Australian Government
Australian Institute of Health and Welfare

Characteristics of ex-serving Australian Defence Force members hospitalised for suicidality and intentional self-harm

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About

This is the first report using a newly established data set on the health service use of ex-serving Australian Defence Force (ADF) members. It examines the characteristics of hospitalised ex-serving members to better understand their hospital care needs, particularly for conditions associated with suicidal behaviour, including mental health-related care and intentional self-harm.

Cat. no: PHE 346

- <u>Analysis</u>
- <u>Fact sheet</u>
- <u>Infographic</u>
- <u>Data</u>

Findings from this report:

- <u>A higher share of hospital admissions for admitted ex-serving members were for mental health compared to all Australians</u>

- <u>Higher proportions of suicidal behaviour admissions were associated with Army or Navy service and involuntary separation</u>

- <u>The most common reasons for admission to public hospitals were similar for ex-serving members and all Australians</u>

- <u>One in 27 presentations to emergency by ex-serving members was for self-harm or suicidal behaviour between 2013 and 2020</u>

Viewing this data

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Introduction

Background

In 2017 the Department of Veterans' Affairs (DVA) and Australian Institute of Health and Welfare (AIHW) established a partnership to build a comprehensive profile of the health and welfare of Australia's veteran population.

AIHW has partnered with DVA and Defence to establish a new data asset to provide greater insight into the health service needs of ex-serving ADF members. This data asset allows the service use patterns for individuals (de-identified) to be tracked over time (for more detail see Technical notes).

This project describes the use of certain healthcare services by ex-serving ADF members based on this data asset. This report specifically examines the use of public hospital services for conditions associated with suicidal behaviour (mental health, alcohol and drug use and intentional self-harm) by ex-serving ADF members, including those who died by suicide. Some private hospital data is also included in this report where it was available.

Given 20% of deaths by suicide are linked to a history of self-harm (ABS 2021), understanding hospital-based care for conditions associated with suicidal behaviour may identify intervention opportunities and inform suicide prevention strategies.

AIHW acknowledges that the data presented in this report represent human lives and we acknowledge all of those serving and ex-serving ADF members who have died by suicide. We also acknowledge all of those who have been affected by suicide or intentional self-harm. We are committed to ensuring our work continues to inform improvements in mental health, and suicide awareness and prevention.

What is included in this report

In this first report using the new data asset, AIHW has focussed on exploring the public hospital care use of ex-serving ADF members for conditions related to suicide and suicidality, including those admitted to hospital as well as those presenting to emergency departments. More specifically, AIHW has used the data asset to establish what proportion of ex-serving members who received public hospital care in 2019-20 and received that hospital care primarily for conditions related to suicidal behaviour.

For example, the proportion of ex-serving ADF members admitted to public hospitals for mental health-related care was calculated by taking the number of ex-serving members who were admitted to public hospital at least once during the period primarily for mental health-related care and then dividing this by the total number of ex-serving members who were hospitalised during the period.

Importantly, because this analysis only includes people that received care from a hospital, the data cannot be used to provide an indication of the incidence or prevalence of conditions associated with suicidal behaviour within the populations studied or the relative risk of suicide or suicidality. It also doesn't provide information on the unmet care needs of those who could have benefited from hospital care but did not receive it.

Incidence (or hospitalisation) rates are recognised as a useful statistical measure of hospital care utilisation, however are not presented here, due to data limitations with gaps in information from some jurisdictions (outlined further below).

This report compares the characteristics of those ex-serving ADF members who accessed hospital services (hospital admissions and ED presentations) and those who died by suicide with the general Australian population who accessed the same sorts of services. While comparisons with other specific population groups, (such as those who have faced similar trauma including first responders) or those who have similar socio-economic characteristics (including housing circumstances, employment status, family structure) could offer valuable insights, data constraints limit such analysis at present.

Further information on population scope, analysis period and methodology can be found in Box 1 and the Technical notes.

In this report, the term 'mental health-related care' is used to refer to a range of psychological disorders consistent with AIHW reporting of mental health admitted care for the Australian population, while 'mental and behavioural disorders' is used specifically when discussing diagnosis in line with international classification systems such as the ICD (International Classification of Diseases).

Who is included in this report?

The scope of the analysis for this report is all people who had:

- accessed admitted patient care services at a participating public hospital in Australia (excluding non-DVA clients admitted to public hospitals in Western Australia and Northern territory) from 1 July 2010 to 30 June 2020
- been admitted to a participating public or private hospital in Queensland during the study period from 1 July 2010 to 30 June 2020
- presented to a participating hospital Emergency Department (ED) from 1 July 2013 to 30 June 2020.

These data include around 269,000 ex-serving ADF members (who had served at least one day since 1 January 1985), of whom 226,800 were males and 42,100 were females. Between July 2010 and June 2020, 36% of ex-serving males (81,300) and 40% of females (16,900) received admitted patient care for any condition at a participating public hospital.

Between July 2010 and June 2020, 600 ex-serving males and 68 ex-serving females died by suicide. Of ex-serving members who died by suicide, 275 males (46%) and 40 females (59%) had received admitted patient care at a participating public hospital prior to their death during the 10-year period.

The small number of observed deaths by suicide among females limits analysis and interpretation of data for females who died by suicide.

Between July 2013 and June 2020, there were around 117,300 ex-serving ADF members who attended a public hospital ED for any reason, this included 98,900 males and 18,400 females.

Further information on the data sources and population scope can be found in Box 1 and the Technical notes. Definitions of the terms used in this section are available in the Glossary.

Notes on measuring the use of admitted patient and emergency department care

There are some factors that affect the analysis of admitted patient care and ED care in the ex-serving population and the comparable Australian population. These include:

- differences in the age structure of the population groups
- the Australian comparator population includes the ex-serving population
- counts of patients were computed corresponding to the disaggregation of year (i.e. analysis by year counted patients per year while counts across the whole analysis period would only count each patient once for the entirety of that period)
- lack of data on private hospital admitted patient and emergency department care
- to a lesser extent, lack of data on public hospital admitted patient and emergency department care (explained below)
- emergency department care and public hospital admitted patient care were analysed separately, and overlapping admissions were not excluded. This should be considered when interpreting the results.

Data on admitted patient care was available for 2010-2020 while ED care was for 2013 to 2020.

Age structure of the ex-serving member population

The ages of ex-serving members are different to the ages of persons in the whole of Australia population. The ex-serving population has a smaller proportion of older persons and a smaller proportion of younger persons, with a higher proportion of persons aged between 35-54 years and also males aged 55 to 64 years (see Figure 3 in Technical notes). This is a result of the ex-serving population only including persons who have served since 1985, a small share of persons having already separated from the ADF at younger ages and historical differences in female recruitment.

The differences in the age structure between the ex-serving ADF member population and the total Australian population should be considered when interpreting health-related findings. Many health conditions and diseases are directly associated with aging. In contrast, conditions related to suicidal behaviour such as mental and behavioural disorders, alcohol and other drug use and intentional self-harm are more prevalent among younger cohorts (see Intentional self-harm hospitalisations by age groups).

Due to the differences in age structures between the ex-serving population and Australian population and the links between age and health conditions, AIHW has made comparisons with the Australian population based on age groups to control for these differences. Where most of the age group comparisons show the same pattern, greater confidence can be had in using all age comparisons.

Data limitations

The analysis for this report was conducted using multiple linked administrative datasets held in a bespoke data asset built by the AIHW. Comprehensive information about the data sources used for this analysis is available in the Technical notes.

There are some challenges and limitations that affect any type of analysis using linked administrative data including:

- bias from linkage errors where records cannot be linked
- data sources of varying quality

- limitations in the time periods to which data are available.

Specific challenges relating to this report were the lack of private hospital data across most jurisdictions and public hospital data for non-DVA clients for two jurisdictions (Western Australia and Northern Territory).

Lack of hospital data

Overall, half of all episodes of admitted patient care for mental health-related care is provided by private hospitals (AIHW Admitted Patients 2021-22). This proportion varies by condition and population with national data showing that more admitted patient care is provided by private hospitals for depressive episodes and mental and behavioural disorders due to alcohol and other drug use (see Admitted patients mental health-related care).

Private hospital services are not universally available and most are funded by the patient's private health insurance and/or self-funding - meaning that people from higher socioeconomic groups have higher rates of private hospital admissions (see Understanding the wellbeing characteristics of ex-serving ADF members and Australia's hospitals at a glance). Notably for ex-serving members, private hospital care is also available through workers compensation arrangements, the Department of Defence for serving ADF members and DVA for eligible ex-serving members.

At the time of this report only Queensland had both public and private hospital data that could be used to compare ex-serving and Australian population use of hospital care. In comparison, all jurisdictions except for Western Australia and Northern Territory had sufficient public hospital data to compare ex-serving and Australian population use of public hospital admitted patient care.

ED data has similar limitations to admitted patient care data. However, most care in ED takes place in public hospitals so the lack of private hospital data is likely to have had a smaller impact on the analysis of ED care.

As a result of the limited private hospital data, the focus of the report is on public hospital admissions. However, to complement the main analysis AIHW also conducted analysis based on data from Queensland to provide a more complete picture of public and private hospital admissions for conditions relating to suicidality. The Queensland comparison is used as a form of case study to better understand the downward bias that was present in the public hospital only analysis and to understand if trends changed given the inclusion of private hospital data based on Queensland. The Queensland results are presented in the Technical notes.

Partial data on Western Australia and Northern Territory

AIHW also used data from DVA for admitted patient and ED care for the analysis. This included care delivered in hospitals across all states and territories including those for which there was no public hospital data through the National Health Data Hub (NHDH). This has enabled the addition of some Western Australian and Northern Territory hospital data (for eligible DVA clients only) but would not be considered representative of hospital data not captured in NHDH.

See the Technical notes for more information on the NHDH and DVA data.

> **Box 1: Analysis Study Populations**
>
> **Admitted Patient Care Analysis**
>
> The **admitted patient** care analysis is based on two study and comparator populations based on the availability of admitted patient care data.
>
> **Ex-serving ADF member population 1 – all participating jurisdictions:** Ex-serving members who had served at least one day from 1 January 1985, and who were admitted to a public hospital in Australia (except non-DVA client veterans admitted to a Western Australia or Northern Territory hospital) between 1 July 2010 and 30 June 2020. It also includes all ex-serving members who died by suicide between 1 July 2010 and 30 June 2020.
>
> In total, 98,200 ex-serving ADF members – 81,300 males and 16,900 females were admitted. Among these ex-serving ADF members, 275 males and 40 females died by suicide between 1 July 2010 and 30 June 2020.
>
> Comparisons are made with the total Australian population aged 17 and over who accessed public hospitals and those who died by suicide and accessed public hospitals for the same period.
>
> **Ex-serving ADF member population 2 – Queensland only:** Ex-serving members who had served at least one day from 1 January 1985, and who were admitted to a public or private hospital in Queensland between 1 July 2010 and 30 June 2020.
>
> In total, 59,400 ex-serving members – 49,000 males and 10,400 females – were admitted to a public or private hospital in Queensland.
>
> Comparisons are made with the total Queensland population aged 17 and over who accessed Queensland hospitals for the same period.

There were around 140 ex-serving ADF members who died by suicide and received admitted patient care at Queensland hospitals across the study period which prevented further analysis.

The analysis of this cohort is mainly presented in the Technical notes.

Emergency Department Care Analysis

The **Emergency Department (ED)** analysis is based on the ex-serving ADF population who had served at least one day from 1 January 1985, and who presented to a public hospital ED in Australia (except non-DVA client veterans admitted to a Western Australia or Northern Territory hospital) between 1 July 2013 and 30 June 2020 due to the availability of ED care data.

In total, 117,300 ex-serving ADF members – 98,900 males and 18,400 females were included.

Comparisons are made with the total Australian population aged 17 and over accessing participating hospitals across Australia for the same period.

Measures used in the report

Information about the use of admitted patient and emergency department care by the ex-serving population and comparisons with the broader age-matched Australian population is presented using counts, proportion differences and relative differences. Proportion difference is the absolute difference in percentage points between the two populations. Relative difference is the ratio of proportions and measures the scale or extent of the difference.

When calculating counts and proportions, ex-serving ADF members who were admitted multiple times in a period were only counted once each period. In terms of the proportions, if an ex-serving ADF member was admitted multiple times in the same period and at least one admission was primarily for mental health-related care, they were counted as a mental health-related care admission in the numerator (and denominator) whereas if an ex-serving ADF member was admitted multiple times in the same period and no admissions were for mental health-related care, they were included in the denominator.

The same process was taken for all people receiving public hospital care during the period and the proportions compared to provide additional context to the ex-serving member experience.

Confidence intervals (CI) of 95% are provided for the proportion and relative differences to indicate the level of certainty around these estimates due to random fluctuations associated with small numbers. A narrow confidence interval indicates more certainty in the result. Statistically significant differences between ex-serving ADF members and all Australians are not necessarily explained by prior ADF service and may be explained by other factors (such as socio-demographic factors) not accounted for in this report.

Suicide is a relatively rare event compared to other causes of death. Admission to hospital for intentional self-harm, while more frequent than suicide, is also not common. Small numbers can raise privacy and confidentiality concerns and affect statistical methods and reporting capability. Values based on small numbers have therefore been suppressed to maintain confidentiality and to avoid publishing statistics of low reliability. Statistics based on small numbers of suicides should be interpreted with caution.

Hospitalisation rates of the ex-serving population could not be determined at the time of reporting due to a lack of data on the size of the ex-serving population in each jurisdiction. AIHW is currently exploring other ex-serving population data sources to support these analyses in the future.

Statistics in this report are presented for two distinct periods. Analysis of admitted patient care in the year before suicide used data across the entire study period of 2010-2020. In contrast, analyses of admitted patient care for conditions associated with suicidal behaviour focussed on 2019-20, as prior years revealed similar patterns (See Supplementary Tables for years 2010-11 to 2019-20). The ED analysis focuses exclusively on the entire period for which data was available, being 2013-20.

More information is available in the Technical notes.

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Summary

In general, ADF members are encouraged to be physically and mentally fit, receive regular medical assessments, and have access to comprehensive medical and dental treatment.

ADF members can, however, face stressors from exposure to combat, geographical relocations, and lengthy separation from family and support networks. The health of ADF members may be affected differently given the member's gender, age, service branch, rank, length of service, and for ex-serving members due to the time since service and the circumstances of their discharge from the ADF.

In order to better manage the particular needs of ADF members, it is important to understand their experiences and how their characteristics and needs may differ from other Australians. This includes examining the characteristics of members associated with suicidality and self-harm.

This report examines the characteristics of ex-serving members using a newly established data asset of public hospital service use (including admitted patient care and emergency departments). It specifically focuses on public hospital care for conditions associated with suicidal behaviour, including mental health-related care, alcohol and other drug use, and intentional self-harm, to identify the particular characteristics and care needs of ADF members.

More specifically, AIHW analyses the proportion of ex-serving members who received public hospital care in 2019-20 and who received that care primarily for conditions associated with suicidal behaviour. Comparisons to other hospitalised Australians are used to provide context and better understand the specific care needs of ADF service members.

This report makes two key comparisons of people using public hospital services: firstly, between ex-serving ADF members who used hospitals services throughout the study period and the total Australian population who used hospital services, and secondly, hospital service use prior to death among those who died by suicide within these groups.

These data contribute to a more complete picture of the characteristics of ex-serving ADF members and how their public hospital care needs may differ from the rest of the population. It is important to remember that not all people who experience these issues will go to public hospital. Some may not seek care and/or may access alternative models of care, including private hospitals. These data cannot be used as a measure of the prevalence or incidence of health conditions either within the ex-serving ADF population or the general population.

Public hospital admitted patient care for ex-serving members was more likely to be for mental health-related care compared to all Australians

Of people admitted to public hospital in 2019-20, the proportion of ex-serving ADF members who had at least one hospitalisation primarily for mental health-related care was relatively high compared to those from the total Australian population (8.1% compared with 6.6% for males and 6.1% compared with 5.0% for females).

The proportion of ex-serving members who had at least one hospitalisation primarily for mental health-related care varied by age. Ex-serving males aged 35-44 years had the highest proportion of hospitalisation for mental health-related care (14.6%) relative to the Australian male population in that age group (11.4%). The rates were similar for males aged 17-24 and those aged 65 years and over.

For females, ex-serving members aged 25-34 had relatively higher rates of admission for mental health-related care at 7.4% compared to 4.9% in the Australian female population in that age group.

The proportion of ex-serving males admitted to public hospitals who had at least one hospitalisation primarily for stress-related disorders was 1.7% compared to 0.5% for all Australian males. Similarly, the proportion of ex-serving males admitted to public hospitals who had at least one hospitalisation primarily for depression was higher for ex-serving males aged 35-54 years compared to the same aged Australian male population.

Higher proportions of admission for mental health-related care in ex-serving males was associated with specific ADF service factors such as:

- Army (8.4%) or Navy (8.7%) service compared to RAAF (5.9%) service for ex-serving males
- shorter lengths of service for ex-serving males; service of less than one year (10.8%), and between 1 and less than 5 years (10.7%) compared to service of at least 5 years but less than 10 years (8.5%), and 10 or greater years (5.6%)
- other ranks for ex-serving males – junior and unspecified (9.2%), compared to officers (6.1%) and senior other ranks (4.7%)

- involuntary separation – especially involuntary medical separation (19.6%), compared to voluntary separation (8.1%) for ex-serving males.

Similar patterns for ADF factors were observed for both ex-serving males and females for admitted patient care relating to alcohol and other drug use and intentional self-harm.

A higher proportion of ex-serving ADF members in the hospitalised group had at least one admission for alcohol and other drug related conditions than in the total male and female hospitalised population (males was 3.8% compared with 3.2% respectively and females was 3.1% compared with 1.9%). Of those with an admission for alcohol and drug related care, 53.8% of ex-serving males had an admission for alcohol use (compared with 46.0% in the total population).

Higher proportions of ex-serving ADF males and females who were admitted to a public hospital were admitted for intentional self-harm compared to the total Australian population for each year between July 2010 and June 2020.

Emergency department presentations for ex-serving ADF members were more likely to be related to suicidal behaviours than for all Australians

Between 2013 and 2020, about 4,400 ex-serving ADF members presented to an emergency department (ED) for self-harm or suicidal behaviour. This accounted for 3.7% of all ED presentations among ex-serving ADF members, above the rate of 2.8% for all Australians.

Across all age groups, the proportion of presentations to EDs by ex-serving males that were for self-harm or suicidal behaviour was 3.7%. This was up to 1.6 times higher among ex-serving males (for those aged 65+) compared with all Australian males. A similar pattern was seen among ex-serving females, except for those aged 65 years and over (where there was no significant difference).

The **most common reasons** for admission to public hospitals were similar for both ex-serving members and the total Australian population.

The three most common reasons that ex-serving ADF members were admitted to public hospitals were **symptoms and signs**, **injury and poisoning** and **digestive diseases**.

Male hospital admissions for ex-serving ADF members

were higher for mental health-related care compared to all admitted Australians in 2019-20.

- Male ex-serving: **8.1%**
- Male Australian: **6.6%**

Female hospital admissions for ex-serving ADF members

were higher for mental health-related care compared to all admitted Australians in 2019-20.

- Female ex-serving: **6.1%**
- Female Australian: **5.0%**

The **age patterns** of males and female ex-serving members who received admitted patient care were similar to the age structure of the ex-serving population group, including those who weren't admitted.

1 in 27 presentations

to emergency by ex-serving members was for self-harm or suicidal behaviour between 2013 and 2020.

- Ex-serving: **3.7%**
- All Australians: **2.8%**

Characteristics associated with higher proportions of suicidal behaviour admissions were **Army** or **Navy service** and **involuntary separation** (especially medical).

Military characteristics for ex-serving members who received admitted patient care were similar to the characteristics of the ex-serving population.

Among ex-serving ADF males admitted to a public hospital, the most common mental health-related care was **mental health related to alcohol and other drugs**, followed by **stress-related disorders**.

If you need help or support, please contact:

Open Arms - Veterans and Families Counselling - external site opens in new window **1800 011 046**

Open Arms Suicide Intervention page - external site opens in new window

Defence All-hours Support Line (ASL) - external site opens in new window **1800 628 036**

Defence Member and Family Helpline - external site opens in new window **1800 624 608**

Defence Chaplaincy Support - external site opens in new window

ADF Mental Health Services - external site opens in new window

Lifeline - external site opens in new window **13 11 14**

Suicide Call Back Service - external site opens in new window **1300 659 467**

Beyond Blue Support Service - external site opens in new window **1300 22 4636**

For information on support provided by DVA, see:

Mental health support services - external site opens in new window

Free mental health care for veterans - external site opens in new window

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Analysis

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Analysis

This report commences by providing an overview of the characteristics of ex-serving ADF members who were admitted for patient care for any reason during the period 2010-2020. This overview includes a presentation of which subgroups of ex-serving members are using admitted patient care and the reasons for using admitted care. The purpose of this overview is to contextualise the use of admitted patient care by ex-serving members for conditions associated with suicidal behaviour.

Between 2010 and 2020, there were 98,200 ex-serving ADF members who received admitted patient care for any reason, including 81,300 males and 16,900 females.

Key findings

- The age patterns of male and female ex-serving members who received admitted patient care were similar to the age structure of the whole ex-serving population group.
- Military characteristics for ex-serving members who received admitted patient care were similar to the characteristics of the ex-serving population.
- The most common reasons for being admitted in public hospitals were similar for both ex-serving members and the total Australian population.

Which ex-serving ADF members received admitted patient care?

This section describes the demographic and military characteristics of ex-serving ADF members who received admitted patient care (or admitted to a public hospital) for any reason at a participating hospital from 1 July 2010 to 30 June 2020, unless otherwise stated. It does not include emergency department care.

Table 10 in Technical notes provides the figures which are used in this section.

Age

Age patterns of male and female ex-serving members who received admitted patient care were generally similar to the age structure of the ex-serving population group. Most ex-serving ADF members who received admitted patient care were aged 35 to 54 years (54.1% for males and 62.8% for females). The main differences between the total ex-serving population and ex-serving members who were admitted was that a higher proportion of ex-serving females were aged 25-34 of those who received admitted patient care (19.4% compared with 12.2% for all ex-serving females) and a lower proportion of ex-serving females were aged 45-54 of those who received admitted patient care (29.7% compared with 37.5% for all ex-serving females).

Service

The ADF has three service branches: The Royal Australian Navy (Navy), the Australian Army (Army) and the Royal Australian Air Force (Air Force). Members may move between services however this analysis only counts service at separation. Most ex-serving ADF members served in the Army at separation (69% for males and 63% for females).

Of ex-serving members who received admitted patient care:

- Most ex-serving ADF members who received admitted patient care had separated from the Army (68.9% for males and 63.9% for females).
- Most ex-serving ADF members who received admitted patient care and died by suicide had separated from the Army (75.6% for males and 69.1% for females).

These results approximately reflect the service branch composition of the ADF.

Rank

Rank describes organisational and workforce structures that determine an ADF member's position, conditions, entitlements and opportunities. It is reported here as rank at time of separation from the ADF in three groups: Commissioned Officer (for example Major), Senior other rank (for example Warrant Officer) and Other rank (for example Seaman).

Of the ex-serving ADF members who received admitted patient care, at least 10% were Commissioned Officers at time of separation. 'Other ranks' comprised at least 65% of ex-serving ADF members who received admitted patient care.

The proportions of the rank categories for those who received admitted patient care were similar to those for the broader ex-serving population.

Length of service

Length of service describes the time between joining the ADF and separation. This report presents, length of service in five groups, ranging from less than 1 year to 20 years or more. At the time of separation from the ADF the most common length of service for ex-serving ADF members who received admitted patient care during this period was between 1 and 5 years (26.6% for males and 34.1% for females). The proportions of ex-serving members for those who received admitted patient care had similar lengths of service to the broader ex-serving population except for a comparatively higher proportion of males with 20 years or longer service being admitted (24.5% compared with 20.8%).

Time since service

The time between separation from the ADF and admission is presented in 5 groups ranging from less than 1 year to 20 years or more. Most ex-serving ADF members had been separated from the ADF for at least 10 years when admitted to a participating hospital (73.3% for males and 66% for females). The proportions of ex-serving members by time since service for those who received admitted patient care were similar to the broader ex-serving population except for a comparatively lower proportion of females who served 20 years or more being admitted (31.7% compared with 39.7%).

Reason for separation from the ADF

The reasons that ADF members leave the ADF can be categorised into four broad groups: voluntary separation, involuntary medical separation, involuntary other separation and contractual or administrative change. This is based on complete separation from the ADF, or in other words, no further permanent or reserve service being undertaken by the ADF member.

The most common type of reason for separation in the ex-serving ADF members group was voluntary separation, with similar proportions for males (42.1%) and females (43.6%). This was followed by involuntary other separation (35.1% for males and 28.2% for females), involuntary medical separation (13% for males and 15.7% for females), and contractual or administrative change (9.7% for males and 12.5% for females).

Of ex-serving members who received admitted patient care:

- The most common reason for separation from the ADF was voluntary (37.8% for males and 41.9% for females)
- Around 20% had separated from the ADF involuntarily due to medical reasons.

Of ex-serving ADF members who died by suicide and received admitted patient care for any reason prior to their death:

- The most common reason for separation from the ADF was voluntary (67.3% for males and 77.5% for females)
- Around 14% of males had separated from the ADF involuntarily due to medical reasons.

DVA client status

Ex-serving DVA clients are a sub-population of ex-serving ADF members and have different characteristics to the all ex-serving ADF members cohort. ADF members who are eligible for DVA support – and who access services funded by DVA – are more likely to have physical and mental health needs that would have led them to DVA. For the purposes of this report, the definition of a DVA client is an ex-serving ADF member who has at least one of the following:

- been issued a White, Orange or Gold health card
- had at least one accepted claim for a health or disability condition accepted as being related to service
- has received or is receiving benefits or payment from DVA
- had at least one health service or support service through the DVA National Treatment Account.

A Gold health card provides eligible DVA clients with comprehensive health services, including admitted patient care for all conditions, while a white card provides services for specific medical conditions. Other health services funded or provided by DVA to eligible ex-serving ADF members may include admitted patient care depending on the condition and the circumstances (DVA health support - external site opens in new window). For more information and definition of the DVA client cardholder types, see Technical notes.

- A greater proportion of admitted patients were DVA clients compared to the proportion of ex-serving members who were DVA clients. This was true for both males (33.1% vs 27.5%) and females (22.3% vs 19.6%).

- There was a higher proportion of ex-serving ADF members who received admitted patient care and were DVA clients for each client type (Gold cardholders, White cardholders and other clients).

Why were ex-serving ADF members admitted to hospital?

While the focus of this report is on conditions associated with suicidal behaviour, this section presents an overview of the range of reasons for patients' hospital admissions to contextualise admissions related to suicidal behaviour.

The reasons for admission are presented based on principal diagnosis (see Box 2) with consideration of differences being driven by sex and age. This section discusses admitted patient care for persons based on 2019-20 data. See supplementary table S.PUB.1.1 for data for July 2010 to June 2020.

Analysis of reasons for admission is based on International Statistical Classification of Diseases and related health problems, 10th revisions, Australian Modification (ICD-10-AM) chapters (broad diagnosis groups). See Technical Notes for full codes and classification.

Box 2: Definitions and concepts used in this section

Admitted patient: a patient who undergoes a hospital's admission process to receive treatment and/or care.

External cause: the environmental event, circumstance, or condition as the cause of injury, poisoning and other adverse effect. External causes are coded using the ICD10-AM classification.

International Classification of Diseases (ICD): the World Health Organization's internationally accepted classification of diseases and related health conditions. The 10th revision, Australian modification (ICD-10-AM) is currently in use in Australian hospitals for admitted patients.

Principal diagnosis: the diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care (hospitalisation).

Overall, the most common principal diagnoses among those accessing admitted patient care services in public hospitals were similar for both ex-serving ADF members and the total Australian population.

In the financial year 2019-2020:

- The three most common principal diagnoses for ex-serving ADF members admitted to public hospitals were symptoms and signs, injury and poisoning and digestive diseases.
- As a proportion of all admitted patients to public hospitals, more ex-serving ADF male members than all Australian males were admitted with principal diagnoses of mental and behavioural disorders (7.1% vs 5.7%).
- The proportion of ex-serving ADF females admitted for mental and behavioural disorders (5.0%) was greater than for all Australian females (4.2%). However, mental and behavioural disorders was not among the top ten most common principal diagnoses for ex-serving ADF females and all Australian females admitted to public hospitals.

Age

There were different reasons for admission among the ex-serving ADF population and all Australian population across select age groups. Of patients admitted to public hospitals in 2019-2020, compared to all Australians (see supplementary table S.PUB.1.2):

- a higher proportion of male ex-serving ADF members aged 35-44 years were admitted for mental and behavioural disorders (13.0% vs 10.2%)
- a lower proportion of male ex-serving ADF members aged 65+ years were admitted for eye diseases (3.1% vs 5.7%)
- a higher proportion of male ex-serving ADF members aged 25-34 years were admitted for mental and behavioural disorders (13.4% vs 11.0%)
- a higher proportion of female ex-serving ADF members aged 65 and older were admitted for digestive diseases (19.0% vs 12.5%)
- a higher proportion of female ex-serving ADF members aged 35-44 years were admitted for injury and poisoning (8.4.% vs 14.7%)
- a lower proportion of female ex-serving ADF members aged 25-34 years were admitted for pregnancy and childbirth (47.5% vs 55.9%).

DVA client status

Ex-serving DVA clients are a sub-population of ex-serving ADF members and have different characteristics to the total ex-serving ADF member cohort. ADF members who are eligible for DVA support – and who access services funded by DVA – are more likely to have physical and mental health needs that would have led them to DVA. There may also be other reasons that DVA clients have higher

admissions such as greater access to hospital care. The reasons for admissions to hospital differed between ex-serving members who were DVA clients and those who were non-DVA clients (see supplementary table S.PUB.1.3).

Among ex-serving patients admitted to public hospitals (FY 2019-20), compared to non-DVA clients:

- a higher proportion of male and female DVA clients were admitted for mental and behavioural disorders (males 8.5% vs 6.1%; females 6.1% vs 4.6%)
- a higher proportion of male and female DVA clients were admitted for respiratory system diseases (males 7.3% vs 5.9%; females 6.1% vs 4.6%)
- a lower proportion of male and female DVA clients were admitted for digestive diseases (males 14.3% vs 16.9%; females 12.1% vs 13.6%)
- a lower proportion of female DVA clients were admitted for neoplasms (5.4% vs 8.2%)
- a higher proportion of female DVA clients were admitted for injury and poisoning (15.6% vs 13.4%).

Viewing this data

Caution: Some readers may find parts of this content confronting or distressing

Please carefully consider your needs when reading the following information about suicide, suicidality and self-harm. This report may be distressing to some readers.

If this material raises concerns for you, support is available. Please contact Lifeline on 13 11 14, or Defence All-hours Support Line on 1800 628 036, or Open Arms – Veterans and Families Counselling - external site opens in new window, available 24/7 to anyone who has served one day of continuous fulltime service in the ADF and their immediate families, or see other ways you can seek help.

The information included here places an emphasis on data, and as such, can appear to depersonalise the pain and loss behind the statistics. The AIHW acknowledges the individuals, families and communities affected by ADF member and veteran suicide, suicidality and self-harm each year in Australia.

The AIHW supports the use of the Mindframe guidelines - external site opens in new window on responsible, accurate and safe suicide and self-harm reporting. Please consider these guidelines before including any details of statistics on suicide methods in reports on suicide or self-harm.

Cancel

Analysis

Key findings

- A higher proportion of ex-serving ADF members were admitted to public hospitals for mental health, alcohol and drug use and intentional self-harm than the Australian population.
- Factors associated with higher likelihood of hospital admission by ex-serving ADF members for mental health, alcohol and drug use and intentional self-harm include service in the Army or Navy, shorter service duration (for males), lower military ranks (for males) and involuntarily leaving the ADF.
- Ex-serving ADF members who died by suicide had higher hospital admissions for mental health and injury than the Australian population who died by suicide between 2010 and 2020.

The focus of this report is on admitted patient care services used by ex-serving ADF members for conditions associated with suicidal behaviour. This includes mental health conditions and the prevalent use of alcohol and other drugs in Australia which are linked to an increased risk of suicide and suicide attempts (Bertolote et al 2014; Fisher et al 2020).

Additionally, hospital-treated self-harm is identified as a potent independent risk factor for suicide (Geulayov et al 2019) with studies reporting between 1.5% and 4% of these patients dying by suicide within five years (Carroll et al 2014, Clapperton et al 2024). Further, it has been estimated that for each suicide in Australia, there are 11 hospitalisations for intentional self-harm (Harrison 2014). Therefore, this report specifically examines admitted patient care for mental health, alcohol and drugs and intentional self-harm as conditions associated with suicidal behaviour.

Previous analysis by AIHW (2021) examined the use of health services (mainly primary care) by ex-serving ADF members who died by suicide. It found that between 2001 and 2018, a similar proportion of ex-serving males (88%) and females (96%) used Medicare-subsidised or Department of Veterans Affairs-funded health services in the year before death compared to Australian males (85%) and females (94%) who died by suicide. However, there was a notable difference in the utilisation of Medicare-subsidised mental health services: 53% of ex-serving males who died by suicide between 2014 and 2018 accessed these services in the year before death, surpassing the 38% among Australian males.

A Victorian study (Clapperton et at 2021) found that 50% of people who died by suicide had hospital contact in the year before their death, with females notably over-represented in these instances of hospital contact. Specifically, 29% of these cases involved hospitalisation for mental health related reasons, and 10% were for intentional self-harm (Clapperton et al 2021). AIHW analysis of admitted care in the year before suicide was previously limited to DVA clients. It showed that among DVA clients who died by suicide, 15% received admitted patient care within 12 months of death; most of whom had at least one mental health-related diagnosis.

This report extends the admitted patient care analysis by including all ex-serving ADF members admitted to participating public and private hospitals between 2010-2020. Understanding the use of hospital services for conditions associated with suicidal behaviour is crucial in the broader context of suicide prevention, as 20% of suicides are linked to a history of self-harm (ABS 2021).

Therefore, monitoring and reporting admitted patient care for intentional self-harm and other conditions associated with suicidal behaviour among ex-serving ADF members is vital for identifying individuals at risk of death by suicide. This includes those who do not seek care, and for developing targeted suicide prevention strategies tailored to the unique needs of ex-serving ADF members.

All states and territories except WA and NT contribute public hospital data to the NHDH; private hospital data is only provided by QLD with some VIC and ACT. Private patients treated in public hospitals in the participating jurisdictions are included.

Mental health

Although over half of people who died by suicide had a diagnosed psychiatric disorder such as severe depression at the time of their death (Lewitzka et al 2022; Harris et al 1997), it is important to note that most people with mental health conditions do not go on to die by suicide. Hospitalisation is often required for patients with severe depression accompanied by acute suicidal ideation to prevent self-harm, and the period immediately following discharge from a psychiatric in-patient facility poses an increased risk for suicidal behaviour and adverse outcomes (Chung et al 2017; Walter et al 2019).

The number of admissions for suicidal crisis (without self-harm) cannot be measured due to the limitations in the current Australian hospital coding system (ICD 10 AM WHO 2018). The coding system allows recording suicidal ideation as the principal diagnosis only in the absence of underlying mental health conditions, confirmed by clinicians (McCarthy et al 2021).

Most adults (83.9%) who present for hospital-treated intentional self-harm (ISH) have an underlying psychiatric disorder, of which depression, anxiety and alcohol use are the most common (Hawton et al 2013).

While not all people who self-harm or contemplate suicide have a mental health condition, these behaviours do suggest the experience of psychological distress.

Mental and behaviour disorders

Overall

A higher proportion of ex-serving ADF males aged 25 to 64 years were admitted for a mental and behavioural disorder in comparison to Australian males in 2019-20. The proportion of ex-serving females admitted for a mental and behavioural disorder was higher in comparison to Australian females but this was mainly driven by those aged 25-34 with similar trends for ex-serving and all Australian females in other age groups.

Table 1 shows the differences across age groups for FY 2019-20. The proportion of patients admitted to a public hospital for mental and behavioural disorders was significantly higher in ex-serving ADF males aged 35-44 years and ex-serving ADF females aged 25-34 years, compared to the corresponding age groups in the total Australian population.

Table 1: Proportion of patients admitted for mental and behavioural disorders for ex-serving ADF members and all Australians aged 17 and over to a public hospital, 2019-20

Age group	Males ex-serving	Males Aus	Proportion difference (CI)	Females ex-serving	Females Aus	Proportion difference (CI)
17-24	8.3	10.8	-2.5 (-6.2-1.1)	6.0	7.4	-1.4 (-5.5,2.6)
25-34	13.4	11.0	**2.4 (0.6,4.1)**	6.1	4.0	**2.1 (0.2,4.0)**
35-44	13.0	10.2	**2.8 (1.5,4.2)**	5.8	5.0	0.8 (-0.8,2.4)
45-54	8.5	6.8	**1.7 (1.0,2.4)**	5.6	5.1	0.5 (-0.7, .6)
55-64	4.0	3.4	**0.6 (0.0, 1.1)**	2.9	3.1	-0.1 (-1.3,1.1)
65+	3.2	2.9	0.2 (-0.3,0.7)	2.6	3.3	-0.7 (-2.7,1.3)
All ages 17+	7.1	5.7	**1.4 (1.0,1.8)**	5.0	4.2	**0.8 (0.1, 1.5)**

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

n.p. Suppressed due to small numbers, or to prevent subsequent disclosure of cells with small numbers.

Different vetting and release approval practices apply to the different data sources.

Bolding indicates statistical significance was found for the difference between the proportions.

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes hospital stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Military characteristics

Among patients admitted to a public hospital (2019-20), a greater proportion of ex-serving ADF members being admitted for mental and behavioural disorders was associated with the following service characteristics:

- Army (males 7.4%; females 5.3%) or Navy service (males 7.5%; females 6.0%) compared to RAAF service (males 5.3%; females 2.9%)
- length of service for males with less than one year (9.6%), and between 1 and less than 5 years (9.4%) compared to between 5 and less than 10 years (7.3%), and 10 or greater years (5.0%)
- other ranks for males – junior and unspecified (8.1%) compared to officers (5.2%) and senior other ranks (4.3%)
- involuntary separation for males - especially medical (16.7%) compared to voluntary separation (7.1%).

The analysis based on Queensland public and private hospitals showed similar service characteristics were associated with a greater proportion of ex-serving ADF members being admitted for mental and behavioural disorders.

Admission for mental health-related care by diagnostic group

This section presents analysis of the types of mental health-related care for admitted patients. Mental health-related care was defined using the same classification that is used in AIHW reporting conventions when analysing the Australian population. Importantly, this definition also provides categories of types of mental health-related care. The types of conditions within mental health-related care were categorised using diagnostic groups in line with ICD-10-AM codes as defined in Table 14 of the Technical notes.

Mental health-related care is based on a broader definition of mental health admissions than mental and behavioural disorders. For example, mental health-related care includes diagnoses such as problems related to psychosocial circumstances, and insomnia.

Overall

In 2019-20, a higher proportion of ex-serving males were admitted to public hospitals for mental health-related care compared to all Australian males (8.1% vs. 6.6%). This pattern was true for ex-serving males across all age groups from 25 to 64 years in comparison to Australian males (Table 2). The difference was most significant for ex-serving males aged 35-44 years (14.6% vs.11.4%).

The proportion of ex-serving females who were admitted for mental health-related care was higher in comparison to admitted Australian females but this was mainly driven by those aged 25-34 (7.4% vs 4.9%) with similar trends for ex-serving and all Australian females in other age groups (Table 2).

Table 2: Proportion of patients admitted for mental health-related care for ex-serving ADF members and all Australians aged 17 and over to a public hospital, 2019-20

Age group	Males ex-serving	Males Aus	Proportion difference (CI)	Females ex-serving	Females Aus	Proportion difference (CI)
17-24	13.3	12.6	0.7 (-3.8,5.2)	9.0	9.3	-0.4 (-5.2, 4.5)
25-34	15.3	12.5	**2.8 (0.9, 4.6)**	7.4	4.9	**2.4 (0.4, 4.5)**
35-44	14.6	11.4	**3.2 (1.8,4.6)**	7.4	5.9	1.5 (-0.3,3.3)

45-54	9.6	7.6	**2.0** **(1.3, 2.8)**	6.5	5.8	0.7 (-0.5, 2.0)
55-64	4.5	3.8	**0.6** **(0.0, 1.2)**	3.6	3.5	0.1 (-1.2, 1.4)
65+	3.6	3.6	0.0 (-0.5, 0.5)	3.0	3.9	-0.9 (-3.1, 1.3)
All ages 17+	8.1	6.6	**1.5** **(1.1, 1.9)**	6.1	5.0	**1.1** **(0.3, 1.8)**

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

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1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Of patients in public hospitals (FY 2019-20), compared to all Australians by age group:

- a higher proportion of ex-serving males aged 25-34 years was admitted for stress-related disorders (4.0% vs 1.2%)
- a higher proportion of ex-serving males aged 45-54 years was admitted for depression (1.5% vs 0.9%)
- a similar proportion of ex-serving females was admitted across all mental health-related care and age groups.

Among both ex-serving ADF members and the total Australian population admitted to a public hospital, mental health related to alcohol and other drugs ranked the top mental health diagnosis (Figure 1), followed by stress-related and schizophrenia and other related disorders among ex-serving ADF males, depression among ex-serving ADF females.

Figure 1: Proportion of all admissions for mental health-related care by diagnostic group for male and female ex-serving ADF members and all Australians aged 17 and over to a public hospital, 2019-20.

	ADF males	Australian males	ADF females	Australian females
1	Mental health related to alcohol and other drug (28.0%)	Mental health related to alcohol and other drug (30.9%)	Mental health related to alcohol and other drug (18.9%)	Mental health related to alcohol and other drug (17.6%)
2	Stress related (21.3%)	Schizophrenia and related disorder (21.8%)	Depression (17.3%)	Schizophrenia and related disorder (14.3%)
3	Schizophrenia and related disorder (16.7%)	Other-mental health procedure, service or environmental factor (10.5%)	Stress related (16.9%)	Other-mental health procedure, service or environmental factor (13.5%)
4	Depression (13.1%)	Depression (9.8%)	Other-mental health procedure, service or environmental factor (16.1%)	Anxiety (11.6%)
5	Other-mental health procedure, service or environmental factor (11.5%)	Dementia (9.7%)	Bipolar and other mood disorders (excluding depression) (14.5%) / Schizophrenia and related disorder (14.5%)	Stress related (11.0%)
6	Bipolar and other mood disorders (excluding depression) (8.6%)	Stress related (7.8%)		Depression (10.9%)
7	Anxiety (7.0%)	Organic disorders other than dementia (7.5%)	Anxiety (10.8%)	Dementia (8.3%)

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDC–MBS–PBS–RPBS data (2010–2020) and NHDH (2010-2020)
https://www.aihw.gov.au

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes:

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Different vetting and release approval practices apply to the different data sources

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Table 3 provides more detail about the distribution of key diagnostic groups – stress-related, depression and mental health disorder due to alcohol and other drug use – across age groups for males and females.

Table 3: Proportion of all admissions for specified mental health-related care types by principal diagnosis group for ex-serving ADF members and all Australians aged 17 and over admitted to a public hospital, 2019-20

Age group	Diagnostic group	Ex-serving males (%)	Australian males (%)	Proportion difference (CI)	Ex-serving (%)	Aus (%)	Proportion difference (CI)

Age	Diagnosis						
25-34	Stress-related	26.2	9.2	**17.0 (11.2, 22.8)**	23.9	17.4	6.5 (-5.8, 18.9)
25-34	Mental health disorder related to alcohol and other drug use	29.3	37.6	**-8.3 (-14.3, -2.2)**	19.6	21.8	-2.2 (-13.7, 9.3)
25-34	Depression	11.1	9	**2.1 (-2.1, 6.2)**	10.9	10.6	0.3 (-8.7, 9.3)
35-44	Stress-related	25.3	8.9	**16.4 (11.9, 20.8)**	21.7	16.2	5.5 (-5.0, 15.9)
35-44	Mental health disorder related to alcohol and other drug use	30.4	39.3	**-8.9 (-13.7, -4.1)**	21.7	23.8	-2.1 (-12.6, 8.4)
35-44	Depression	11.7	8.7	3.0 (-0.3, 6.3)	18.3	10.4	8.0 (-1.8, 17.8)
45-54	Stress-related	18.7	9.4	**9.3 (6.1, 12.5)**	11.2	10.5	0.7 (-5.6, 7.0)
45-54	Mental health disorder related to alcohol and other drug use	29.7	37.2	**-7.5 (-11.3, -3.6)**	19.4	25.5	-6.2 (-14.0, 1.7)
45-54	Depression	15.4	11.6	**3.8 (0.8, 6.8)**	18.4	12.8	5.5 (-2.1, 13.2)
55-64	Stress-related	24.3	7.9	**16.4 (10.5, 22.2)**	n.p.	8	n.p.
55-64	Mental health disorder related to alcohol and other drug use	24.8	32.6	**-7.9 (-13.8, -1.9)**	n.p.	19.6	n.p.
55-64	Depression	14.8	13.3	1.4 (-3.4, 6.3)	17.9	13.5	4.3 (-9.9, 18.5)

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

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Different vetting and release approval practices apply to the different data sources.

Bolding indicates statistical significance was found for the difference between the proportions. Proportions within brackets represent 95% CI.

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.
8. Proportion difference (or absolute difference) is the simple difference between the proportions for the Australian and ex-serving populations. Relative difference (or risk ratio) is the ratio of the proportions for the ex-serving population and Australian populations and measures the scale of the difference.

Military characteristics

As a proportion of patients admitted to public hospitals (FY 2019-20):

- 9.7% of ex-serving male DVA clients and 7.3% of female DVA clients were admitted for mental health-related care, compared to 6.9% of ex-serving male non-DVA clients and 5.6% of female non-DVA clients
- 19.3% of male and 10.1% of female ex-serving ADF members who had involuntarily separated for medical reasons were admitted for mental health-related care; this compares to 8.1% of male and 4.3% of female ex-serving who separated for voluntary reasons admitted for mental health-related care.
- ex-serving males with a length of service from 5 to less than 10 years (2.4%) and ex-serving females with the same length of service (1.7%) represented a greater proportion of persons admitted for stress-related disorders.

Alcohol and other drug use

What is alcohol and other drug use?

Alcohol and other drug (AOD) use is prevalent within Australian society, with 77.0% of Australians aged 14 and over reporting alcohol consumption in 2019, and 16.8% exceeding lifetime risk guidelines (AIHW 2023d). According to the 2019 National Drug Strategy Household Survey (NDHS), 43% of people aged 14 and over had illicitly used a drug during their lifetime and 16.4% in the previous 12 months (AIHW 2023e). AOD use contributes to both acute and chronic injury and disease, including injuries sustained while intoxicated or unintentional overdose, liver disease, mental disorders, heart disease and some cancers, and is the third leading risk factor for premature death and disabilities (WHO 2014). Chronic stimulant use and opioid consumption increases the risk of mental disorder, and blood borne infections (Degenhardt and Hall 2012).

Alcohol and other drug use is linked to an increased risk of suicidal ideation and behaviours, possibly connected to coping with psychological distress or reducing inhibitions to act on suicidal ideation (Fisher 2020). Alcohol misuse is common in intentional self-harm populations (Hawton et al 2013), contributing to approximately one third of deaths by suicide in this population (Conner et al 2014).

The following analyses include admissions for all physical and mental health conditions associated with AOD use including poisoning, alcoholic liver disease and alcoholic cardiomyopathy – expanding beyond mental health-related conditions as reported previously (see Technical notes for full codes and classification).

Overall

Of admitted patients in public hospitals (FY 2019-20), compared to all Australians:

- a higher proportion of ex-serving ADF males were admitted for alcohol and other drug related conditions (3.8% vs 3.2%), of which a greater proportion were admitted for alcohol use (53.8% vs 46.0%)
- a higher proportion of ex-serving ADF females were admitted for alcohol and other drug related conditions (3.1% vs 1.9%)
- a higher proportion of ex-serving ADF females were admitted for anti-epileptic, sedative-hypnotic and antiparkinsonian drug use (0.6% vs 0.3%).

Table 4 shows that among the substances leading to admission at a public hospital, alcohol was the most common substance. This was more significant for male ex-serving ADF members compared to Australian males. Female ex-serving ADF members were more likely to be admitted for the use of anti-epileptic, sedative-hypnotic and antiparkinsonian drugs compared to Australian females. A greater proportion of male ex-serving ADF members were admitted for conditions related to opioid use compared to Australian males.

Similar findings were seen in those admitted to public or private hospitals in Queensland.

Table 4: Proportion of admissions for *any* alcohol and drug related condition by alcohol and drug group for ex-serving ADF members and all Australians aged 17 and over to a public hospital, 2019-20

Rank	Principal diagnosis	Ex-serving males (%)	Australian males (%)	Ex-serving females (%)	Australian females (%)
1	Alcohol	53.8	46.0	32.3	33.5
2	Anti-epileptic, sedative - hypnotic and antiparkinsonian drugs	12.0	10.9	20.5	15.6
3	Opioids	8.7	7.8	7.9	7.3

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

n.p. Suppressed due to small numbers, or to prevent subsequent disclosure of cells with small numbers.

Different vetting and release approval practices apply to the different data sources

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Age-specific comparisons

While the acute effects of alcohol toxicity (such as poisoning) are found across age groups, the chronic diseases requiring admitted patient care due to long-term alcohol use are more likely to manifest in older age groups. A greater proportion of male ex-serving ADF members aged 65+ were admitted compared to all Australian males for alcohol use, and for any alcohol or drug use (see Supplementary Table S.PUB.3.2).

Military characteristics

Of admitted ex-serving patients to public hospitals (FY2019-20):

- a higher proportion of ex-serving Army (2.1%) and Navy (2.2%) than RAAF (1.6%) members were admitted for alcohol-related conditions
- a higher proportion of ex-serving ADF males with an involuntary medical separation (8.1%) were admitted for an alcohol and other drug related condition than those with a voluntary separation (4.0%)
- a higher proportion of ex-serving ADF males with lengths of service less than 1 year (5.3%) or 1 to less than 5 years (5.5%) were admitted for any alcohol and other drug-related condition than those with more than 10 years of service (2.3%)
- a higher proportion of ex-serving ADF males who separated in 'other ranks' (4.6%) were admitted for any alcohol and other drug-related condition than officers (2.6%) and senior other ranks (1.8%).

The analysis of Queensland public and private hospitals showed similar service characteristics were associated with a greater proportion of ex-serving ADF members being admitted for alcohol and other drug related conditions.

Intentional self-harm

What is intentional self-harm?

Intentional self-harm (ISH) is often defined as deliberately injuring or hurting oneself, with or without the intention of dying. ISH 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.

Hospital morbidity 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, understanding of intentional self-harm is key to suicide prevention.

Admitted patient care for intentional self-harm

People who present to hospital services for ISH represent a minority of those who intentionally self-harm. The number of people who are treated in the community or do not any seek medical treatment for self-harming injury is unknown. Community-treated ISH, often involving self-injury, shows equal prevalence among males and females, tends to be non-suicidal, driven by the need to cope with

psychological distress, and has higher repetition rates and lower suicidal mortality than hospital-treated ISH. In contrast, hospital-treated ISH is predominantly by self-poisoning, is more common among females than males, and is associated with suicidal ideation, repetition and deaths by suicide (Carter et al 2016).

While most emergency department presentations for ISH do not result in admission, a minority with serious injuries or mental disorders may require admission to intensive care or psychiatric care. Across Australia ISH accounts for 27,000 admissions to hospital and 90,000 bed days annually (see Intentional self-harm hospitalisations by states & territories).

Hospital-treated ISH is associated with adverse outcomes like repetition of non-fatal ISH, death by suicide, all-cause mortality, mental health morbidity, substance use, diminished quality of life and functioning across physical, psychological and social domains (Carter et al 2016).

Case identification

Records of admitted patient care for ISH are included if they meet the following criteria:

1. A principal diagnosis of injury, poisoning and certain other consequences of external causes (ICD-10-AM range S00-T75, T79) and:
2. A first reported code for external cause of morbidity (ICD-10-AM range X60-X84, Y87.0)

While this report presents data on patients admitted to hospital for ISH (both suicide attempts and non-suicidal self-harming behaviours), there are limitations to the data source (i.e. the National Hospital and Morbidity Database or NHMD). See limitations in the technical notes.

Improving self-harm data

Only including ISH presentations requiring admission and the reliance on the 'external' codes to capture cases means a significant proportion of ISH cases are not captured (McGill et al 2019). However, the NHMD is currently the most comprehensive national data source available. There are additional data sources including the National Ambulance Surveillance System (NASS), which is a new public health monitoring system providing timely and comprehensive data, including ISH with suicidal intent (see Ambulance attendances: suicidal and self-harm behaviours) and some national surveys. Primary care data from general practice and community mental health services currently do not routinely collect ISH data.

The AIHW is working with key stakeholders including mental health services and emergency data custodians to develop nationally consistent suicide-related data.

Overall

Higher proportions of ex-serving ADF members (males and females) who were admitted to a public hospital were admitted for ISH compared to the total Australian population for each year between July 2010 and June 2020. In FY 2019-20, 215 male ex-serving ADF members and 78 female ex-serving ADF members were admitted for ISH. Ex-serving ADF members admitted for ISH used similar mechanisms to self-harm as the total Australian population.

Age-specific comparisons

Table 5 shows the differences across age groups for FY 2019-20. The proportion of patients admitted to a public hospital for ISH was significantly higher for ex-serving ADF males aged 25-34 years and ex-serving ADF females aged 35-44 years, compared to the corresponding age groups in the total Australian population.

Table 5: Proportion of all admissions for any intentional self-harm for ex-serving ADF members and all Australians aged 17 and over to a public hospital, FY2019-20

Age group	Males ex-serving	Males Aus	Proportion difference (CI)	Females ex-serving	Females Aus	Proportion difference (CI)
17-24	5.0	2.5	2.5 (-0.4,5.4)	n.p.	3.3	n.p.
25-34	3.0	1.8	**1.2 (0.3,2.1)**	2.4	0.9	**1.5 (0.3,2.7)**
35-44	1.7	1.4	0.4 (-0.1,0.9)	2.6	0.9	**1.7 (0.6,2.8)**
45-54	1.3	0.9	**0.4 (-0.1,0.7)**	1.8	1.1	**0.7 (0.0,1.3)**

55-64	0.7	0.4	**0.2 (0.0,0.5)**	1.2	0.6	0.5 (-0.2,1.3)
65+	0.1	0.2	0.0 (-0.1,0.1)	n.p.	0.2	n.p.
All ages 17+	1.1	0.8	**0.3 (0.2,0.5)**	1.9	0.9	**1.1 (0.6,1.5)**

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

n.p. Suppressed due to small numbers, or to prevent subsequent disclosure of cells with small numbers.

Different vetting and release approval practices apply to the different data sources.

Bolding indicates statistical significance was found for the difference between the proportions.

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Military characteristics

Among ex-serving ADF members admitted to a public hospital for ISH in 2019-20:

- 119 (55.3%) males and 37 (47.4%) females were DVA clients at the time of admission
- a lower proportion of RAAF members were admitted for ISH compared to Army and Navy members (0.6% vs 1.2% and 1.4%)
- a lower proportion of members who had ten or more years of service were admitted for ISH (0.7% vs 1.5% *[<1 year]*, 1.6% *[1-<5 years]*, 1.2% *[5-<10 years]*)
- a higher proportion of members who separated involuntarily due to medical reasons were admitted for ISH compared to other involuntary separation (3.8% vs 1.4%).

Cause of death after ISH hospital admission

The cause of death is recorded in the National Death Index using International Classification of Disease Codes (ICD-10). For the period 2010-20, 195 ex-serving ADF members died following admission for ISH. Of these, the cause of death was:

- ISH – 86 (44.1%)
- deaths from alcohol or drugs (including deaths due to chronic liver diseases and cirrhosis) – 35 (17.9%) (males only).

Of patients admitted for ISH, the proportion of ex-serving members who died by ISH was similar with the Australian population. However, of patients admitted for ISH who died of any cause, ex-serving members had a higher proportion of deaths from ISH compared with the Australian population (males: 43.1% vs. 34.4%; females: 50.0% vs. 29.5%).

Readmission for ISH

For the period 2010-20:

- There were 2,300 ex-serving ADF members admitted to a public hospital for ISH (1,770 for males and 540 for females).
- Most admitted ex-serving ADF males (79.4%) and ADF females (71.8%) only had a single admission for ISH.
- A higher proportion of ex-serving members were re-admitted for ISH compared to all Australians admitted for ISH (males: 20.6% vs 18% and females: 28.2% vs 22.7%).

The Queensland analysis showed a similar pattern to the public hospital-only analysis of readmissions.

Comorbidities of persons admitted for ISH

AIHW has also examined comorbidities relating to conditions associated with suicidal behaviour provided to patients who were admitted for ISH.

Of patients with an admission for ISH in hospitals (FY 2010-20), compared to all Australians:

- a higher proportion of ex-serving ADF members had a concurrent (that is, for the same admission) mental health-related care diagnosis (males 77.5% vs 71.8%; females 74.4% vs 67.8%)
- a higher proportion of ex-serving ADF members had a concurrent stress-related diagnosis (males 29.5% vs 18.3%; females 24.1% vs 18.4%), and more had a subsequent admission for a stress-related diagnosis (males 16.7% vs 10.8%; females 16.6% vs 12.0%)
- a higher proportion of male ex-serving ADF members had a prior (8.6% vs 6.7%), concurrent (29.8% vs 25.6%), subsequent (15.1% vs 12.1%), or any admission for depression 42.0% vs 36.0%).

It is worth noting that US studies have reported that ISH is common among veterans with post-traumatic stress disorder, affecting over half of those seeking treatment (e.g., Calhoun et al 2017).

Of patients with an admission for ISH in public hospitals (FY 2010-20), compared to all Australians:

- a higher proportion of ex-serving ADF members had a concurrent alcohol or other drug diagnosis (males 69.5% vs 65.9%; females 84.1% vs 79.6%)
- a higher proportion of male ex-serving ADF members had a concurrent diagnosis for the effects of anti-epileptic, sedative-hypnotic, or antiparkinsonian drug use diagnosis (26.4% vs 21.7%).

Admitted patient care in the year before suicide

From 1 July 2010 to 30 June 2020, there were 600 ex-serving ADF males and 68 ex-serving ADF females who served since 1 January 1985 who died by suicide. Of these, 275 males and 40 females were admitted to a participating public hospital in the study period. In the year before death, 171 ex-serving ADF males and 26 ex-serving ADF females who died by suicide, received admitted patient care at a public hospital including:

- 73 (42.7%) males and 7 females (26.9%) for mental and behavioural disorders
- 63 (36.8%) males and 15 (57.7%) females for injury, poisoning and the consequences of other external causes.

Of those who died by suicide and were admitted to hospital in the year prior to death, similar proportions of ex-serving ADF males (46.8%) and all Australian males (42.5%) were admitted for any mental health-related care. This was also the case for ex-serving females (42.3%) compared to all Australian females (48.8%).

Of those admitted for mental health-related care in the year before suicide, a higher proportion of ex-serving ADF males (26.2%) were admitted for stress-related disorders, compared to all Australians admitted for mental health-related care (16.5%).

Of those who died by suicide and were admitted in the year prior, 44 (22.3%) ex-serving ADF members were admitted for the effects of alcohol and other drug use.

Of those who died by suicide and were admitted in the year prior, 45 (26.3%) male ex-serving ADF members and 13 female (50%) ex-serving ADF members were admitted for ISH in a public hospital in the year before suicide.

The small numbers prevent further comparisons with the total Australian population who also died by suicide.

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Viewing this data

Caution: Some readers may find parts of this content confronting or distressing

Please carefully consider your needs when reading the following information about suicide, suicidality and self-harm. This report may be distressing to some readers.

If this material raises concerns for you, support is available. Please contact Lifeline on 13 11 14, or Defence All-hours Support Line on 1800 628 036, or Open Arms – Veterans and Families Counselling - external site opens in new window, available 24/7 to anyone who has served one day of continuous fulltime service in the ADF and their immediate families, or see other ways you can seek help.

The information included here places an emphasis on data, and as such, can appear to depersonalise the pain and loss behind the statistics. The AIHW acknowledges the individuals, families and communities affected by ADF member and veteran suicide, suicidality and self-harm each year in Australia.

The AIHW supports the use of the Mindframe guidelines - external site opens in new window on responsible, accurate and safe suicide and self-harm reporting. Please consider these guidelines before including any details of statistics on suicide methods in reports on suicide or self-harm.

Cancel

Analysis

Key findings

- Ex-serving ADF members had higher proportion of ED presentations for intentional self-harm or suicidal ideation than the Australian population.
- Ex-serving ADF members aged over 65 were 1.3 times more likely to have a mental and behavioural disorder related to self-harm or suicidal behaviour compared to all Australians.

Identifying intentional self-harm in Emergency Department data

To complement analysis of admitted patient care, AIHW have examined the use of Emergency Department (ED) services relating to non-fatal suicide behaviour such as intentional self-harm (ISH) or suicidal ideation. Most people experiencing suicidal ideation or who self-harm do not go on to end their lives—but these behaviours are a strong risk factor for suicide (Arias et al. 2015 and Crandall et al. 2006). Therefore, understanding of ISH in ED hospital settings is key to suicide prevention.

Box 3: Key terms

ED presentation: Defined as when an individual presents themselves or is transported to an Emergency Department.

Index presentation: The first[1] observed presentation for a patient to an Emergency Department, during the study period.

Self-harm or suicidal behaviour: Describes ED presentations that include a diagnosis of intentional self-harm and/or suicidal ideation (See Technical Notes for full codes and classification).

1. The identification of an index presentation for self-harm or suicidal behaviour in this study should not be assumed to be the first ever presentation for a person, given the time-period constraint and the fact that the ED data were examined in isolation from the admitted patient data.

Presentations relating to ISH and/or suicidal ideation cannot be easily identified in the current national ED data collection. The challenges to identification include limitations in ED presentation diagnosis coding systems, variability between diagnosis coders, and variability between coding sets available in ED systems across jurisdictions. See Technical notes for more information.

Given the known challenges and limitations of identifying suicide and self-harm related presentations within ED data, this analysis further aimed to enhance identification by supplementing standard diagnoses codes with additional codes related to self-harm (Sara and Wu 2023). To account for jurisdictional differences in coding systems, the analysis integrated codes from two of the main coding classifications used in ED data collection systems (International Statistical Classification of Diseases – ICD – and Systemised Nomenclature of Medicine - SNOMED), applying mapping developed by the Independent Hospital and Aged Care Pricing Authority (IHACPA). Supplementary codes were also used to identify the associated comorbid risk factors (Zhang et al 2022). See Technical notes for more information.

ISH is often defined as deliberately injuring or hurting oneself, with or without the intention of dying. Currently, it is not possible to determine suicidal intent from all intentional self-harm in ED data. The following analysis therefore includes both suicide attempts and non-suicidal self-harming behaviours.

Ex-serving ADF members' index presentation to emergency departments

Between 2013 and 2020, 117,300 ex-serving ADF members attended the ED for any reason, including 98,900 males and 18,400 females.

Most ex-serving members that presented to ED were between the ages of 35–54, for both males (53.7%) and females (64.7%).

The age at index presentation was broadly reflective of the age structure of the ex-ADF population during this period, and similarly this was also observed for the total Australian population (See Supplementary table S.ED.1). However, it should be noted that the study ex-serving ADF population have a different age structure compared to the total Australian population due to the absence of older

veterans with service prior to 1985, fewer ex-serving in the 17–24 age group and fewer ex-serving females aged 65+ years reflecting historical differences in female ADF recruitment.

Of the ex-serving ADF members who had presented to ED, 4,400 (3.7%) had an ED presentation for ISH or suicidal ideation, from here on referred to as presentations for self-harm or suicidal behaviour, which was above the 2.8% for all Australians. There were 3,600 (3.7%) ex-serving males and 770 (4.1%) ex-serving females who presented for self-harm or suicidal behaviour.

Most index presentations for self-harm or suicidal behaviour from ex-serving ADF members were among those aged 35–54 years (62.7% for males and 68.9% for females). For the total Australian population, the majority of those who presented for self-harm or suicidal behaviour were younger, aged 17–34 (51.8% for males and 56.3% for females). This difference is in part due to the relatively low proportion of ex-serving ADF members at younger ages among the ex-serving ADF population. See Supplementary table S.ED.2.

Presentations related to self-harm or suicidal behaviour

Proportions of ED presentations by male ex-serving ADF members for self-harm or suicidal behaviour were compared with all Australian males of the same age group as shown in Table 6 below. Presentations to ED by ex-serving ADF males of all age groups were 1.2 to 1.6 times more likely related to self-harm or suicidal behaviour compared to all Australian males of the same age group. This was similarly observed for the female ex-serving ADF population except for those aged 65+ years.

Table 6: Number and percentage of ED presentations for self-harm or suicidal behaviour for ex-serving ADF members and all Australians, by age group, 2013–2020

Age group (years)	Ex-serving males	Australian males	Ex-serving females	Australian females
17–24	269 (3.2%)	56,812 (2.7%)	128 (4.6%)	96,157 (3.9%)
25–34	1,133 (3.0%)	55,369 (2.2%)	271 (2.9%)	59,133 (1.9%)
35–44	1,711 (2.6%)	47,331 (2.0%)	488 (3.0%)	45,234 (1.8%)
45–54	2,034 (2.1%)	34,738 (1.5%)	575 (2.6%)	38,559 (1.8%)
55–64	543 (1.1%)	16,602 (0.8%)	122 (1.6%)	18,034 (0.9%)
65+	161 (0.3%)	10,640 (0.2%)	8 (0.4%)	11,710 (0.2%)

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes:

1. ED presentations for self-harm or suicidal behaviour refer to ED presentations for intentional self-harm and/or suicidal ideation.
2. Bolding indicates statistical significance was found for the relative difference between the proportions.
3. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded emergency department care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Risk factors related to self-harm or suicidal behaviour

Analysis was undertaken to identify key risk factors associated with ED presentations for self-harm or suicidal behaviour. Risk factors evaluated include mental and behavioural disorders, substance use disorders (excluding alcohol), alcohol use disorder and related conditions and social issues (Arias et al. 2015 and Crandall et al. 2006). These were analysed for ED presentations during the study period, including presentations prior to the initial ED presentation for self-harm or suicidal behaviour (index presentation).

The proportion of ED presentations for each risk factor was calculated by dividing the presentations for a risk factor by the total number of presentations for persons with an ED presentation with a self-harm or suicidal behaviour. Presentations for risk factors could have occurred before, during or after the ED presentation for self-harm or suicidal behaviour.

Box 4: Notes for the Emergency Department care self-harm or suicidal behaviour cohort and risk factors related to self-harm or suicidal behaviour

Self-harm or suicidal behaviour cohort: Patients who have presented to the ED that includes a diagnosis of self-harm or suicidal behaviour at any point for the first time (index presentation) during the analysis period of 1 July 2013 to 30 June 2020.

Mental and behavioural disorders: In this section, this is defined as presentations to public hospital EDs that have a diagnosis of *Mental and behavioural disorders*, not including disorders due to psychoactive substance use. Note, a disorder refers specifically to 'a clinically recognizable set of symptoms or behaviours associated in most cases with distress and with interference with personal functions' (WHO 1992).

Of ED presentations by the self-harm or suicidal behaviour cohort that related to mental and behavioural disorders (Table 7), presentations among:

- ex-serving ADF males aged 65 years and over were 1.3 times more likely to be for mental and behavioural disorders compared to all Australian males aged 65 years and over (8.2% vs 6.2%)
- ex-serving ADF females aged 25–34 were 1.3 times more likely to be for mental and behavioural disorders compared to all Australian females aged 25–34 (16.4% vs 12.9%).

Table 7: Number and percentage of ED presentations for mental and behavioural disorders among the self-harm or suicidal behaviour cohort for ex-serving ADF members and all Australians, by age group, 2013–2020

Age group (years)	Ex-serving males	Australian males	Ex-serving females	Australian females
17–24	150 (12.6%)	35,453 (13.1%)	61 (10.6%)	55,350 (12.0%)
25–34	758 (13.9%)	50,381 (14.9%)	**268 (16.4%)**	**47,052 (12.9%)**
35–44	1,374 (14.7%)	45,134 (14.3%)	384 (14.3%)	36,822 (13.1%)
45–54	1,302 (11.0%)	28,541 (11.8%)	290 (9.8%)	28,214 (12.2%)
55–64	371 (10.9%)	12,452 (10.0%)	39 (6.5%)	12,657 (11.2%)
65+	**70 (8.2%)**	**5,407 (6.2%)**	n.p.	6,516 (7.5%)

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes:

n.p. Not available for publication but included in totals where applicable, unless otherwise indicated. In this case this is a result of low numbers being potentially identifying.

1. ED presentations for self-harm or suicidal behaviour refer to ED presentations for intentional self-harm and/or suicidal ideation.
2. The self-harm or suicidal behaviour cohort is defined as those who have presented to an ED that includes a diagnosis of self-harm or suicidal behaviour at any point during the analysis period of 1 July 2013 to 30 June 2020.
3. Proportions of presentations is a percentage of all presentations among those who have had a self-harm or suicidal behaviour ED presentation.
4. Bolding indicates statistical significance was found for the relative difference between the proportions.
5. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded emergency department care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Of ED presentations by the self-harm or suicidal behaviour cohort that related to substance use disorders, not including alcohol (Table 8), presentations among:

- ex-serving ADF males in the age groups of 25–34, 35–44, and 45–54, were approximately half as likely to be for substance use disorders compared to all Australian males of the same age group (2.4% vs 4.3% for those aged 35–44).
- ex-serving ADF males aged 65 and over were 3 times more likely to be for substance use disorders compared to all Australian males aged 65 and over (0.6% vs 0.2%).

Table 8: Number and percentage of ED presentations for substance use disorder (not including alcohol) among the self-harm or suicidal behaviour cohort for ex-serving ADF members and all Australians, by age group, 2013–2020

Age group (years)	Ex-serving males	Australian males	Ex-serving females	Australian females
17–24	23 (1.9%)	6,601 (2.4%)	5 (0.9%)	4,926 (1.1%)
25–34	**131 (2.4%)**	**14,754 (4.4%)**	21 (1.3%)	7,246 (2.0%)
35–44	**220 (2.4%)**	**13,634 (4.3%)**	42 (1.6%)	5,171 (1.8%)

45–54	**118 (1.0%)**	**6,107 (2.5%)**	44 (1.5%)	3,169 (1.4%)
55–64	24 (0.7%)	1,241 (1.0%)	n.p.	876 (0.8%)
65+	**5 (0.6%)**	**176 (0.2%)**	n.p.	196 (0.2%)

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes:

n.p. Not available for publication but included in totals where applicable, unless otherwise indicated. In this case this is a result of low numbers being potentially identifying.

1. ED presentations for self-harm or suicidal behaviour refer to ED presentations for intentional self-harm and/or suicidal ideation.
2. The self-harm or suicidal behaviour cohort is defined as those who have presented to an ED that includes a diagnosis of self-harm or suicidal behaviour at any point during the analysis period of 1 July 2013 to 30 June 2020.
3. Proportions of presentations is a percentage of all presentations among those who have had a self-harm or suicidal behaviour ED presentation.
4. Bolding indicates statistical significance was found for the relative difference between the proportions.
5. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded emergency department care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

Of ED presentations by the self-harm or suicidal behaviour cohort that related to alcohol use disorders (Table 9), presentations among:

- ex-serving ADF males aged 45–54 years were less likely (0.9 times) to be for alcohol use disorders compared to all Australian males aged 45–54 years (6.5% vs 7.4%).
- ex-serving ADF males aged 65 and over were almost 2 times more likely to be for alcohol use disorders compared to all Australian males aged 65 and over (5.3% vs 2.8%).
- ex-serving ADF females aged 23–34 years were approximately a third less likely to be for alcohol use disorders compared to all Australian females aged 23–34 years (0.6% vs 2.1%).
- ex-serving ADF females aged 45–54 years were half as likely to be for alcohol use disorders compared to all Australian females aged 45–54 years (2.6% vs 4.7%).

For complete tables of ED presentations for these risk factors by age group, refer to Supplementary Tables S.ED.4–S.ED.6.

Table 9: Number and percentage of ED presentations for alcohol use disorder among the self-harm or suicidal behaviour cohort for ex-serving ADF members and all Australians, by age group, 2013–2020

Age group (years)	Ex-serving males	Australian males	Ex-serving females	Australian females
17–24	29 (2.4%)	5,602 (2.1%)	8 (1.4%)	6,383 (1.4%)
25–34	178 (3.3%)	10,598 (3.1%)	**9 (0.6%)**	**7,544 (2.1%)**
35–44	456 (4.9%)	17,479 (5.5%)	111 (4.1%)	10,844 (3.9%)
45–54	**774 (6.5%)**	**17,978 (7.4%)**	**76 (2.6%)**	**10,846 (4.7%)**
55–64	219 (6.4%)	8,796 (7.0%)	21 (3.5%)	4,875 (4.3%)
65+	**45 (5.3%)**	**2,476 (2.8%)**	n.p.	196 (0.2%)

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes:

n.p. Not available for publication but included in totals where applicable, unless otherwise indicated. In this case this is a result of low numbers being potentially identifying.

1. ED presentations for self-harm or suicidal behaviour refer to ED presentations for intentional self-harm and/or suicidal ideation.
2. The self-harm or suicidal behaviour cohort is defined as those who have presented to an ED that includes a diagnosis of self-harm or suicidal behaviour at any point during the analysis period of 1 July 2013 to 30 June 2020.
3. Proportions of presentations is a percentage of all presentations among those who have had a self-harm or suicidal behaviour ED presentation.
4. Bolding indicates statistical significance was found for the relative difference between the proportions.
5. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded emergency department care in public hospitals in all states and territories, including Western Australia and the Northern Territory.

The number of ED self-harm or suicidal behaviour cohort patients who have had more than one presentation for these risk factors were further investigated. Among ex-serving ADF males who had a presentation for self-harm or suicidal behaviour:

- 20.8% had at least 2 ED presentations for mental and behavioural disorders
- 2.9% had at least 2 ED presentations for substance use disorder, not including alcohol
- 6.4% had at least 2 ED presentations for alcohol use disorder
- 0.5% had at least 2 ED presentations for social issues.

The equivalent proportions for ex-serving ADF females are similar to ex-serving ADF males. See Supplementary table S.ED.7 for further information and proportions for the ex-serving ADF female and the total Australian self-harm cohorts. Note that these data are not analysed by age group due to small numbers. Therefore, any differences between the ex-serving and total Australian populations may be related to the underlying population age structure. Age differences can be partially informed by findings presented above and Supplementary tables S.ED.4-S.ED.6.

The number of patients who presented to ED who have had risk factor presentations in the lead up to the index self-harm or suicidal behaviour ED presentation were also further investigated. In the 30 days prior to the index presentation for self-harm or suicidal behaviour, most ex-serving males did not present to ED. However, among ex-serving ADF males who presented in that period:

- 6.4% presented to an ED for mental and behavioural disorders
- 0.7% presented to an ED for substance use disorder, not including alcohol
- 1.3% presented to an ED for alcohol use disorder
- 0.2% presented to an ED for social issues.

The equivalent proportions of presentations in the 30 days prior for ex-serving ADF females are not discussed here due to low numbers. For complete breakdown by time period up to 1 year prior to the index self-harm or suicidal behaviour presentation, and available proportions for the ex-serving female and Australian self-harm cohorts, refer to Supplementary table S.ED.8. Comparisons to the total Australian population should be made with caution due to the differences in age.

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The information included here places an emphasis on data, and as such, can appear to depersonalise the pain and loss behind the statistics. The AIHW acknowledges the individuals, families and communities affected by ADF member and veteran suicide, suicidality and self-harm each year in Australia.

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Technical notes

This section contains supplementary findings from the analyses and more detailed information about the data sources, codes and classifications used in compiling data for this report.

- Data gaps and future work
- Characteristics of ex-serving members who used any admitted patient care
- Admitted patient care in public and private hospitals
- Data sources
- Linkage approach for the ex-serving ADF cohort data set
- Study period and population
- Codes and classification
- Methods
- Acronyms, symbols and glossary

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Technical notes

This report has examined hospital admissions and ED presentations for conditions associated with suicidality and self-harm among ex-serving ADF members, across the period 2010 to 2020. This has been the first time that data has been available to analyse admitted patient care and ED use for these conditions for all ex-serving ADF members.

However, the analysis of this data is still subject to some limitations due to gaps in data availability. For example, ED data was not suitable for analysis for the financial years 2010–11 to 2012–13 due to inadequate diagnostic information and ex-serving members were only in scope if they had served from January 1985 onwards (as noted in the Data limitations and Technical notes section).

Due to the wealth of information available in the analysis datasets, AIHW will continue to conduct research using this data. This report represents the first phase of the AIHW's project aiming to understand health service use for conditions associated with suicidal behaviour among ex-serving ADF members.

In the second phase of this project, further analysis of hospitalisations will be conducted alongside analysis of other health care services, including health care provided under Medicare Benefits Scheme (MBS) and prescribing under the Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS). This will complement the hospitals analysis conducted in this report and will include modelling to help understand patterns and factors associated with healthcare services use among ex-serving ADF members, particularly mental health services.

While the second phase will provide additional insights, there remain gaps in the data relating to health service use among ex-serving ADF members. As noted earlier, there are extensive data gaps relating to private hospital use. Another example is the use of community mental health care services which were not included in this report. These services often treat mental health conditions in specialised community and hospital-based outpatient psychiatric services provided by state and territory governments.

Another challenge, as discussed throughout the report, is that there are current limitations across some health services data sources in the collection of data on intentional self-harm and suicidality. The AIHW is working with key stakeholders including mental health services and emergency data custodians to develop nationally consistent suicide-related data.

Viewing this data

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Technical notes

Table 10 shows the demographic and military characteristics of ex-serving ADF members who received admitted patient care for any reason at a public hospital from 1 July 2010 to 30 June 2020, and the characteristics of ex-serving members (regardless of use of admitted patient care). Note that this table refers to any use admitted patient care and is not only indicative of use of admitted patient care for conditions related to suicidal behaviour.

Table 10: Demographic characteristics of ex-serving ADF members and ex-serving ADF members who used any admitted patient service in public hospitals, 2010-20

Characteristic	Characteristic value	Proportion of male ex-serving members in analysis cohort	Proportion of male ex-serving members with any admission	Proportion of female ex-serving members in analysis cohort	Proportion of female ex-serving members with any admission
Age	17-24	2.3	2.8	2.7	5
Age	25-34	12.3	11.4	12.2	19.4
Age	35-44	26.6	24.7	32.3	33.1
Age	45-54	31.5	29.4	37.5	29.7
Age	55-64	16.7	18	12.7	10.3
Age	65+	10.7	13.7	2.6	2.5
Service	ARMY	68.5	68.9	63.2	63.9
Service	NAVY	15.9	15.5	17.1	18.2
Service	RAAF	15.6	15.5	19.8	17.9
Separation reason	Voluntary	42.1	37.8	43.6	41.9
Separation reason	Involuntary - medical	13	18.3	15.7	19.1
Separation reason	Involuntary - other	35.1	35.8	28.2	27.9
Separation reason	Contractual/Admin change	9.7	8.1	12.5	11.1
Length of service	<1 year	14.2	13.9	17.9	20.3
Length of service	1-<5 years	28.5	26.6	34.1	34.3
Length of service	5-<10 years	18.7	17.7	22.1	21.6
Length of service	10-<20 years	17.3	16.6	17.5	16.3
Length of service	20+ years	20.8	24.5	7.8	7.0
Length of service	Unknown	0.6	0.7	0.5	0.5
Time since service	<1 year	3	4.1	2.9	5.6
Time since service	1-<5 years	11.3	11.5	10.7	14.7
Time since service	5-<10 years	12.5	11.1	12.5	13.7
Time since service	10-<20 years	31.7	31.5	34.3	34.3
Time since service	20+ years	41.5	41.8	39.7	31.7
DVA client status	DVA client - All	27.5	33.1	19.6	22.3
DVA client status	*DVA client - gold card*	7.4	10.2	1.6	1.8
DVA client status	*DVA client - white card*	13.4	15.9	9.7	11
DVA client status	*DVA client - other*	6.7	7.0	8.3	9.5
DVA client status	Not DVA client - All	72.5	66.9	80.4	77.7
Rank	Officer	12.7	10.9	13	10.7
Rank	Sr other ranks	15.2	18	6.1	5.2
Rank	Other ranks	72.1	71	81	84.1

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

Different vetting and release approval practices apply to the different data sources.

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. For stay separations between 1 July 2010 and 30 June 2020.
3. Proportion of analysis cohort is the proportion of person years while ex-serving during the analysis period. Person years is calculated by counting the period of time where each person is ex-serving.
4. Characteristics are determined at the time of a patient's first admitted patient separation for ex-serving members who used an admitted patient service between termination date and death, between 1 July 2010 and 30 June 2020.
5. Includes deaths classified as 'Intentional self harm', identified by ICD-10 codes X60-X84 and Y87.0, that occurred while ex-serving between 1 July 2010 and 30 June 2020.
6. Characteristics are determined at the date of death for ex-serving members who died by suicide.
7. Includes public hospital data from New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in public hospitals in all states and territories, including Western Australia and the Northern Territory.
8. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.

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Technical notes

Why investigate the use of admitted patient care services in public and private hospitals?

The NHDH only enabled analysis of admitted patient care in private hospitals for a single jurisdiction (Queensland). Accordingly, the focus of the report was on public hospital data to provide a more nationally comprehensive view of admitted care use by ex-serving members. However, the absence of private hospital data for the analysis means that there is a downward bias in measuring mental health, alcohol and other drug and intentional self-harm presentations to hospital.

AIHW undertook analysis of Queensland (as the only jurisdiction with sufficient data) to provide insights on total admitted patient care, including both public and private hospital care. This enabled comparison of trends in admitted patient care for ex-serving ADF members between public and private hospitals and public hospitals only. Given this analysis was only based on Queensland there may be jurisdictional differences that can not be controlled for when making comparisons. AIHW is working with other jurisdictions to enable the inclusion of private hospital data in the NHDH to extend this analysis in the future.

Public and private hospital admissions

The most common principal diagnoses among ex-serving ADF members and the total Queensland population admitted to *public and private hospitals* in Queensland were different to those for *public hospital only* admissions.

Of all patients admitted to a public or private hospital in Queensland (FY 2019-20), a higher proportion of ex-serving ADF members than the comparable Queensland population were admitted for:

- musculoskeletal conditions (males:18.1% vs 11.1%; females: 15.8% vs 10.0%)
- mental and behavioural disorders (males: 7.5% vs 4.3%; females: 6.4% vs 3.4%).
  Note that this pattern is similar to the proportions based on the public hospital data (males: 7.1% vs 5.7%; females: 5.0% vs 4.2%).

Age

Differences in the reasons for admission among the ex-serving ADF population and comparable Queensland population were greater among select age groups and conditions. Of patients admitted to Queensland public and private hospitals in 2019-2020, compared to all Queenslanders (see supplementary table S.QLD.1.2):

- a higher proportion of male ex-serving ADF members aged 25-34 years were admitted for musculoskeletal conditions (19.1% vs 10.3%)
- a higher proportion of male ex-serving ADF members aged 35-44 years were admitted for mental and behavioural disorders (16.5% vs 8.0%)
- a higher proportion of female ex-serving ADF members aged 17-24 years were admitted for musculoskeletal conditions (17.5% vs 3.6%)
- a higher proportion of female ex-serving ADF members aged 25-34 years were admitted for mental and behavioural disorders (8.1% vs 3.6%).

DVA client status

Ex-serving DVA clients are a sub-population of ex-serving ADF members and have different characteristics to the all ex-serving ADF cohort. ADF members who are eligible for DVA support – and who access services funded by DVA – are more likely to have physical and mental health needs that would have led them to DVA. The reasons for admissions to hospital differed between DVA clients and non-DVA clients (see supplementary table S.QLD.1.3).

Of ex-serving patients admitted to Queensland (public and private) hospitals (FY 2019-20), compared to non-DVA clients:

- a higher proportion of male and female DVA clients were admitted for mental and behavioural disorders (males 9.8% vs 4.4%; females 10.6% vs 3.8%)
- note that this pattern is similar to the rates based on the public hospital data (males: 8.5% vs 6.1%; females: 6.1% vs 4.6%)
- a higher proportion of male and female DVA clients were admitted for musculoskeletal conditions (males 23.2% vs 11.1%; females 22.5% vs 11.4%)
- a higher proportion of male DVA clients were admitted for neoplasms (16.3% vs 12.7%) which contrasts with that of the public hospital analysis where more female DVA clients were admitted for neoplasms.

Mental and behavioural disorders

Of all admitted patients to public and private hospitals in Queensland (FY 2019-20):

- a higher proportion of ex-serving ADF males for all age groups except 65+ were admitted for a mental and behavioural disorder compared to the Queensland population (Table 11)
- a higher proportion of ex-serving ADF females for all age groups except 17-24 and 65+ were admitted for a mental and behavioural disorder compared to the Queensland population

Table 11: Proportion of admitted patients for any mental and behavioural disorders for ex-serving ADF members and all Queenslanders aged 17 and over to a public or private hospital in Queensland, 2019-20

Age group	Males ex-serving	Qld Males	Proportion difference	Females ex-serving	Qld Females	Proportion difference
17-24	9.0	8.7	0.3 (-4.2-,4.8)	9.3	5.8	3.5 (-2.3,9.3)
25-34	16.6	9.0	**7.6 (5.3,9.9)**	8.1	3.6	**4.6 (1.9,7.3)**
35-44	16.5	8.0	**8.5 (6.9,10.2)**	8.2	4.0	**4.3 (2.2,6.4)**
45-54	9.0	5.2	**3.8 (3.0,4.7)**	6.7	4.1	**2.6 (1.2,3.9)**
55-64	5.0	2.5	**2.4 (1.8,3.1)**	4.6	2.6	**2.0 (0.5,3.4)**
65+	2.9	2.2	**0.7 (0.3,1.2)**	3.0	2.5	0.5 (-1.5,2.6)
All ages 17+	7.5	4.3	**3.2 (2.7,3.6)**	6.4	3.4	**3.1 (2.2, 3.9)**

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes

n.p. Suppressed due to small numbers, or to prevent subsequent disclosure of cells with small numbers.

Different vetting and release approval practices apply to the different data sources.

Bolding indicates statistical significance was found for the difference between the proportions.

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public and private hospital data from Queensland. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in Queensland.

Military characteristics

As a proportion of patients in public and private Queensland hospitals (2019-20), a principal diagnosis of mental and behavioural disorders was more common in ex-serving ADF males with:

- Army or Navy service (compared to RAAF service)
- Length of service less than one year, between 1 and less than 5 years and between 5 and less than 10 years (compared to longer service periods)
- Other ranks – junior and unspecified (compared to officers and senior other ranks)
- Involuntary medical separation (compared to other involuntary and voluntary separation)

These patterns were similar for the analysis based on public hospital data only.

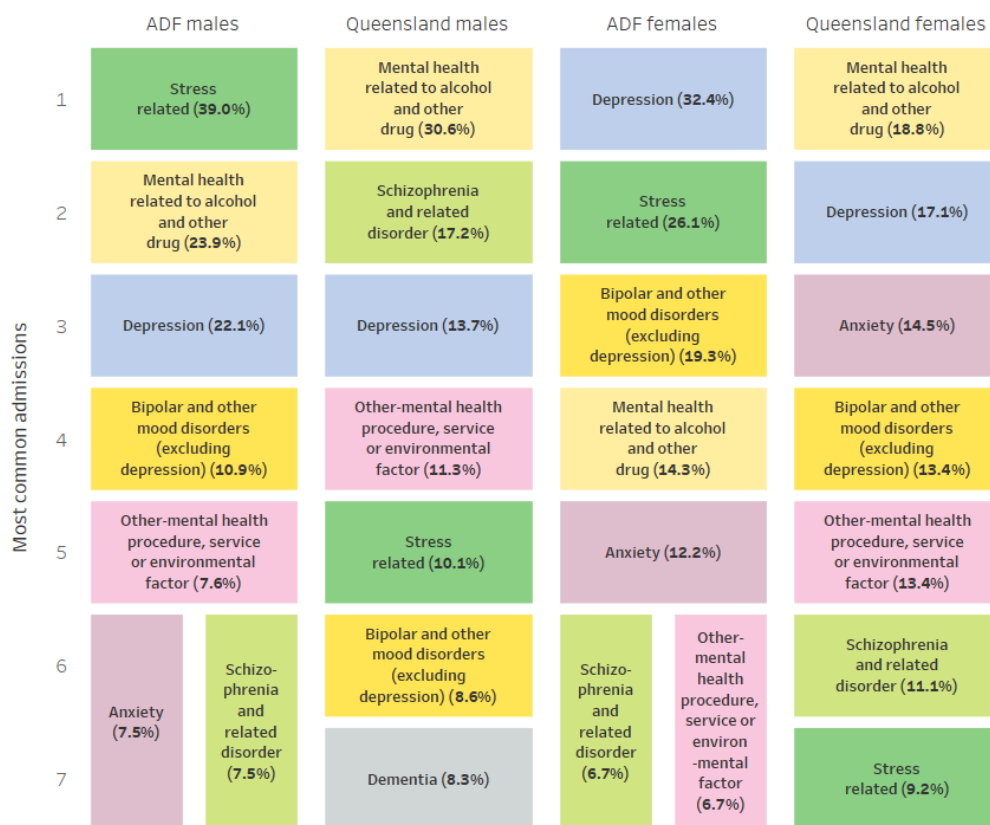## Admission for mental health-related care by diagnostic group

This section presents analysis of the types of mental health-related care for admitted patients using a broader definition of mental health than mental and behavioural disorders. Mental health-related care was defined using the same classification that is used in AIHW reporting conventions when analysing the Australian population.

In 2019-20, a higher proportion of admitted ex-serving males were admitted to Queensland hospitals for mental health-related care compared to all admitted Queensland males (8.0% vs. 5.0%). This pattern was true for ex-serving males across all age groups apart from 17-24 in comparison to Queensland males. The difference was most significant for ex-serving males aged 35-44 years (17.2% vs. 8.9%).

The proportion of ex-serving females admitted for mental health-related care in Queensland was higher in comparison to Queensland females (6.9% vs. 3.9%). This pattern was true for ex-serving females across all age groups apart from 17-24 and 65+ in comparison to Queensland females. The difference was most significant for ex-serving females aged 25-34 years (8.7% vs. 4.4%).

Figure 2 compares the distribution of mental health-related care across the male and female ex-serving ADF member and total Queensland populations admitted to a public or private hospital in Queensland hospitals for *any* mental health-related care. Stress-related disorders and depression were the top mental health-related care types for ex-serving ADF males and females, respectively, whereas mental health related to alcohol and other drugs was the leading mental health-related care type for the total Queensland population.

Figure 2: Proportion of all admissions for any mental health-related care by principal diagnosis group for male and female ex-serving ADF members and all Queenslanders aged 17 and over to a public and private hospital in Queensland, 2019-20.

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDC–MBS–PBS–RPBS data (2010–2020) and NHDH (2010-2020)
https://www.aihw.gov.au

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Notes:

n.p. Suppressed due to small numbers, or to prevent subsequent disclosure of cells with small numbers.

Different vetting and release approval practices apply to the different data sources

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.
3. Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.
4. By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.
5. Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.
6. Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.
7. Includes public and private hospital data from Queensland. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in Queensland.

Of patients admitted to Queensland hospitals (FY 2019-20), compared to Queenslanders by age group:

- a higher proportion of ex-serving ADF males aged 35-44 years were admitted for mental health-related care (17.2% vs 8.9%)
- a higher proportion of ex-serving ADF females aged 35-44 years were admitted for mental health-related care (8.7% vs 4.4%)
- a higher proportion of ex-serving ADF males aged 35-44 years were admitted for stress-related disorders (7.6% vs 1.1%) – for all males about 40% of mental health-related care were stress-related disorders compared to 10% for all Queensland males
- a higher proportion of ex-serving ADF males aged 25-34 years were admitted for depression (4.0% vs 1.3%)
- a higher proportion of ex-serving ADF males aged 35-44 years were admitted for mental health-related drug and alcohol conditions (4.5% vs 3.4%).

Military characteristics

As a proportion of patients admitted in Queensland hospitals (FY 2019-20):

- 10.4% of male DVA clients and 11.2% of female DVA clients were admitted for mental health-related care, compared to 4.9% of male non-DVA clients and 4.2% of female non-DVA clients
- 22.0% of male and 16.3% of female ex-serving ADF members who had involuntarily separated for medical reasons were admitted for mental health-related care; this compares to 8.5% of male and 4.6% of female ex-serving who separated for voluntary reasons admitted for mental health-related care
- ex-serving males with a length of service from 5 to less than 10 years (4.4%) and females with a length of service greater than 10 years (2.6%) represented a greater proportion of persons admitted for stress-related disorders.

The analysis of public hospital-only data showed that similar service characteristics were associated with a greater proportion of ex-serving ADF members being admitted for mental health-related care.

Alcohol and other drug use

Of patients admitted to Queensland hospitals (FY 2019-20), compared to all admitted Queenslanders:

- a higher proportion of ex-serving males were admitted for alcohol and other drug related conditions (2.8% vs 2.4%), of which a greater proportion were admitted for alcohol use (63.9% vs 49.3%)
- a similar proportion of ex-serving females were admitted for alcohol and other drug related conditions. However, there was a higher proportion of ex-serving females admitted for alcohol and other drugs in most years between 2010 and 2020 (except for 2013-14 and 2019-20).

Table 12 shows that among the substances leading to admission at public and private hospitals, alcohol was the most common substance. Similar findings were seen in those admitted to public hospitals.

Table 12: Proportion of all admissions for *any* alcohol and drug related condition by principal diagnosis drug group for ex-serving ADF members and all Queenslanders aged 17 and over to a public and private hospital in Queensland, 2019-20

Rank	Principal diagnosis	Ex-serving males	Queensland males	Ex-serving females	Queensland females
1	Alcohol	63.9	49.3	41.9	38.3
2	Anti-epileptic, sedative - hypnotic and antiparkinsonian drugs	9.8	10.2	14.5	14.6
3	Opioids	8.1	7.1	11.3	6.6

Notes

n.p. Suppressed due to small numbers, or to prevent subsequent disclosure of cells with small numbers.

Different vetting and release approval practices apply to the different data sources

1) Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.

2) By year of separation from hospital stay, for separations between 1 July 2010 and 30 June 2020.

3) Includes stay separations that occurred while ex-serving (for ex-serving members) and where patients were aged 17 years or older at admission.

4) By age at admission. Patients may be reported in up to two age groups if a change in age during the analysis period causes them to be assigned into the subsequent age group for later admissions.

5) Where a stay includes more than one episode, the principal diagnosis of the initiating episode is used.

6) Excludes stays where the principal diagnosis was in the ICD-10-AM chapter 'Certain conditions originating in the perinatal period' or 'Codes for special purposes'.

7) Includes public and private hospital data from Queensland. Additional data for ex-serving members was provided by the Department of Veterans' Affairs (DVA) for DVA-funded admitted patient care in Queensland

Of patients admitted to public and private Queensland hospitals (FY2019-20), compared to all Queenslanders:

- a higher proportion of ex-serving ADF males aged 35-44 were admitted for an alcohol-related condition (3.5% vs 2.3%)
- a greater proportion of male ex-serving ADF members admitted for any alcohol or drug use aged 35-44 or 55-64 were admitted for alcohol use compared to all Queensland males (See Supplementary Table S.QLD.3.2)
- a higher proportion of Army (3.0%) and Navy (3.4%) than RAAF (1.6%) were admitted for alcohol-related conditions
- a higher proportion of ex-serving ADF males with an involuntary medical separation (6.0%) were admitted for an alcohol and other drug related condition than those with a voluntary separation (3.5%)
- a higher proportion of ex-serving ADF males with lengths of service less than 1 year (4.9%) or 1 to less than 5 years (4.9%) were admitted for any alcohol and other drug-related condition than those with more than 20 years of service (2.1%)
- a higher proportion of ex-serving ADF males who separated in 'other ranks' (3.7%) were admitted for any alcohol and other drug-related condition than officers (1.9%) and senior other ranks (1.3%).

Intentional self-harm

In FY 2019-20, 113 male ex-serving ADF members and 31 female ex-serving ADF members were admitted for intentional self-harm in Queensland hospitals.

Similar proportions of ex-serving ADF members and Queensland population were admitted to public and private hospitals for intentional self-harm. This was the same across all age groups with sufficient data for both males and females.

This trend contrasts with the higher proportion of ex-serving ADF members than Australian population admitted for intentional self-harm in public hospitals.

The service characteristics associated with ex-serving ADF members admitted to public and private hospitals for intentional self-harm were similar to that based on the public hospital-only analysis.

Summary

The purpose of the analysis of Queensland public and private hospitals was to compare and contrast the findings with the analysis of public hospitals across most Australian jurisdictions for ex-serving members. Noting that analysis of both public and private hospitals could be more beneficial if there was data from more jurisdictions to account for Queensland-specific factors, there were mostly similar themes across each analysis, with some differences. Comparing the two sets of analysis:

- There were similar findings for mental and behavioural disorders and mental health-related care
  - Mental and behavioural disorders and mental health-related care as a proportion of admitted care was higher for ex-serving ADF members than the comparator Australian or Queensland population.

- There were similar findings for alcohol and drug use for males
  - A higher proportion of ex-serving males were admitted for alcohol and other drug related conditions, of which a greater proportion were admitted for alcohol use.
- There were similar findings for military characteristics of ex-serving members with the following having a higher association with conditions related to suicidal behaviour:
  - Army or Navy service
  - shorter lengths of service
  - lower rank
  - involuntary medical separation.

The two sets of analysis did show some different findings which could suggest a greater need to consider the role of private hospitals in future analysis:

- The most common reasons that patients were admitted to public hospitals was different compared to public and private hospitals for ex-serving members and all admitted Australians.
  - The top 3 reasons for admission in public hospitals were: symptoms and signs, injury and poisoning and digestive diseases.
  - The top 3 reasons for admission in Queensland hospitals were: digestive diseases, symptoms and signs and musculoskeletal conditions.
- The proportion of admissions for intentional self-harm was higher for ex-serving members compared to all admitted Australians based on public hospital data but there were similar proportions of admission for intentional self-harm based on the Queensland hospital analysis. This could have been a result of small figures in the Queensland analysis.

Viewing this data

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The information included here places an emphasis on data, and as such, can appear to depersonalise the pain and loss behind the statistics. The AIHW acknowledges the individuals, families and communities affected by ADF member and veteran suicide, suicidality and self-harm each year in Australia.

The AIHW supports the use of the Mindframe guidelines - external site opens in new window on responsible, accurate and safe suicide and self-harm reporting. Please consider these guidelines before including any details of statistics on suicide methods in reports on suicide or self-harm.

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Technical notes

The information in this report is based on several data sources.

Department of Defence personnel system data

The Department of Defence compiled a file of current and historical personnel systems for ADF members who have served since 1 January 1985. This combines Personnel Management Key Solution (PMKeyS), Core HR system, D1, CENRESPAY (for reservists), ADFPAY (for permanent members) and other historical payment systems. The Department of Defence and AIHW assessed the resulting file for completeness and duplicates. Comparisons were made with records from Defence annual reports and other sources to validate the list. For ex-serving ADF members, service characteristics are reported as at date of separation from the ADF.

Department of Veterans Affairs (DVA) client data

The DVA client data was used to identify ex-serving ADF members who were eligible for financial and/or healthcare support, from 1 July 2010 to 30 June 2020. There have been significant changes to DVA policy over the study period, particularly in increasing access to non-liability mental health care. Since July 2017, all current and former ADF members have been entitled to non-liability health care for all mental health conditions and are considered DVA clients from first use of these services. While the proportion of DVA clients and the number of services provided by DVA increases - this does not necessarily indicate an increase in the prevalence of mental health conditions.

DVA National Treatment Account (NTA)

The NTA is an administrative data set containing records of DVA-funded health services provided to eligible DVA clients. This includes data for admitted patient care provided in public and private hospitals and for non-admitted emergency department care from 1 July 2010 to 30 June 2020. Data for DVA-funded admitted patient care provided by public hospitals contributed to the Australian suicide and ex-serving ADF member linked datasets

National Mortality Database (NMD)

Cause of Death Unit Record File data are provided to the AIHW by the Australian Coordinating Registry as compiled by the ABS on behalf of Registrars of Births, Deaths, and Marriages (RBDM). Cause of death and demographic items are coded by the Australian Bureau of Statistics (ABS) from data originating from the Registrars of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice and Community Safety). The data are maintained by the AIHW in the NMD.

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. NDI 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 National Mortality Database (AIHW).

The data quality statement underpinning the NDI can be found at: National Death Index (NDI), Data Quality Statement. - external site opens in new window

National Hospital Morbidity Database (NHMD)

The National Hospital Morbidity Database (NHMD) is a compilation of episode-level records from the 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, length of stay and clinical data including diagnoses, procedures and external causes of injury or poisoning. States and territories are primarily responsible for the quality of data. However, the AIHW undertakes extensive validation procedures on receipt of the data, checking for valid values, and logical and historical consistency. Potential errors are queried with jurisdictions.

Key definitions

- An *admitted patient* undergoes a hospital's formal admission process to receive treatment and/or care. This may be provided as a day-only or overnight admission. There is variation across jurisdictions as to what requires a day-only or overnight admission. Day-only admissions are generally for treatment or care of at least 4 hours' duration i.e., brief outpatient clinic appointments for consultation, review or testing are not captured in this data.
- *Separation* is the term used to refer to an episode of admitted patient care, which can be a total hospital stay, or a portion of a hospital stay when there is a change in care type e.g. from acute care to rehabilitation care. Most episodes represent a single hospital stay. Separation (rather than admission)/number of separations is used as the unit of measurement for episode-based analysis. 'Separation' also refers to the completion of an epsiode of care i.e. changing care type, transferring to another hospital, discharge or death. *Care type* defines the overall nature of the clinical service. There are several care types – acute and mental health care will be the focus of this analysis. Note that mental health care was introduced on 1 July 2015 – prior to this date admitted mental health care was primarily captured within the acute care type, but also rehabilitation, geriatric and psychogeriatric care types.
- *Stay* refers to the contiguous period of admitted patient care. Most stays are a single separation or episode of admitted patient care. Stays with multiple separations are those with transfers between hospitals, changes in care type e.g. from acute care to rehabilitation care or a day-only transfer for treatment e.g. for a surgical procedure.
- The *principal diagnosis* is the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care.
- An *additional or secondary diagnosis* is a condition or complaint that either coexists with the principal diagnosis, or arises during the episode of care. Generally (diabetes is a notable exception), a secondary diagnosis should only be recorded if the condition affects patient management for that episode of care i.e. it cannot be assumed that the patient does not have a particular condition if it is not recorded.
- *External cause/place of external cause* ICD-10-AM codes describe the external event, circumstance or condition as the cause or place of injury, poisoning or other adverse effect.
- A separation is referred to as *mental health related* if a mental health-related principal diagnosis was recorded as either a diagnosis from ICD-10-AM Chapter 5 Mental and behavioural disorders, or a selected diagnosis from other ICD-10-AM chapters or it included any specialised psychiatric care.
- *Specialised psychiatric care* is provided in a dedicated psychiatric ward or unit. Noting that mental health care is also provided by mental health professionals i.e. psychiatrists, psychologists, nurses, social workers and drug and alcohol counsellors in general wards, outpatient areas and emergency departments. Not all hospitals have specialised psychiatric units to accommodate patients receiving mental health care. Patients who have been admitted involuntarily for treatment of severe mental illness e.g. psychosis or suicidality are generally, if possible, transferred to a hospital with a specialised psychiatric facility by ambulance and/or police.

Information about the NHMD is available on the AIHW website.

The admitted patient care data was available for all states and territories except for Western Australia and the Northern Territory.

National Non-Admitted Patient Emergency Department Care Database

The National Non-Admitted Patient Emergency Department Care Database (NNAPEDCD) is a compilation of episode-level records for non-admitted patients registered for care in emergency departments in selected public hospitals. It provides information on care, including waiting times, in public hospital EDs with designated assessment, treatment, and resuscitation areas, 24/7 medical and nursing staff, and a designated emergency nursing unit manager. The data quality statement and detailed data specifications for the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD) is available online at Hospitals – About the data and About our data- National hospitals data collection.

The ED data was available for all states and territories except for Western Australia and the Northern Territory.

National Health Data Hub

The National Health Data Hub (NHDH) formerly known as the National Integrated Health Services Information Analysis Asset (NIHSI) is an enduring linked data asset managed under the custodianship of the AIHW. This analysis was based on an older version of the asset which had data up to June 2020. The asset includes state/territory hospitals data and national health administrative data sets.

The hospital data includes:

- admitted patient care services public hospitals data for all states and territories except WA and NT
- private hospitals data for QLD, ACT and Victoria
- emergency department services public hospitals data for all states and territories except WA and NT

The national health administrative data includes:

- Medicare Benefits Schedule (MBS) data

- Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS) data
- Residential Aged Care Services data
- National Death Index (NDI).

More information is available at <u>National Integrated Health Service Information (NIHSI) version 2.0 (aihw.gov.au) - external site opens in new window</u>

The Australian population comparator analysis of admitted patient care and ED used the data held in the asset.

Limitations of the NHMD available in NHDH for this analysis

Private hospital data was not sufficient to analyse admitted patient care services across all Australian states and territories. The version of the NHMD included in <u>NHDH</u> available at the time of analysis included admitted patient care in all public hospitals for participating states and territories (excluding WA and NT) and select private hospital data with limited coverage for Victoria and ACT and complete coverage for Queensland.

Admitted patient care for mental health conditions is provided by both public and private hospitals across Australia. Overall, half of all episodes of admitted patient care for mental health-related care are provided by private hospitals. This varies by condition and population.

While admitted patient care for intentional self-harm and very acute mental health-related conditions is most often provided by public hospitals following presentation to the emergency department, private hospitals provide a significant component of admitted patient care, particularly for less acute mental health, and alcohol and other drug-related conditions. For instance, more admitted patient care for depressive episodes and mental and behavioural disorders due to alcohol and other drug use is provided by private hospitals (see <u>Admitted patients mental health-related care</u>).

Private hospital services are not universally available and are most commonly funded by the patient's private health insurance and/or self-funding - meaning that people from higher socioeconomic groups have higher rates of private hospital admissions. Private hospital care is also available through workers compensation arrangements, the Department of Defence for serving ADF members and the Department of Veterans' Affairs for eligible ex-serving members. This is an important consideration as there are important sociodemographic differences associated with the aetiology and trajectory of mental health and alcohol and other drug-related conditions.

To accommodate the potential bias due to the lack of national private hospital data – 2 analyses are reported:

Analysis 1: This includes admitted patient care provided by public hospitals in NSW, Victoria, South Australia, Queensland, Tasmania, Australian Capital Territory (and in Western Australia and Northern Territory for eligible DVA clients) as a combined Australian total. This analysis provides insights into generally more acute and urgent admitted patient care for conditions related to suicide and can be accessed by all eligible Australians via Medicare.

Analysis 2: The Queensland analysis enables a more complete picture by including both the acute care that public and private hospitals provide, and the related rehabilitation and prevention programs more commonly provided by private hospitals. As Queensland was the only jurisdiction that had complete public and private hospital admissions which means that the analysis was conducted as a case study to better understand the downward bias that was present in Analysis 1.

Person-Level Integrated Data Asset (PLIDA)

The Person-Level Integrated Data Asset (PLIDA) formerly known as the Multi-Agency Data Integration Project 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 population demographics. This analysis extracted demographic information about the ex-serving ADF member population and the comparator Australian population from the 2016 Census of Housing and Population and personal income tax data for the 2015-16 financial year. PLIDA is managed under the custodianship of the Australian Bureau of Statistics and more information is available on the <u>ABS website - external site opens in new window</u>.

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Technical notes

The method to construct the dataset for this study was undertaken using data linkage, also known as data integration, the process that brings together information relating to an individual from multiple sources. AIHW undertook data linkage between an extract of PMKeyS, DVA client data, the DVA NTA, the NDI and the Medicare Consumer Directory and subsequently to NHMD and the National non-admitted patient emergency department care database (NNAPEDCD) - external site opens in new window. This linkage was by a probabilistic linkage procedure (Fellegi and Sunter 1969).

The AIHW is an international leader in data linkage and an Accredited Data Service Provider (ADSP) under the data sharing scheme (the DATA Scheme) established by the *Data Availability and Transparency Act 2022* (DAT Act). As an ADSP the AIHW abides by the Australian Government's Data Sharing Principles, constituting a best-practice risk management framework to enable the robust, safe, and secure sharing of data.

Strict separation of identifiable information and content data is maintained within the AIHW Data Linkage Unit in accordance with the AIHW linkage protocols. Summary results from the linked data set are presented in aggregate format. Personal identifying information is not released, and no individual can be identified in any reporting. The linked data set created for this study will be stored securely in line with AIHW data storage and retention protocols.

References

Fellegi I and Sunter A. (1969) 'A Theory for Record Linkage - external site opens in new window', *Journal of the American Statistical Association*, 64: 1183-1210, doi:10.1080/01621459.1969.10501049.

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Technical notes

Study period

Data for all sources (outlined in Data sources) were available from 1 July 2010 to 30 June 2020. However, the NHDH emergency department data contained no diagnostic information for the financial years 2010–11 to 2012–13. While the entire data period was used to process the data presented, the data set used for the ED analysis was restricted to ED separations from 2013–14 to 2019–20, for which diagnostic information was available.

Study populations

The minimum age for both the ex-serving ADF and Australian populations was 17 years.

The ex-serving ADF population in this report includes all ex-serving ADF members who have served at least one day since 1 January 1985. As of 31 December 2020, almost 379,000 Australians had served at least one day in the ADF between 1 January 1985 and 31 December 2020. Of these, just over 362,000 were still alive, comprising 60,000 permanent ADF members, 39,000 reserve ADF members, and 263,000 ex-serving ADF members.

Public hospitals only

The ex-serving population in the study includes all ex-serving ADF members who have served at least one day since 1 January 1985, and received at least one episode of admitted patient care in a public hospital in NSW, Vic, Qld, SA, Tas or ACT and eligible DVA clients who received DVA-funded admitted patient care in a public hospital in WA or NT.

Among this cohort, 30,700 (31.3%) were DVA clients – 8,614 (8.8%) had a DVA gold card as an indicator of eligibility for DVA-funded admitted patient care at a public or private hospital. A DVA client under the broad definition used in this report is an ex-serving member who satisfies at least one of the following criteria:

- has been issued a White, Orange or Gold card or
- had at least one accepted claim for a health or disability condition accepted as being related to ADF service or
- has received or is receiving benefits or payment or
- had at least one health service or support service through the DVA National Treatment Account.

This definition does not include veterans who had made only rejected DVA claims and were not a card holder or in receipt of any benefits from DVA (See Codes and Classifications section for more information on DVA client cards and concepts).

The difference in the age structure was reviewed – both male and female ex-serving ADF members were over-represented in the younger age groups (35-64 years). Analysis was performed at the age group level to mitigate age-related effects. The focus of this analysis was mental health – epidemiological research suggests that around half of all life-time mental disorders start by the mid-teens and three quarters by the mid-20s, with later onset disorders being mostly secondary to an existing mental disorder (Kessler et al 2007). The 2021 National Survey of Mental Health and Well-being found that the prevalence of mental disorders was highest in the 16-24 (39.6%) and 25-34 (27.1%) age groups and lowest in the 75-85 (3.7%) age group (ABS 2020-21).

According to the 2016 census data available in MADIP, 200,800 ex-serving ADF members from this cohort were living in Australia at that time – 54,500 (27.1%) in QLD, 48,600 (24.2%) in NSW, 34,000 (16.9%) in VIC, 23,600 (11.7%) in WA, 15,200 (7.5%) in SA, 7,800 (3.9%) in the ACT, 6,90 (3.4%) in TAS and 3,500 (1.7%) in the NT.

The comparator population is the Australian population aged 17 and over. According to the 2016 census, 16,115,000 people aged 17 and over were living in Australia at that time – 3,215,000 (19.9%) in QLD, 5,151, (32.0%) in NSW, 4,100,000 (25.4%), 1,203,000 (7.5%) in SA, 1,681,000 (10.4%) in WA, 364,200 (2.3%) in TAS, 127,000 (0.8%) in NT and 275,100 (1.7%) in the ACT.

Preliminary analysis of Australian Taxation Office data found that this cohort of ex-serving ADF members had similar access to private hospital care as the Australian population in 2016 (in terms of uptake of private hospital insurance). This is consistent with previous AIHW analysis comparing related sociodemographic characteristics e.g. income, home ownership between this cohort of ex-serving ADF members and the Australian population (AIHW 2022).

Queensland public and private hospitals only

The ex-serving population for this analysis includes all ex-serving ADF members who have served at least one day since 1 January 1985, and received at least one episode of admitted patient care in a public or private hospital in Queensland.

Emergency Department care

For the ED analysis, the ex-serving population includes all ex-serving ADF members who have served at least one day since 1 January 1985, and have at least one presentation to ED in a public or private hospital in Australia.

Limitations in the study populations

The study population does not include ADF members with service prior to 1 January 1985 due to technical limitations in Defence systems and information infrastructure for records before 1985.

Public hospitals only

The study populations were ex-serving ADF members from this cohort and the Australian population aged 17 and over who received admitted patient care as a public or private patient in public hospitals in NSW, VIC, QLD, SA, TAS and the ACT. According to domicile recorded in the 2016 census – this means about 88% of both populations had access to a public hospital included in the NHDH data. While both populations seem to have had similar access to admitted patient care in private hospitals in terms of insurance – without complete private hospital data from all participating states and territories, it was not possible to confirm that the use of private hospital services was comparable between the two cohorts.

Additional data for admitted patient care services received by eligible ex-serving members in public hospitals in WA and NT was provided by DVA. At 1 July 2016, there were 13,100 (9% of total) gold card holders (eligible for DVA-funded admitted care) living in WA and NT. DVA Treatment Population Statistics for June 2016 are available here - external site opens in new window.

**Queensland public and private hospitals only**

While this analysis was more complete in terms of access and receipt of admitted patient care services, it only included about 30% of this ex-serving cohort and was restricted by small numbers.

Differences between study comparator populations

The ex-serving ADF member population for this analysis is those with 1 day of service since 1985, accordingly, the age structure is different to the total Australian population aged 17 and over. Figure 3 illustrates the differences in age structure between the ex-serving ADF and the total Australian population.

Figure 3: Differences in age structure between ex-serving ADF and total Australian populations, 2010–20

A grouped column chart showing differences in age structure between ex-serving ADF and total Australian populations by sex.
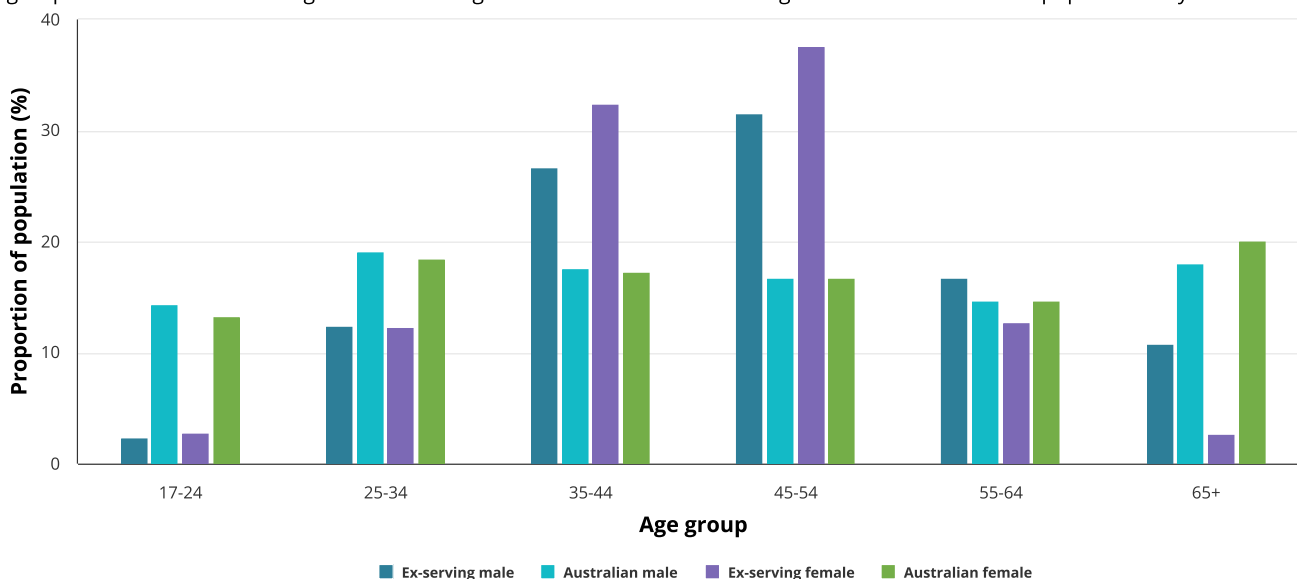
Notes:

1. Includes ADF members with at least one day of service since 1 January 1985 who were ex-serving (separated from permanent and/or reserve ADF service) and alive at any point from 1 July 2010 to 30 June 2020.
2. Proportion of the ex-serving population cohort is the proportion of person years while ex-serving from 2010 to 2020. Person years is calculated by counting the period of time where each person is ex-serving.
3. Proportion of the total Australian population cohort is the combined age group estimated resident population (ERP) as at 31 December for each year in the analysis period, divided by the combined total ERP as at 31 December for each year in the analysis period.

Source: AIHW analysis of linked Defence Historical Personnel data–PMKeyS–DVA client–NDI–MCD–NHMD-NNAPEDCD–MBS–PBS–RPBS data (2010–2020) and AIHW NHDH (2019-2020)

Note

- the absence of older ex-serving ADF members reflects data limitations: this cohort contains only members with service since 1985, many older ex-serving ADF members who only had service prior to 1985 are not able to be included.
- separation from the ADF is less common at younger ages, leading to a smaller proportion of ex-serving ADF members in the 17-24 age group.
- the smaller proportion of females among the ex-serving ADF members over 64 reflects historical differences in female recruitment.

Among this cohort, ex-serving ADF members were over-represented in the 35 to 54 age groups for both admitted patient care admissions and ED presentations in comparison to the total Australian population- noting that age is related to military characteristics e.g., time served, time since service and to a lesser degree, rank.

The differences in the age structure between the ex-serving ADF member population and the total Australian population should be considered when interpreting health-related findings. Many health conditions and diseases are directly associated with aging such as cancer, dementia and cardiovascular disease.

However, conditions associated with suicidal behaviour such as mental and behavioural disorders, alcohol and other drug use and intentional self-harm are more prevalent among younger cohorts. Epidemiological research indicates that around half of all life-time mental and behavioural disorders emerge by mid-teens and three-quarters by the mid-20s with later onset disorders being mostly secondary to an existing mental disorder (Kessler et al 2007).

The *2021 National Survey of Mental Health and Wellbeing* found that the prevalence of mental and behavioural disorders was highest in the 16 to 24 (39.6%) and 25-34 (27.1%) age groups and lowest in the 75 to 85 (3.7%) age group (ABS 2020-21). Young and middle-aged people are more likely to die by suicide than older age cohorts; almost one quarter of deaths in people aged 15 to 44 years are due to suicide (ABS 2021). Similarly, rates of hospitalisations for intentional self-harm are higher for young people (AIHW 2023).

As a result of the varying age-related health effects, this analysis has included age-specific group comparisons to control for these effects. Further, due to the differences in age structures between the ex-serving population and Australian population, AIHW recommends comparisons with the Australian population are based on age groups to control for these differences.

Where results in this analysis have been presented for comparisons between ADF member patients and the Australian population patients for "All ages 17+", it is recommended that these results are interpreted in parallel with comparator statistics for the individual age groupings for the cohort, particularly where there are different trends, as age grouped comparisons better control for the differences in age distribution between ADF and Australian public hospital patients.

References

Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S and Ustun TB (2007) '<u>Age of onset of mental disorders: a review of recent literature - external site opens in new window</u>', *Current Opinion in Psychiatry*, 20:359–64, doi:10.1097%2FYCO.0b013e32816ebc8c.

Viewing this data

Caution: Some readers may find parts of this content confronting or distressing

Please carefully consider your needs when reading the following information about suicide, suicidality and self-harm. This report may be distressing to some readers.

Technical notes

Codes and Classifications for Admitted Patient Care Analysis

International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification (ICD-10-AM)

Diagnosis, intervention, and external cause data are provided to the NHMD by all states and territories using the ICD-10-AM and the Australian Classification of Health Interventions (ACHI). The Australian Coding Standards are designed to be used in conjunction with the ICD-10-AM and ACHI to support sound coding convention. Although the ICD-10-AM is primarily designed for the diseases and injuries with a formal diagnosis, it also classifies a wide variety of signs, symptoms, abnormal findings, complaints, and social circumstances that may stand in place of a diagnosis. During the study period, hospital records were coded according to the applicable ICD-10-AM edition:

- 2010–11 to 2012–13: ICD-10-AM 7th edition
- 2013–14 to 2014–15: ICD-10-AM 8th edition
- 2015–16 to 2016–17: ICD-10-AM 9th edition
- 2017–18 to 2020–21: ICD-10-AM 10th edition.

It is important to note that diagnostic classifications and coding standards have changed over time. There is also variation in the quality, completeness and depth of coding across services, and state-specific standards. These factors can impact on the accuracy of diagnostic information.

ICD-10-AM 1–4-character diagnosis codes are used to construct the diagnostic groups according to AIHW conventions for this analysis.

Excluded from this analysis were separations with the care type 'hospital boarder' or 'posthumous organ procurement.

ICD-10 AM Chapter principal diagnostic groups

The 'Chapter' groups are the broadest diagnostic category in the ICD-10-AM for describing the reason a patient received admitted patient care. Table 13 delineates the ICD-10 AM Chapter diagnostic groups used for this analysis.

Table 13: ICD-10-AM codes for principal diagnosis by ICD-10-AM chapter

ICD-10-AM codes	ICD-10-AM chapter
A00-B99	Certain infectious and parasitic diseases
C00-D48	Neoplasms
D50-D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune system
E00-E89	Endocrine, nutritional and metabolic diseases
F00-F99	Mental and behavioural disorders
G00-G99	Diseases of the nervous system
H00-H59	Diseases of the eye and adnexa
H60-H95	Diseases of the ear and mastoid
I00-I99	Diseases of the circulatory system
J00-J99	Diseases of the respiratory system
K00-K93	Diseases of the digestive system
L00-L99	Diseases of the skin and subcutaneous tissue
M00-M99	Diseases of the musculoskeletal system and connective tissue
N00-N99	Diseases of the genitourinary system
O00-O99	Pregnancy, childbirth and the puerperium
P00-P96	Certain conditions originating in the perinatal period
Q00-Q99	Congenital malformations, deformations and chromosomal abnormalities
R00-R99	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
S00-T98	Injury, poisoning and certain other consequences of external causes
Z00-Z99	Factors influencing health status and contact with health services

Mental health-related care

These groups were constructed in accordance with AIHW reporting conventions for mental health-related admitted patient care. Broad mental health diagnostic groups were derived from the AIHW detailed groupings to accommodate small numbers for the ex-serving ADF member cohort.

Further information on codes and classifications for mental health-related care is available on the AIHW website. Table 14 delineates the mental health diagnostic groups used for this analysis.

Table 14: ICD-10-AM codes for principal diagnosis of mental health-related care by mental health diagnosis groups

ICD-10-AM codes	Mental health diagnostic group
F43	Stress-related disorders
F40-42, F44-45, F48	Anxiety disorders
F32	Depressive disorders
F30-31 F33-34 F38-39	Bipolar and other mood disorders (excluding depressive)
F1, Z50.2 Z50.3 Z71.4 Z71.5	Mental and behavioural disorders due to other psychoactive substance use
F00 F01 F02 F03 F051 G30	Dementia
F2	Schizophrenia and related disorders
F04 F05 (Excluding F051) F06 F07 F09	Other organic disorders
F5 (Excluding F52.5)	Behavioural syndromes
F6	Personality disorders
F7, F8 (excluding F84.2), F9 (Excluding F98.5 and F98.6)	Other 1 (diagnostic/symptoms)
Z00.4, Z03.2, Z04.6, Z09.3, Z13.3, Z54.3, Z61.9, Z63.1, Z63.8, Z63.9, Z65.8, Z65.9 and Z76.0.G47.0, G47.1, G47.2, G47.8, G47.9, O99.3, R44.0, R44.1, R44.2, R44.3, R44.8, R45.0, R45.1, R45.4, R48.0. R48.1, R48.2 and R48.8. Any mental health related episode not captured above (i.e., psychiatric care days but no mental health related principal diagnosis)	Other 2 (mental health procedure-service/environmental)

Intentional self-harm diagnoses

Records of hospitalisation for treatment following intentional self-harm were included if they met the following criteria:

- 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).

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.

Table 15: delineates the mechanism of intentional self-harm groups used for this analysis

ICD-10-AM codes	Mechanism of intentional self-harm group
X60	Nonopioid analgesics, antipyretics and antirheumatics
X61	Antiepileptic, sedative-hypnotic, anti-parkinsonism, and psychotropic drugs, not elsewhere classified
X62	Narcotics and psychodysleptics [hallucinogens], not elsewhere classified
X63-X64	Other drugs
X65	Alcohol
X66, X68-X69	Other chemical (excluding gas)
X67	Gas
X70	Hanging
X78	Sharp objects
X71-X77, X79-X84, Y87.0	Other cause

Counts of hospitalisations for intentional self-harm reported may differ slightly from other publications. This reflects differences in the inclusion and/or exclusion criteria (e.g. rehabilitation) and multi-episode stay-based rather than single episode-based analysis. At least one episode in multi-episode stays had to meet the above criteria to be included in the intentional self-harm patient group. This diagnostic group had negligible (<0.1%) stays containing episodes with a principal or additional diagnosis of 'care involving the use of rehabilitation procedures' (Z50).

Further information about codes and classifications related to intentional self-harm is available on the AIHW website.

Alcohol and other drug diagnoses

These groups were constructed in accordance with AIHW reporting conventions. Broad diagnostic groupings of physical and mental-health related conditions related to the use of alcohol and other drugs were constructed. This was to accommodate small numbers in the ex-serving ADF cohort.

Further information about the codes and classifications used by AIHW for the alcohol and other drug related diagnostic groups is available on the AIHW website. Table 16 delineates the diagnostic groups used for this analysis.

Table 16: ICD-10-AM codes for principal diagnosis by alcohol and other drug diagnosis groups

ICD-10-AM codes	Alcohol and other drug diagnostic group
E52, F10.0–10.9, G31.2, I42.6, K29.2, K29.20–29.21, K70.0–70.9, K85.2, K86.0, T51.0–51.9, Z71.4	Alcohol
F11.0-11.9, T40.0-40.4, T40.6	Opioids
T42.4, F13.0*-13.9, T41.2, T42.0-T42.3, T42.5-42.8	Anti-epileptic, sedative-hypnotic and antiparkinsonian drugs
F55.2, N14.0, T39.0–39.4, T39.8–39.9, F12.0–12.9, T40.7, F16.0-16.9, T40.8, T40.9, F14.0–14.9, T40.5, F17.0-17.9, T65.2, Z58.7, Z71.6, F15.01–15.02, F15.11–15.12, F15.21–15.22, F15.31–15.32, F15.41–15.42, F15.51–15.52, F15.61–15.62, F15.71–15.72, F15.81–15.82, F15.91–15.92, T43.61–43.62, F15.00, F15.09, F15.10, F15.19, F15.20, F15.29, F15.30, F15.39, F15.40, F15.49, F15.50, F15.59, F15.60, F15.69, F15.70, F15.79, F15.80, F15.89, F15.90, F15.99 F55.0, T43.0-43.2 T43.3-43.5 F18.0-18.9, T52.0-52.9, T53.0-53.7, T53.9, T59.0, T59.8 F19.0-19.9 F55.1, F55.3-F55.6, F55.8-55.9, K85.3, N14.1-14.3, T38.7, T43.8-43.9, T47.2-47.4, T50.1-50.3, T50.7, Z71.5 Q86.0	Any other drug/drug-related including: *Non-opioid analgesics* *Cannabinoids* *Hallucinogens* *Cocaine* *Nicotine* *Amphetamines and other stimulants* *Antidepressants* *Antipsychotics and neuroleptics* *Volatile solvents* *Multiple drug use* *Unspecified drug use* *Foetal and perinatal conditions*

National Death Index (NDI) causes of mortality

Causes of mortality included in the NDI are recorded as ICD-10 codes, as derived by Australian Bureau of Statistics from death certificates. Causes of mortality have been grouped according to ICD-10 chapter. Subgroups have been created (where there is sufficient data) for 'intentional self-harm,' 'deaths of despair' and 'deaths of undetermined intent.' Deaths from intentional self-harm are a subgroup of deaths of despair. Table 17 provides further information.

Table 17: ICD-10 codes for cause of death groups

ICD-10 codes	Cause of death group

A00-B99	Certain infectious and parasitic diseases
C00-D48	Neoplasms
C33-C34	• *Lung cancer*
C00-D48 (excluding C33-C34)	• *Other neoplasms*
D50-D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune system
E00-E99	Endocrine, nutritional, and metabolic diseases
F00-F99	Mental and behavioural disorders
G00-G99	Diseases of the nervous system
H00-H59	Diseases of the eye and adnexa
H60-H95	Diseases of the ear and mastoid
I00-I99	Diseases of the circulatory system
J00-J99	Diseases of the respiratory system
K00-K93	Diseases of the digestive system
L00-L99	Diseases of the skin and subcutaneous tissue
M00-M99	Diseases of the musculoskeletal system and connective tissue
N00-N99	Diseases of the genitourinary system
O00-O99	Pregnancy, childbirth, and the puerperium
P00-P96	Certain conditions originating in the perinatal period
Q00-Q99	Congenital malformations, deformations, and chromosomal abnormalities
R00-R99	Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified
V01-Y98	External causes of mortality
X40-X49, Y40-Y59	• *Accidental poisoning, including drugs causing adverse effects in therapeutic use*
X60-X84, Y87.0	• *Intentional self-harm*
V01-Y98 (excluding X40-X49, X60-X84, Y40-Y59, Y87.0)	• *Other injury, poisoning and certain other consequences of external causes*
X60-X84 & Y87, K70, K73, K74, X40-X45, Y10-Y15, Y45, Y47, Y49	Deaths of despair
X60-X84, Y87.0	• *Intentional self-harm*
K70, K73, K74, X40-X45, Y10-Y15, Y45, Y47, Y49	• *Other deaths of despair*
Y10-Y34, Y87.2	Deaths of undetermined intent
All other or missing codes, including codes for special purposes such as provisional codes for COVID-19.	Other or unspecified cause of death

Codes and Classifications for Emergency Department Care Analysis

During the study period, ED records were coded by hospitals according to a code sets, the range of codes available varied from hospital to hospital and between jurisdictions. The ED data comprise 3 fields only, into which the patient's treating clinician can apply diagnoses to the electronic record at the conclusion of a patients ED presentation. In contrast to the admitted patient coding, these fields are not input by trained medical records coders.

The *principal diagnosis* is established at the conclusion of the patient's attendance in an ED and is to be the main diagnosis responsible for occasioning the attendance following consideration of clinical assessment by a coder. The *first additional diagnosis* is the first condition or complaint coexisting with the ED principal diagnosis during a patient's attendance to the ED, as represented by a code. The *second additional diagnosis* is the second condition or complaint coexisting with the ED principal diagnosis during a patient's attendance to the ED, as represented by a code. Due to the limited code positions and depth of coding, it cannot be assumed that the patient does not have a particular condition if it is not recorded.

In the NHDH each of these 3 fields are available from 2013–14 onward. Care must be taken when evaluating these diagnoses over time, as diagnosis information was supplied using different classifications for all study years. For years 2013–14 to 2017–18, the following code sets were able to be used for this field:

- ICD-10-AM (6th, 7th, 8th, and 9th editions)
- ICD-9-CM (2nd edition)
- EDRS-SNOMED CT-AU

From 2018–19, an ICD-10-AM based 'ED shortlist' was used for the principal diagnosis field (METEOR identifier 681646).

Each of these code sets are further described below.

International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification (ICD-10-AM)

Although the ICD-10-AM is primarily designed for the diseases and injuries with a formal diagnosis, it also classifies a wide variety of signs, symptoms, abnormal findings, complaints, and social circumstances that may stand in place of a diagnosis.

It is important to note that diagnostic classifications and coding standards have changed over time, hence their numerated editions. There is also variation in the quality, completeness, and depth of coding across services, and state-specific standards. These factors can impact on the accuracy of diagnostic information.

Systemised Nomenclature of Medicine - Clinical Terms - Australia (SNOMED CT-AU)

The Systemised Nomenclature of Medicine – Clinical Terms – Australia (SNOMED CT-AU) is the Australian extension of SNOMED CT, a comprehensive multilingual health terminology. SNOMED CT is designed to underpin clinical data recording and meaning-based retrieval and use. SNOMED includes more than 350,000 active concepts with unique meanings and formal logic-based definitions, organised in hierarchies with multiple levels of granularity. The hierarchies include clinical findings, procedures, observables, body structures, organisms, substances, and pharmaceutical/biologic products.

Emergency department ICD-10-AM (10th ed) principal diagnosis Short List

The ICD-10-AM Emergency Department Principal Diagnosis Short List was developed in 2015 by the Independent Hospital and Aged Care Pricing Authority (IHACPA) from the full version of ICD-10-AM. The short list was compiled using data analysis and clinical advice. The ED Short List replaces previous reporting inconsistencies whereby states and territories would report principal diagnosis using various code sets, including SNOMED CT, ICD-9-CM, or the various versions of ICD-10-AM.

The ED Short List does not contain any of the external cause codes from the ICD-10-AM, therefore the code range that is commonly used to identify intentional self-harm (X60-X84, Y87.0) are not included. The ICD10-AM code for suicidal ideation (R45.81) is included in the Short List.

IHACPA has developed mapping files between each version of the ED Short List (9, 10 and 11 to date) and the full ICD-10-AM. IHACPA has also developed a mapping file between the full ICD-10-AM and SNOMED-CT-AU, which they provided the AIHW for the purposes of these analyses.

Codes defining intentional self-harm and suicidal ideation

Given the known challenges and limitations of the identifying suicidal behaviours within the ED data, as well as the variability in code sets used – which varies within jurisdictions, this project further aimed to enhance the identification of both the cohort of interest and the comorbid risk factors associated using three methods. Firstly, we used a method developed and validated by NSW Health System Information and Analytics Branch (Sara and Wu 2023), which is now routinely used across NSW for the purpose of better identifying suicide and self-harm presentations to the Emergency Department. Secondly, we used the mapping file provided by IHACPA to add any additional codes across all diagnoses of interest, and thirdly, for the enhanced identification of patients presenting with alcohol use disorders, we used the method described by Zhang et al. (2022).

The suicidal ideation and self-harm population analysed in this report included any person presenting to any ED in Australia, with any diagnosis (that is in any of the 3 diagnosis code positions), with either intentional self-harm and/or suicidal ideation, identified by any of the codes below.

Intentional self-harm

Records of ED presentation for treatment following intentional self-harm were included if they contained any of the following codes (Table 18), noting that ICD10-AM codes were included both with and without a decimal place, to accommodate variation in coding practices.

Table 18: ICD-10-AM & SNOMED codes indicating a diagnosis of intentional self-harm

Description	ICD-10-AM or SNOMED codes

Self-poisoning by:	T39.0, T39.1, T39.3, T39.4, T39.8, T39.9, T42.2, T42.4, T42.6, T42.7, T43.0, T43.2, T43.3, T43.9, T50.9
- other and unspecified drugs - medicaments - biological substances - salicylates - other nonsteroidal anti-inflammatory drugs - other nonopioid analgesics and antipyretics - nonopioid analgesics - antipyretics - antirheumatics - aminophenol derivatives - succinimides - oxazolidinediones - benzodiazepine - antiepileptic drugs - other antiepileptic drugs - sedative-hypnotic drugs - tricyclic and tetracyclic antidepressants - other and unspecified antidepressants - phenothiazine antipsychotics and neuroleptics - psychotropic drugs - neuroleptics - other antipsychotic drugs - other drugs not easily classified	242824002, 242832005, 297201008, 86849004, 410061008, 219125007, 297063003, 296167005, 296303002, 242833000, 296171008, 274228002, 711538001, 296189009, 296193003, 296851001, 269808005, 296123008 296391008, 296493005, 295967000, 295921000, 271982007, 295252006, 295269008, 295925009, 363293009, 55680006, 59369008, 59274003, 7895008, 431307001, 295122008, 242822003, 295808006, 18152005, 269268004, 21068005, 281510005, 290145004, 216472002, 295124009, 295312006, 277131000, 290310000, 295215006, 439011002, 242826000, 295214005, 290145004, 216472002, 295124009, 295312006, 277131000, 290310000, 295215006, 439011002, 242826000, 295214005, 296128004, 216530001, 296053004, 296118008, 296168000, 296125001, 296070007, 61406000, 242835007, 296108003, 42377002, 295978008, 296021008, 295980002, 290858001, 295835002, 295836001, 295830007, 290888005, 295916003, 295937006
Sequalae of intentional self-harm	Y87.0

Suicidal ideation

Records of an ED presentation for suicidal ideation were included if they contained any of the following codes (Table 19).

Table 19: ICD-10-AM & SNOMED codes indicating a diagnosis of suicidal ideation

Description	ICD-10-AM or SNOMED codes
Suicidal ideation	R45.81 267073005, 41501003, 6471006, 225444004, 304594002, 47695004, 401229000, 225457007, 386738004, 425104003, 366979004, 267076002, 394685004, 102911000, 272022009, 102897001, 247650009, 81492003, 18963009, 302203004, 81548002, 702535006, 225478005, 394924000, 386798001, 225912009, 401231009, 224977004

Codes used to define diagnoses for risk factors associated with self-harm and suicidal behaviour

Table 20: ICD-10-AM & SNOMED codes indicating specific risk factor diagnoses

Description	ICD-10-AM or SNOMED codes
Mental and behavioural disorders including, but not limited to: • mood disorders • delirium • dementia • personality disorders • schizophrenia • schizoaffective disorders • bipolar affective disorders • anxiety disorders • obsessive-compulsive disorders depressive disorder • post-traumatic stress disorder • adjustment disorder • eating disorders	F00–F09, F20–F99 52448006, 12348006, 15662003, 52448006, 12348006, 15662003, 191461002, 2776000, 36217008, 40425004, 111479008, 247804008, 31027006, 191447007, 69322001, 280427006, 47372000, 46206005, 277843001, 192562009, 419284004, 74732009, 413307004, 391281002, 27296002, 401061005, 391281002, 27296002, 431957001, 191555002, 31658008, 64905009, 191542003, 231485007, 111484002, 191531007, 268617001, 83746006, 58214004, 247804008, 31027006, 216004, 48500005, 2073000, 417233008, 231487004, 88975006, 231489001, 191572009, 68890003, 5464005, 69322001, 231496004, 231494001, 284513006, 268619003, 31446002, 191618007, 191627008, 191629006, 191632009, 765176007, 192362008, 191636007, 371600003, 13746004, 83458005, 370143000, 237350002, 73867007, 192080009, 35489007, 87414006, 40568001, 191616006, 76105009, 78667006, 366979004, 46206005, 70691001, 61569007, 35607004, 25501002, 247850006, 247835002, 54587008, 386810004, 395017009, 225624000, 371631005, 80583007, 21897009, 231504006, 247808006, 69479009, 231506008, 270472006, 48694002, 300895004, 197480006, 191738003, 67698009, 191736004, 192041001, 32937002, 47505003, 17226007, 47372000, 57194009, 66381006, 224965009, 271952001, 67195008, 162218007, 191714002, 191677006, 44376007, 18193002, 231517009, 191956005, 191952007, 268650001, 386738004, 37057007, 31297008, 111475002, 191746002, 56882008, 78004001, 192450008, 105481005, 72366004, 192454004, 268722008, 270487001, 270903007, 268723003, 860914002, 58703003, 225450009, 231520001, 13601005, 26665006, 20010003, 33449004, 50299009, 106143002, 56627002, 50705009, 91138005, 47004009, 1855002, 110359009, 161129001, 408856003, 191697001, 35919005, 192562009, 61372001, 17961008, 430909002, 192099000, 231539006, 268664001, 5158005, 568005, 161838002, 231538003, 128293007, 74732009, 228150001, 413307004
Substance use disorders (excluding alcohol use)	F11–F19 11196001, 75544000, 87132004, 297199006, 21647008, 296292003, 231479000, 23527004, 231477003, 77721001, 231478008, 85005007, 361149008, 268640002, 231473004, 361151007, 27956007, 31956009, 275471001, 84758004, 50320000, 38247002, 231468005, 105549004, 6525002, 191816009, 2403008, 363101005, 74934004, 735235000, 191483003, 191494004, 11387009, 417284009, 87858002

Alcohol use disorders including:	E51.2, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70.0, K70.4, K70.9, K85.2, K86.0, Z71.4, Z50.2, Z86.41
- acute alcoholic intoxication in alcoholism - acute alcoholic liver disease - admitted to alcohol detoxification centre - alcohol abuse - alcohol dependence - alcohol withdrawal delirium - alcohol withdrawal hallucinosis - alcohol withdrawal syndrome - alcohol withdrawal-induced convulsion - alcoholic cirrhosis - alcoholic fatty liver - alcoholic gastritis - alcoholic hepatic failure - alcoholic hepatitis - alcoholic liver damage - alcoholic polyneuropathy - alcohol-induced acute pancreatitis - alcohol-induced chronic pancreatitis - cerebellar ataxia due to alcoholism - chronic alcoholic hepatitis - continuous acute alcoholic intoxication in alcoholism - persistent alcohol abuse - alcohol-induced organic mental disorder	191802004, 9953008, 183486001, 15167005, 66590003, 8635005, 191476005, 191480000, 308742005, 420054005, 50325005, 2043009, 235881000, 235875008, 41309000, 7916009, 235942001, 235952002, 361272001, 307757001, 191804003, 284591009, 228281002, 29212009, 42344001, 7200002, 300992002, 7052005

• alcohol-induced psychosis • alcoholism • alcohol-induced cerebellar ataxia	
Social issues including: • homelessness • extreme poverty • financial distress • in need of urgent housing • social isolation • family estrangement • problems relating to life cycle • transition adjustments	Z59.0, Z59.6, Z59.9, Z60.0, Z60.2, Z60.9, Z62.8 32911000, 160700001, 224191006, 271364002, 105529008, 22032002, 161152002, 56098000, 248046000

Military service-related characteristics

Table 21 provides information about ADF service characteristics that are used for this analysis.

Table 21: Definition of military service characteristics

Characteristic	Definition
Length of service	Length of service of ex-serving ADF members is calculated using the difference between the hire date and separation date from the ADF. It was categorised as: • <1 year • 1<5 years • 5<10 years • 10+ years
Rank	• Rank of ex-serving ADF members on termination which was derived from their rank equivalency code. Individuals reported as 'Officer' are defined as commissioned officers and those reported as 'Sr Other Ranks' are defined as non-commissioned Sergeant rank (equivalent) and above. All other or undefined ranks are classified as 'Other Ranks.'
Separation reason	Separation from the ADF is classified into separation reasons for ex-serving ADF members, grouped as: • Voluntary • Involuntary – medical • Involuntary – other • Contractual/Admin change
Service	Defined as the ADF service an ex-serving ADF member belonged to on separation: • ARMY • NAVY • RAAF
Time since service	Time since service for ex-serving ADF members is calculated from the separation date. It was categorised as: • <1 year • 1<5 years • 5<10 years • 10-<20 years • 20+ years.

DVA clients

In the general sense, DVA clients include serving, reserve, or ex-serving ADF members, or a partner or their dependents who receive support from DVA. A DVA client can be a DVA card holder, a benefit or income recipient and/or a user of health services or support services funded by DVA. The definition in this report is limited to ex-serving ADF members.

DVA client definition

A DVA client under the broad definition used in this report is an ex-serving ADF member who satisfies at least one of the following criteria:

- has been issued a White, Orange or Gold card
- had at least one accepted claim for a health or disability condition accepted as being related to service
- has received or is receiving benefits or payment
- had at least one health service or support service through the DVA National Treatment Account.

This definition does not include ex-serving ADF members who had made only rejected DVA claims and were not a card holder or in receipt of any benefits from DVA.

For this analysis, additional subgroupings of DVA clients are reported based on the type of card held by the client (if any):

- Gold card holder – has a DVA Gold card (regardless of other concurrent card types)
- White card holder – has a DVA White card but not a Gold card
- Other – has a DVA Orange card (but no Gold or White card) or no DVA card

Veteran Gold Cards

Holders of a Gold Card are entitled to DVA funding for all clinically necessary health services related to all health conditions, regardless of whether they were related to service.

Veteran White Cards

White Card holders are entitled to health services related only to conditions accepted as relating to service. However, cases of malignant cancer, pulmonary tuberculosis, and any mental-health condition do not have to be due to service-related causes.

From 1 July 2018, eligibility for treatment of any mental health condition expanded to include Reservists who have rendered Reserve Service Days with disaster relief service, border protection service or involvement in a serious service-related training incident. In addition, the White Card on Transition project commenced, with DVA issuing White Cards to transitioning members as they separate from the ADF.

Veteran Orange Cards

Orange Card holders are entitled to access prescription medicines, wound care items and nutritional supplements at a concession rate. Orange cards cannot be used for medical or other healthcare treatment. A Veteran Orange Card is issued to Commonwealth and allied veterans and mariners who meet all the following:

- They have qualifying service from the First World War or the Second World War.
- They are aged 70 or over.
- They have been resident in Australia for 10 years or more.

More information about DVA services and entitlements is available at <u>Overview of DVA benefits and services - external site opens in new window</u>.

References

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Zhang J, Qian S, Su G, Deng C, Reid D, Curtis K, Sinclair B & Yu P (2022) 'Emergency department presentations of patients with alcohol use disorders in an Australian regional health district', *Substance Abuse*, 43(1):1128–1140, doi:10.1080/08897077.2022.2060427

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Technical notes

Conditions associated with suicidal behaviour

Although a wide range of risk factors for suicide have been identified in the literature, this report specifically focusses on mental and behavioural disorders, substance use (alcohol or drugs) and intentional self-harm as conditions associated with suicidal behaviour. These conditions were selected for detailed analysis based on their documented significant impact on suicide risk in previous research (Causes of Death, Australia, 2021 - external site opens in new window; Clapperton et al 2021). For details on how these conditions were defined and identified within the datasets analysed, please refer to the Codes and Classifications section of this report.

It is also important to highlight that suicide is a complex issue influenced by an interplay of social, environmental, and psychological factors which are not examined in this report. Furthermore, 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.

Constructing the admitted patient care analysis data set

To use the linked data for this analysis, various data processing procedures were undertaken to ensure the accuracy of findings. Apart from general data cleaning such as management of missing data and the removal of duplicates, the main procedures are described below.

Concordance with the NDI

NDI death information was linked to the patient demographic information and used to identify potential linkage errors. Data for patients was removed where any of the following discrepancies were identified where:

- a patient had linked NDI death information and any separation with date of separation occurring more than seven days after NDI date of death (except where the care type indicated posthumous organ donation)
- a patient had a hospital separation ending in death that preceded the NDI date by more than 7 days
- a patient had a hospital separation ending in death and no NDI record of death.

Hospital stay

A patient's stay in hospital for admitted patient care may include more than one episode of care. This occurs if the care type changes e.g., from acute to rehabilitation or if the patient is transferred from one hospital to another, including temporarily for a specific procedure. This analysis combined all contiguous episodes into a single stay enabling more accurate counting of hospitalisations.

Same day and overnight hospital episodes were processed together to combine all relevant episodes into a hospital stay. Contiguous, overlapping, and nested episodes were combined except when neither the separation mode of the earlier episode nor the admission mode of the later episode indicated a transfer between hospitals or a change in care type. A gap of one day was permitted between separation and admission in a single stay if the separation mode indicated a hospital transfer or care type change, to allow for overnight transfers.

Episodes were excluded where:

- the admission or separation date was missing
- the admission date occurred after the separation date
- the episode could not be linked to a person

After applying exclusions and sorting by admission and separation dates, episodes were combined when:

- the admission date for the later episode was prior to the separation date of the earlier episode (overlapping or nested episode)
- the admission date for the later episode was the same day as the separation date of the earlier episode (contiguous episodes) except when the admission mode of the later episode did not indicate a transfer or care type change:
  - Other

and the separation mode of the earlier episode indicated the end of the stay:

- Left against medical advice/discharge at own risk
- Statistical discharge from leave
- Other (includes discharge to usual residence, own accommodation/welfare institution (includes prisons, hostels and group homes providing primarily welfare services)
- the admission date for the later episode was *one day* after the separation date of the earlier episode, the separation admission mode of the later episode indicated a transfer or care type change:
- Admitted patient transferred from another hospital
- Statistical admission - episode type change

and the separation mode of the earlier episode indicated a transfer or care type change:

- Discharge/transfer to (an)other acute hospital
- Discharge/transfer to (an)other psychiatric hospital
- Statistical discharge – type change

Resulting stays were excluded where the care type of the initiating episode was unqualified newborn days, posthumous organ donation, or hospital boarder (care type 7.3, 9, 10).

Definitions for multi-episode stays

Table 22 clarifies modifications to the definitions of key NHMD data items used for this analysis following the construction of hospital stays from multiple contiguous episodes.

Table 22: Modifications to NHMD data items for 'stay' based analysis

Data item	Definition applied to multi-episode stays
Admission date	Admission date of the earliest episode in the stay.
Separation date	Latest separation date among episodes in the stay where no episode ended in death (separation mode=8). Where death was recorded in one or more episodes in the stay, after sorting by admission and separation dates the separation of the first episode ending in death was used, except where a subsequent separation due to death matched the date of death from NDI.
Admission mode	Admission mode of the earliest episode in the stay.
Separation mode	Separation mode from the episode with the latest separation date in the stay where no episode ended in death, or 8 (Died) where any episode ended in death. Where more than one episode shares the latest separation date, if one or more of these were same-day episodes they were treated as contiguous and the separation mode from the latest same-day record occurring on the latest separation date was used. Where neither were same day episodes, the episode with the later admission date was treated as a nested episode, and the separation mode from the earlier admission was used.
Data set year	Reporting year for separation date as derived above.
Principal diagnosis, additional diagnoses, and external causes	Principal diagnosis, additional diagnoses, and external causes from the earliest episode in the stay to allow for identification of reason for hospitalisation.
Urgency of admission	Urgency of admission of the earliest episode in the stay
Same-day flag	Indicates whether the derived admission and separation dates for the stay are the same day.
Mental health flag	Mental health flag of the earliest episode in the stay.
Any mental health flag	Indicates whether any episode in the stay had a mental health flag regardless of flag value.
Sector	Hospital sector of the first relevant episode in the stay
Mental health, alcohol and other drug, and mechanism of self-harm diagnoses	Aggregated fields capturing whether diagnoses of interest were present in the principal diagnosis of any episode within a stay.
Intentional self-harm related stay	Captures whether any episode within a stay had a principal diagnosis and first external cause identifying an intentional self-harm admission.

Constructing the emergency department care analysis data set

Defining the index presentation

The self-harm or suicidal behaviour cohort was defined as any persons with any ED presentation throughout the study period with any diagnosis of intentional self-harm and/or suicidal ideation, as per the codes in Tables 16 and 17. The index presentation was identified as the first of these with the data ordered chronologically by presentation date and time. The index presentation, for the purposes of its definition, may or may not have also included a risk factor diagnosis. The index presentation was coded at its first documentation. For example, where contiguous ED episodes included interhospital transfer and the index diagnosis only occurred in the second ED, the date and patient demographics of the second ED were used.

The identification of an index presentation self-harm or suicidal behaviour in this study should not be assumed to be the incident (first ever) presentation for a person, given the time-period constraint and the fact that the ED data were examined in isolation to the admitted patient data and/or primary care data which may identify earlier episodes. Some jurisdictions also have specific community mental health data collections (e.g., NSW), which would provide an additional data source to find the 'true' incident presentation to any healthcare practitioner for self-harm or suicidal behaviour. The index presentation can be considered a first presentation with these specific diagnoses in a period prevalence analysis. These analyses do not present data on duration of any diagnosis.

Defining the presence of risk factors

The risk factors described in Table 20 were identified as present at any time during the study period in any of the 3 available diagnosis fields. This includes risk factor presentations that were diagnosed concomitantly with a self-harm or suicidal behaviour diagnosis. They were counted uniquely per presentation, then categorised by frequency of presentations per risk factor, per person. For consecutive ED transfers where risk factor diagnoses may be rerecorded for each presentation prior to and following transfers, risk factor diagnoses were only counted once.

ED presentation lookback analysis for risk factor presentations prior to a self-harm or suicidal behaviour presentation, only considered risk factor ED presentations that occurred separately and before the index episode for self-harm or suicidal behaviour (even on the same day). A concomitant diagnosis of any risk factors assessed with the index self-harm or suicidal behaviour presentation was not counted as 'prior history'.

Statistics

Proportion and percentage

Proportion is the quotient obtained when the number of cases in a group with a characteristic of interest is divided (the numerator) by the total number in the group (the denominator). Its value is between zero and one. A percentage is a proportion multiplied by 100.

In this analysis, proportion is presented as a percentage and provides information on the number of persons affected. For example, the proportion of ex-serving ADF members who received admitted patient care in an Australian public hospital who were admitted for an intentional self-harm related stay.

Proportion denominator

The admitted patient care data available for this analysis was incomplete. For the Australian comparator analysis, public hospital data was not available for WA and the NT, and complete private hospital data fit for this analysis was not available for WA, NT, NSW, VIC, TAS, SA, and the ACT. These data were available for eligible ex-serving ADF members receiving DVA-funded care in public or private hospitals in all states and territories.

To limit the bias introduced by differences in the availability of data, the analysis was restricted to admitted patient care provided in public hospitals (including DVA-funded care in WA and NT). Proportions were calculated as the proportion of patients for a nominated diagnostic group of all patients in participating public hospitals by reporting period.

Proportion difference

Proportion differences (PDs) also referred to as absolute differences are presented in the data tables as the absolute difference in percentage points between the two populations. They are a measure of the magnitude of the gap between populations without respect to the size of the individual rates. PDs are subject to volatility when used with small numbers and hence should be used with caution when comparing ex-serving ADF member and Australian population results.

Relative difference

The relative difference (also referred to as the risk ratio or relative risk) is the ratio of the proportions for the ex-serving population and Australian populations and measures the scale of the difference. When the proportions are small, relative difference can be a more relevant and useful descriptive measure. A relative difference of 1 indicates that the proportion of ex-serving and Australian groups

admitted for a condition/group of conditions is identical and there is no association between being admitted and being in a specific population. A relative difference greater than 1 indicates a positive association and that the risk is higher while if it is less than 1 then there is a negative association, and less risk.

Statistical significance and confidence intervals

Statistical significance is a measure that indicates how likely an observed difference would occur under the conditions of the null hypothesis i.e., the hypothesis that there is no significant difference between the specified populations, any observed difference being due to error. This report provides 95% confidence intervals (CI) to indicate a range that is likely to contain the true value with a 95% degree of confidence. For smaller populations, changes in the numerator due to random variation have a greater effect. Proportions produced for small populations will therefore have wider CIs. Wide CIs imply less certainty around a calculated value; narrow CIs imply more certainty. The result is interpreted as being a statistically significant different if the CI does not contain zero.

CIs in this report were calculated using the normal approximation method and are not reported for proportions of populations with fewer than 25 persons. It is important to note that there are other sources of uncertainty not captured by CIs, such as linkage error. Additionally, statistically significant differences between ex-serving ADF members and Australians are not necessarily explained by prior ADF service and may be explained by other socio-demographic differences between the cohorts.

Small numbers and suppression of identifiable data

Findings based on small numbers of events (such as hospitalisations for intentional self-harm) can fluctuate from year to year for reasons other than an actual change increasing risk of the event. Small groups have resulted from disaggregating the ex-serving member population by age, sex, diagnoses, and military characteristics. This has limited analysis e.g., aggregating diagnostic groups or confidentialising small cell counts. For ex-serving members, ex-serving members who died by suicide, and Australians who died by suicide, counts and proportions are not reported for fewer than 5 persons. For the Australian (all) comparator group, counts and proportions are not reported for 10 or fewer persons.

Confidentialisation was applied where states or territories were dominant contributors to the number of stay events. Data are not reported for combinations of diagnosis group, cohort, and reporting period where:

- fewer than 3 states or territories contributed 100% of events
- one state or territory contributed at least 85% of events
- two states or territories combined contributed at least 90% of events

Where data are not reported due to small numbers or dominance, consequential suppression may be applied to additional data to prevent their calculation. For example, where data for females are not reported, data for total persons may be suppressed to prevent calculation by subtracting males from total persons.

References

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Technical notes

Acronyms

Term	Description
ABS	Australian Bureau of Statistics
ADF	Australian Defence Force
ADSP	Accredited Data Service Provider
AIHW	Australian Institute of Health and Welfare
CI	Confidence Interval
Defence	Department of Defence
DVA	Department of Veterans' Affairs
ED	Emergency Department
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
ICD-10 AM	International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification
IHACPA	Independent Hospital and Aged Care Pricing Authority
MADIP	Multi-Agency Data Integration Project
MBS	Medicare Benefits Schedule
METEOR	Metadata Online Registry
NCIS	National Coronial Information System
NDI	National Death Index
NHMD	National Hospital Morbidity Database
NIHSI	National Integrated Health Services Information
NMD	National Mortality Database
NTA	National Treatment Account
PBS	Pharmaceutical Benefits Scheme
PD	Prevalence Proportion Difference
PMKeyS	Personnel Management Key Solutions
RPBS	Repatriation Pharmaceutical Benefits Scheme

Symbols

Symbol	Description
—	nil or rounded to zero
. .	not applicable
n.a.	not available
n.p.	not publishable because of small numbers, confidentiality, or other concerns about the quality of the data

Glossary

Admitted patient: A patient who undergoes a hospital's admission process to receive treatment and/or care.

External cause: The environmental event, circumstance or condition as the cause of injury, poisoning and other adverse effect.

International Classification of Diseases (ICD): The World Health Organization's internationally accepted classification of diseases and related health conditions. The 10th revision, Australian modification (ICD-10-AM) is currently in use in Australian hospitals for admitted patients.

Participating hospital: Those hospitals whose data are included in National Health Data Hub via the National Hospital Morbidity Database.

Patient presentation at emergency department: The presentation of a patient at an emergency department occurs following the arrival of the patient at the emergency department. It is the earliest occasion of being registered clerically, or triaged.

Principal diagnosis: The principal diagnosis is the diagnosis considered to be chiefly responsible for occasioning an episode of patient care (hospitalisation).

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Notes

Acknowledgements

The AIHW thanks and acknowledges the large contribution by staff from a range of organisations in providing datasets and/or advice in conducting this project. These organisations are:

- Department of Defence
- Department of Veterans' Affairs
- Royal Commission into Defence and Veteran Suicide
- AIHW Veterans' Advisory Group

The AIHW also thanks and acknowledges contributions of internal staff from the AIHW:

- Data Integration Service Centre who conducted the data-linkage,
- Ethics Privacy and Legal Unit who facilitated the ethics approval process,
- Specialist Capability Unit who provided statistical guidance in the methods used for analysis
- Suicide and Self-Harm Monitoring Unit for advice on reporting on suicide and self-harm
- The NIHSI/NHDH Unit who facilitated the NHDH data asset governance and approval and researcher access; and
- Hospitals Analysis Support Unit who facilitated the Hospital data custodian data asset governance and approval and researcher access.

Ethical approval of this project was provided by AIHW Ethics Committee and Departments of Defence and Veterans' Affairs Human Research Ethics Committee.

Finally, the AIHW also thanks Everymind for providing invaluable advice in the appropriate and sensitive way to report on suicide and self-harm.

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Data

Data tables: Use of healthcare services by ex-serving ADF members for conditions associated with suicidality and intentional self-harm in public hospitals

Data
XLSX 409Kb

Data tables: Use of healthcare services by ex-serving ADF members for conditions associated with suicidality and intentional self-harm in Queensland Hospitals

Data
XLSX 401Kb

Data tables: Use of Emergency Department services by ex-serving ADF members for conditions associated with suicidality and intentional self-harm in public hospitals

Data
XLSX 210Kb

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Related material

Resources

Fact sheet: Characteristics of ex-serving Australian Defence Force members hospitalised for suicidality and intentional self-harm

Resource
PDF 146Kb

Related topics

- Hospitals
- Suicide & self-harm monitoring
- Veterans

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