (per 100,000 population), 30+ Ex-serving and Australian men, 2007–2009 to 2014–2016

30+ Ex-serving and Australian men



Sources: AIHW analysis of linked PMKeyS-NDI data 2007–2016; AIHW National Mortality Database 2007–2016.

Notes

Australian Bureau of Statistics (ABS) changes to mortality coding over the study period

The following information on mortality coding is sourced from the ABS. For further information, see the ABS [Causes of Death](#) report.

Substantial changes to ABS cause of death coding were undertaken in 2006, improving data quality by enabling the revision of cause of death for open coroner's cases over time. Deaths that are referred to a coroner (including deaths due to suicide) can take time to be fully investigated. To account for this, all coroner-certified deaths registered after 1 January 2006 are subject to a revisions process. This allows cause of death for open coroner's cases to be included at a later stage where the case is closed during the revision period. Cause of death data are deemed preliminary when first published, with revised and final versions of the data being historically published 12 and 24 months after initial processing. Prior to 2006, revisions did not take place and as such it is recognised by the ABS that suicide deaths may have been understated during this period (ABS 2017).

As well as the above changes, new coding guidelines were applied to deaths registered from 1 January 2007. The new guidelines improve data quality by enabling deaths to be coded as suicide by ABS mortality coders if evidence from police reports, toxicology reports, autopsy reports and coroners' findings indicates the death was due to suicide. Previously, coding rules required a coroner to determine a death as due to suicide for it to be coded as suicide.

The combined result of both changes has been the more complete capture of suicide deaths, and a reduced number of deaths coded as 'undetermined intent', within Australian mortality data.

Detailed information on coding guidelines for intentional self-harm, and administrative and system changes that can have an impact on the mortality data set, can be found in Explanatory Notes 88-96 of Causes of deaths report (ABS 2017).

Changes to previously published suicide information

As well as the addition of a new year of cause of death data, there are three main reasons for changes to previously published suicide results, as described below.

Lag in cause of death information for the most recent year of data, where a death is registered in the following year

Analysis in this study is based on year of occurrence of death. The National Death Index (NDI) is the source of information on fact of death in this study. Fact of death information from the NDI is supplemented with cause of death information from the National Mortality Database (NMD). Results published in the report *Incidence of suicide in Australian Defence Force personnel: detailed analysis 2001-2015* for deaths that occurred in 2015 were based on preliminary cause of death information from the NMD. This was the most recent version of cause of death information at the time of reporting.

Analysis of the NMD for all Australian deaths shows that around 5% of deaths are not registered until the next year. These deaths are not captured in cause of death information, until data for the next year become available. This means that while fact of death information was complete for 2015 at the time of publishing the *Incidence of suicide in Australian Defence Force personnel: detailed analysis 2001-2015*, cause of death information was missing for around 7.5% of the deaths included in the analysis at that time. Additional suicides that occurred in 2015 but that were not registered until 2016 have now been identified with the inclusion of preliminary 2016 cause of death information in the current results.

Cause of death data revisions (ABS)

Cause of death information for the 2018 *National suicide monitoring of serving and ex-serving ADF personnel* release is based on final cause of death information for the years 2001 to 2013. Revised data are used for 2014 and preliminary data for 2015 and 2016. Cause of death for a small number of records linked to the 2014 (revised), 2015 (preliminary) and 2016 (preliminary) cause of death data may change where a death is being investigated by a Coroner and more up to date information becomes available as a result of the ABS revisions process. This may have a small effect on the number of deaths attributed to suicide in these years, as some deaths currently coded as 'undetermined intent' could later be identified as 'intentional self-harm'.

Improvements in information available to the study

Changes to previously published results may also occur as additional information becomes available to the study.

For example, changes affecting recording of deaths in jurisdictional systems (including administrative and system changes, certification practices, classification updates or coding rule changes) can impact on the data sets underlying this study. Data users should note the potential impact of these changes when making comparisons between reference periods. While such changes will not explain all differences between years, they are a factor that may influence the magnitude of any changes in suicide numbers as revisions are applied (ABS 2017)

Rates based on low numbers

Rates based on low numbers of events can fluctuate from year to year for reasons other than a true change in the underlying frequency of the event.

In this report, rates are not reported when there are fewer than 5 events, as rates produced using low numbers can be sensitive to small changes in counts of deaths over time.

Suicide rates

When reporting how often suicide occurs, suicide rates account for the size of the underlying population. Whilst this measure does not account for differences in the age structures of the populations being compared, rates can be validly compared over time, across groups and to the corresponding Australian population.

Here, rates report how often suicides occur in the three ADF service status groups, and Australia, expressed as a number per 100,000 people.

Standardised mortality ratios

The standardised mortality ratio (SMR) is a widely recognised measure used to account for differences in age structures when comparing death rates between populations. The SMR is used to control for the fact that the three 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 rates between the three service status groups and Australia without the confounding effect of differences in age.

The SMR is calculated as the observed number of events in the comparison population (suicide deaths) divided by the number of events that would be expected if the study population had the same age- and sex-specific rates as those observed in the comparison population.

If the age- and sex-specific rates are the same for both populations (i.e. Australian and the ADF population) the SMR will be 1.0. If the rates are higher in the ADF population the SMR will be greater than 1.0, while if the ADF population rates are lower than the Australian population the SMR will be less than 1.0.

Using confidence intervals to test for statistical significance

Statistical significance is a measure that indicates how likely the observed difference is due to chance alone.

In this study, 95% confidence intervals (CIs) are provided for each standardised mortality ratio (SMR) and suicide rates to indicate the level of uncertainty around these estimates. 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 suicide deaths over time (related to the small sample size).

Use of CIs is the simplest way to test for significant differences. For the purpose of this report, differences are deemed to be statistically significant if CIs do not overlap with each other (when comparing suicide rates) or 1.0 (in the case of an SMR).

Static images in this report

An earlier version of this report had interactive Tableau figures with selectable data series as Figures 1, 2 and 3. This version instead uses static images for Figures 1, 2, and 3, with all data series from the original interactive figures given in the Appendix.

Acronyms

(21 Sep 2018)

ADF	Australian Defence Force
CI	Confidence Interval
DSD	Defence Suicide Database
NDI	National Death Index
NMD	National Mortality Database
PMKeyS	Personnel Management Key Solution
SMR	Standardised Mortality Rate

Data sources

The sources used here are the:

- **National Mortality Database (NMD).** Cause of Death Unit Record File data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the Australian Bureau of Statistics (ABS). The data are maintained by the AIHW in the NMD.

Analysis in this report is based on year of occurrence of death. Year of death is an underestimate for the last year of data (2016), as some deaths are not registered until later years. Historical analysis of the NMD shows that this lag in registration results in around 5% late registrations each year.

At the time of analysis, the causes of death data were final for 2013, revised for 2014 and preliminary for 2015 and 2016. Cause of death for a small number of deaths occurring in 2014, 2015 and 2016 are subject to further revision by the Australian Bureau of Statistics (ABS) and may be revised in future years.

- **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).
- **Personnel Management Key Solution (PMKeyS).** PMKeyS is a Defence staff and payroll management system that contains information on all people with Australian Defence Force (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 suicides, in the three 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 suicides are included in the database only on the advice of the ADF Investigative Service. Cases are confirmed by receipt of a coronial finding of 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 suicides only.

References

- ABS (Australian Bureau of Statistics) 2017. [Causes of death, Australia, 2016](#). Explanatory notes. ABS cat. no. 3303.0. Canberra: ABS. Viewed 21 March 2018.
- AIHW (Australian Institute of Health and Welfare) 2018. Canberra: AIHW. [About National Death Index](#). Viewed 9 March 2018.

Data quality statement

National Death Index (NDI).

The data quality statements underpinning the AIHW National Mortality Database can be found in the following Australian Bureau of Statistics (ABS) publications:

- ABS quality declaration summary for [Deaths, Australia \(ABS cat. no. 3302.0\)](#)
- ABS quality declaration summary for [Causes of death, Australia \(ABS cat. no. 3303.0\)](#)
- For more information on the AIHW National Mortality Database see [Deaths data at AIHW](#).



Data



Report editions

Newer releases

- Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 1997 to 2020 | **Web report** | 16 Nov 2022
 - Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019 | **Web report** | 29 Sep 2021
 - National suicide monitoring of serving and ex-serving Australian Defence Force personnel: 2020 update | **Web report** | 09 Oct 2020
 - National suicide monitoring of serving & ex-serving ADF personnel | **Web report** | 29 Nov 2019
-

This release

National suicide monitoring of serving and ex-serving Australian Defence Force personnel: 2018 update | 21 Sep 2018

Previous releases

- Incidence of suicide in serving and ex-serving Australian Defence Force personnel: detailed analysis 2001-2015 | **Publication** | 19 Jan 2018
 - Incidence of suicide among serving and ex-serving Australian Defence Force personnel 2001-2015: in brief summary report | **Publication** | 30 Jun 2017
 - Incidence of suicide among serving and ex-serving Australian Defence Force personnel 2001-2014 | **Publication** | 30 Nov 2016
-



Related material

Latest related reports

- National suicide monitoring of serving & ex-serving ADF personnel |
Web report | 29 Nov 2019
- Causes of death among serving and ex-serving Australian Defence Force personnel: 2002-2015 |
Publication | 21 Sep 2018
- Incidence of suicide in serving and ex-serving Australian Defence Force personnel: detailed analysis 2001-2015 |
Publication | 19 Jan 2018
- Incidence of suicide among serving and ex-serving Australian Defence Force personnel 2001-2014 |
Publication | 30 Nov 2016
- Fourth study of mortality and cancer incidence in aircraft maintenance personnel: a continuing study of F-111 Deseal/Reseal personnel 2016 |
Publication | 17 Oct 2016
- Third study of mortality and cancer incidence in aircraft maintenance personnel: a continuing study of F-111 Deseal/Reseal personnel 2009 |
Publication | 20 Feb 2009

Related topics

- [Life expectancy & deaths](#)
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