Royal Commission
into Defence and Veteran Suicide

SUICIDE AND SELF-HARM MONITORING OF THE SERVING AND EX-SERVING AUSTRALIAN DEFENCE FORCE MEMBER POPULATION

PART 1: THE DATA LANDSCAPE AND SHORT-TERM OPPORTUNITIES

Research Paper

August 2022

The Royal Commission into Defence and Veteran Suicide was established by Letters Patent on 8 July 2021. An amendment to the Letters Patent was subsequently issued on 10 April 2022.

Mr Nick Kaldas APM, the Hon James Douglas QC and Dr Peggy Brown AO have been appointed as Royal Commissioners. They are required to provide an interim report by 11 August 2022, and a final report by 17 June 2024.

The Royal Commission intends to release consultation, research and background papers. This research paper has been prepared by the University of Melbourne (Centre for Mental Health, Melbourne School of Population and Global Health) for the information of Commissioners and the public. The views expressed in this paper are not necessarily the views of the Commissioners.

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Suicide and self-harm monitoring of the serving and ex-serving Australian Defence Force member population – Part 1: The data landscape and short-term opportunities

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Glossary of key terms

Term	Definition
ABS	Australian Bureau of Statistics.
Acceptability	The willingness of persons and organisations to participate and/or use a data system.
Accessibility	The availability and ease of use of data and information within a data system to support the understanding of suicide and self-harm and its prevention.
ADF	Australian Defence Force.
ADF member	Serving, reserve and ex-serving members of the Australian Defence Force; does not include civilian personnel employed by the Australian Government Department of Defence.
AIHW	Australian Institute of Health and Welfare.
CI	Confidence interval.
Data quality	The completeness and validity of the data recorded in a data system.
Defence	Department of Defence.
Defence member	A generic term used to refer to any serving or ex-serving Military population members in any country.
Defence personnel system data	The Department of Defence have compiled data from current and historical Defence personnel systems covering ADF members who have served since 1 January 1985. This combines PMKeyS, Core HR system, D1, CENRESPAY (for reservists), ADFPAY (for permanent members) and other historical payment systems.
DVA	Department of Veterans' Affairs.
Ex-serving ADF member	ADF members who have been discharged from the serving or reserve population.
HR	Hazard ratio.
ICD	International Classification of Disease. The ICD is a method of classifying diseases, injuries, and causes of death. The World Health Organization (WHO) publishes the ICDs to standardize the methods of recording and tracking instances of diagnosed disease across the world.
NASS	National Ambulance Surveillance System.
NCIS	National Coronial Information System.
NDI	National Death Index.
NHMD	National Hospital Morbidity Database.
OR	Odds ratio.
Regular ADF members	Term used in relevant reports to describe any person currently serving full-time as a member of the Australian Defence Force.
Reserve ADF member	ADF members in the active or inactive reserve forces for the Navy, Army or the Air Force.
Self-harm	Any behaviour which involves the deliberate causing of pain or injury to oneself with or without suicidal intent.
SD	Standard deviation.

Serving ADF member	Any person currently serving as a member of the Australian Defence Force, whether permanent forces or reserves, and who has served at least one day.
Serving permanent ADF member	ADF members serving in a regular capacity in the Royal Australian Navy (Navy), Australian Army (Army) or the Royal Australian Air Force (Air Force).
SMR	Standardised Mortality Ratio
Suicidal ideation	Defined as serious thoughts or ideation about engaging in suicide-related behaviour or taking one's own life.
Suicidality	A collective term used to refer to suicide thoughts or ideation, suicide plans and self-harm including suicide attempts.
Suicide	The deliberate act of ending one's life.
Suicide attempt	A form of self-harm behaviour with a nonfatal outcome; where there is evidence that the person intended to take their own life.
Suicide rate	The number of suicide deaths per 100,000 people; that is, the number of suicides, divided by the given population and multiplied by 100,000.
Timeliness	The speed between steps in a data system such as the consideration of the time between the initial case capture and the availability of information for use for public health planning and intervention.
Transitioned ADF members	Term used in relevant reports to describe any person who transitioned from full-time ADF service over a specified time period, including those who transitioned into the active reserves, inactive reserves, and ex-serving.
UK	The United Kingdom
US	The United States of America
Utility	The ability of a data system to contribute to the prevention and management of suicide and self-harm including an improvement in stakeholders' understanding of the public health implications of suicide and self-harm.
Veteran	A generic term used to describe ex-serving Military population members in countries outside of Australia.

Executive summary

Background and context

Suicide in Australian Defence Force (ADF) members is a significant concern in the Australian community. According to the Australian Institute of Health and Welfare (AIHW), ex-serving ADF members are at a much higher risk of suicide than other Australians, with males 24% more likely to die by suicide, and females 102% times more likely to do so than their peers in the general population. The death by suicide of any ADF member is a tragedy with widespread and long-lasting effects for families, friends, and communities. Preventing these suicides is, therefore, a key priority for the Australian Government.

Over the past decade, there have been a number of government-led initiatives designed to understand and address this complex issue. This includes the recent establishment (July 2021) of a Royal Commission into Defence and Veteran Suicide which is currently examining: systemic issues and risk factors relevant to deaths by suicide of serving and ex-serving ADF members; identifying protective measures and actions to address these risks; and assessing the availability of appropriate services and supports for suicide prevention.

The World Health Organisation has identified the importance of monitoring and surveillance of suicide and self-harm as a core component of national suicide prevention strategies. Monitoring rates and risk factors for suicide and self-harm is essential for timely, targeted, and effective intervention and postvention support services.

In March 2022, our team at the University of Melbourne was contracted by the Royal Commission into Defence and Veteran Suicide to undertake a tailored project focused on assessing the suicide and self-harm data landscape in Australia and to identify opportunities to improve suicide and self-harm monitoring for the serving and ex-serving ADF member population. This project has been designed to inform current inquiries into suicide and self-harm data monitoring in the ADF member population being conducted as part of the Royal Commission into Defence and Veteran Suicide.

Method

The project has two parts. Part 1 focuses on identifying short-term opportunities to improve suicide and self-harm monitoring for the serving and ex-serving ADF member population and is the subject of this report. Part 2 involves the development of a long-term road map to improve monitoring of suicide and self-harm in ADF members including a move towards real-time monitoring. This document reports on Part 1 of the project and will be followed by the Part 2 report, to be completed in August 2022.

In Part 1 of this project we conducted three tasks: (1) a rapid evidence review and exploration of the nature and extent of suicide and self-harm in the ADF member population with some international evidence from a selection of countries provided as a point of comparison; (2) a scan of the data landscape in Australia to identify current suicide and self-harm data holdings and data availability (available within the public domain) relevant to monitoring in the general population and ADF member groups, as well as an assessment of key attributes, strengths and deficiencies of these current monitoring efforts; and (3) the identification of data gaps and short-term opportunities to improve suicide and self-harm monitoring for serving and ex-serving ADF member populations. We also reflected on the types of data collection, monitoring and reporting of suicide and self-harm in defence populations currently occurring in other countries as a point of comparison to the data landscape in Australia.

Summary of key results

We found that the risk of suicide is much higher in ex-serving ADF members compared to current serving members and the Australian general population. Current serving ADF members have rates of suicide that are approximately half that of the Australian general population. These data were sourced from the annual update into suicides among permanent, reserve, and ex-serving ADF members conducted by the AIHW that linked personnel data (i.e., The Department of Defence Personnel System data) with the National Death Index and the National Mortality Database. This is reported to the public via an annual report released by AIHW and on the AIHW National Suicide and Self-harm Monitoring System. These estimates of suicide rates in the ADF serving population are likely to be accurate but in the ex-serving population, they are limited by the lack of an authoritative count of the ex-serving ADF member denominator population in Australia. This finding was also

reported by the interim National Commissioner for Defence and Veteran Suicide Prevention, Dr Boss, in the interim advice report.

These estimates are reliant on the coronial processes and data on coroner confirmed cases that inform cause of death statistics in Australia. Cause of death data have been criticised for underreporting deaths by suicide due to the misclassification of some deaths. These data are also not a timely source of data, limiting their use for informing timely and responsive policy and community supports. The net result is likely to be an underreporting of deaths by suicide in the ex-serving ADF population in Australia but also, data that is less amenable to informing real time suicide prevention responses. Data on suspected or probable suicides are available for general population counts from state and territory suicide registers with some of these registers providing data for public reporting on the National Suicide and Self-harm Monitoring System. These data are coded within 24–48 hours of the death being reported, are not reliant on a final coronial decision, and are a valid source of close to real time data on deaths by suicide. Our review of the data landscape did not reveal formal reporting of suspected or probable suicides in ADF member populations from any of these state and territory registers. Our data scan also revealed that Defence collect data on suspected suicides as well as confirmed suicides (i.e., coroner confirmed cases) in their Defence Suicide Database. This is a database that has been operating since 2014 and collects data on ADF members serving full time since 1 January 2000. However, based on publicly available information, we were unable to determine exactly what data are collected by this system, the quality of these data, and how these data are used by Defence.

In relation to suicidality (i.e., suicidal ideation, self-harm including suicide attempts, and making a plan for suicide), rates of suicidal ideation and making a plan within 12 months were found to be higher in serving ADF members than the general population, but they were no more likely to have attempted suicide in the past 12 months compared to the general population. In contrast, ex-serving members were found to have higher rates of all forms of suicidality when compared to serving members. Data presented on suicidality in the ADF population were sourced from survey data (from 2010 and 2015) rather than from surveillance data or linked data studies. Surveys can provide useful insights into rates of suicidality in ADF populations, but they are not a timely source of data.

Our review highlights that risk and protective factors for suicide have been well studied in the general population and, to a lesser extent, in the defence population. A number of risk factors and categories of risk factors have been identified for the latter. However, evidence for these is variable and not always robust. There are very few systematic reviews or meta-analyses of individual risk (and protective) factors. We identified a recent analysis of risk and protective factors associated with deaths by suicide in ADF members (also conducted by the AIHW) which utilised linked administrative data and population health and social data. This included an assessment of some key psychosocial risk factors that have been shown to be common in those who died by suicide in the Australian general population as well as some specific service-related factors. This analysis highlighted that ADF member populations share the same top three psychosocial risk factors associated with suicide as the Australian general population: a personal history of self-harm; disruption of family by separation; and divorce and problems in relationships with spouses or partners. However, these risk factors were proportionally more prevalent in the ADF population compared to the general population. Some service-related factors were also associated with a higher risk of suicide for ex-serving ADF members, including separation from the ADF for involuntary or medical reasons (for all ex-serving members), and less than 1 year of service compared to those who served for 10 years or more (for ex-serving males).

We could not locate, in the public domain, any timelier source of data on suicidality in either serving or ex-serving populations. We were also unable to identify any routine reporting of risk factors for ADF members in general and or for those experiencing suicidality. There may be data of this nature collected within Defence (e.g., the Defence Suicide Database or e-health records), Department of Veterans' Affairs and the Open Arms counselling service but we could not locate this information in the public domain, so we are uncertain of its quality or current use.

There are additional sources of data that are available for reporting of suicide and self-harm in the Australian general population but that are not currently used for informing rates of suicide and self-harm in the ADF member population. These include: information on suspected suicides from any of the six state and territory suicide registers, or intent at notification data held in the National Coronial Information System (which may also be a timely source of data on probable suicides); data on hospital admissions for intentional self-harm captured in the National Hospital Morbidity Database; and data on ambulance attendances that included presentation of

suicidal ideation, self-injury or suicide attempts from the National Ambulance Surveillance System. Information from all of these sources is reported on and presented for the general population in some form on the AIHW National Suicide and Self-harm Monitoring System.

While collecting information on suicide and self-harm in Defence populations within other countries, we also reflected on the ways other countries monitor and report on suicide and self-harm in their defence populations. Although most other countries utilise similar data sources and approaches to the reporting of suicide and self-harm as Australia, the US setting is different. In the US, both the Department of Defense and the Department of Veteran Affairs release to the public annual reports of suicide rates in their serving and ex-serving populations. The US Department of Defense reporting includes suspected suicides as well as confirmed suicides, in order to avoid underreporting. Additionally, the US Department of Defense, utilising its extensive Defence-wide surveillance system (i.e., the Department of Defense Suicide Event Report System) reports on suicide attempts alongside suicide deaths and tracks the presence of an extensive list of known suicide risk factors and many service-related factors for each suicide or suicide attempt. The US Department of Veteran Affairs' most recent publication also included information from close to real-time monitoring systems of health service use for suicide attempts and ideation in US veterans accessing their health services.

Immediate opportunities with currently available data

Based on the above findings, Part 1 of this report identifies some short-term opportunities for data improvement, particularly for improving real-time monitoring of suicide and self-harm. The short-term opportunities identified in this report include:

- Improving identification of the ex-serving ADF member population by exploring linkage to other population datasets with ADF identifiers.
- Continuing annual AIHW suicide monitoring within the ADF member population and considering options to enhance reporting over time (i.e., model aspects of the US Department of Defense Suicide Event Report System report).
- Improving routine monitoring of suicide and self-harm in ADF member populations through data linkage of the Department of Defence Personnel System data and AIHW linked dataset with:
    - the state/territory suicide registers or explore the possibility of linking to the National Coronial Information System to gather data on probable suicides,
    - the National Hospital Morbidity Database (for data on hospital admissions for intentional self-harm), and
    - the National Ambulance Surveillance System (for data on suicidal ideation, attempts).

Exploration of other data sources and opportunities

Other opportunities worthy of exploration in the short term include:

- Conducting a review of the Defence Suicide Database to understand the types of data being collected, the quality of these data and the current use of the system.
- Exploring other sources of data on suicidality and other risk factors available within Defence and the Department of Veterans' Affairs.
- Working with other service organisations that support serving and ex-serving ADF members (e.g., Open Arms counselling service) to identify opportunities for data sharing and/or research.
- Using the survey instrument from the population-wide National Study on Mental Health and Wellbeing 2021 to gather comparable data on suicidality in ADF member populations.

These identified opportunities align with recommendations made by the interim National Commissioner for Defence and Veteran Suicide Prevention, Dr Boss, in the interim advice report. They will be further assessed for their feasibility as we identify other opportunities that are more suitable for implementation over the medium to longer term in Part 2 of this project.

1. Background and introduction

1.1. Purpose and structure of this report

The University of Melbourne has been commissioned by the Royal Commission into Defence and Veteran Suicide to undertake a tailored project designed to inform future efforts towards real-time monitoring of suicide and self-harm in Australian Defence Force (ADF) member populations. The project consists of two parts: Part 1 which will assess the data landscape in Australia and identify short-term opportunities to improve suicide and self-harm monitoring (including deaths by suicide, intentional self-harm with and without intent to die, and suicide ideation) for serving and ex-serving ADF member populations; and Part 2 which involves the creation of a long-term road map to move to real-time suicide and self-harm monitoring, including linking to intervention and postvention services.

This is the Part 1 report which reports on research activity and key findings for three main tasks associated with Part 1. Sections 1 and 2 provide background information about the project for context and the research methodology. Sections 3–5 outline the key results related to each of the three tasks. Section 6 provides a synthesis of key findings and recommendations to inform Part 2 of the project. Part 1 is a key input for Part 2 and as such, Part 2 will be reported on at a later date (~ August 2022).

1.2. Context for the study

1.2.1. Suicide and Self-harm in the ADF member population

Suicide in ADF serving and ex-serving members is a significant concern in the Australian community. According to recent information published by the Australian Institute of Health and Welfare (AIHW), ex-serving ADF members have a higher risk of suicide than other Australians, with males 24% more likely to die by suicide, and females 102% more likely (or approximately, twice as likely) (1). In contrast to ex-serving members, rates of suicide in current serving ADF members on average, are reported as lower than those of the age and the sex-matched general population. Despite this, a range of experiences and factors within service have been identified and associated with increased distress and risk of suicide in some current serving members (2). Additionally, the transition out of the ADF and back to civilian life may also come with additional risks for suicide such as unemployment and homelessness as well as injuries and illnesses including post-traumatic stress disorder, other mental health and physical health conditions that may not arise or be reported until an ADF member is no longer serving (3). For further information on the epidemiology of suicide and self-harm in the ADF member population refer to Section 3 of this report. The death by suicide of any ADF member is a tragedy with widespread and long-lasting effects on families, friends, and communities. Preventing these suicides is therefore a key priority for the Australian Government.

1.2.2. The Royal Commission into Defence and Veteran suicide

Over the past decade, there have been a number of government-led initiatives designed to better understand and address suicide in the Australian population including: the appointment of the National Suicide Prevention Advisor, Ms. Christine Morgan and subsequent policy advisory reports produced by her office in 2020 (4); the Australian Productivity Commission Report into Mental Health 2020 (which includes a section on suicide prevention) (5); and the Royal Commission into the Victorian Mental Health System (6).

Focusing specifically on ADF member populations, and in response to issues raised by Defence communities over time, the former Prime Minister of Australia, Honourable Scott Morrison MP, announced in February 2020 that the Australian Government would establish a new National Commissioner for Defence and Veteran Suicide Prevention to inquire into, and support the prevention of deaths by suicide by ADF members and veterans. Dr Bernadette Boss was announced as the interim National Commissioner for Defence and Veteran Suicide Prevention, enquiring into risk and protective factors and systemic issues relevant to ADF member deaths by suicide. Following on from the interim advice of the interim National Commissioner, which set out a wide range of recommendations designed to support efforts to prevent suicide deaths of ADF members (3), the Australian Royal Commission into Defence and Veteran Suicide was established on 8 July 2021. Under the Commission's terms of reference, from 2021–24, the Commissioners are inquiring into the systemic issues relating to suicide and suicidality of serving and ex-serving Defence members in Australia, including the reporting and recording of information relevant to the mental and physical health of Defence members.

1.2.3. Suicide and self-harm monitoring in Australia

Whether assisting with suicide prevention efforts for the general population or for sub-groups within the population at higher risk of suicide, there is a need for greater attention to early indicators and interventions to reduce distress, self-harm, and suicide within communities. The World Health Organisation has identified the importance of monitoring and surveillance of suicide and self-harm as a core component of national suicide prevention strategies (7). Monitoring rates and risk factors for suicide and self-harm is essential for timely, targeted, and effective intervention and postvention support services.

For many decades now, Australia has conducted national monitoring of suicide and self-harm in the population, though with some notable data gaps and limitations related to the quality, timeliness, breadth, and accessibility of these data. However, there has been significant advances in this area of late: since 2019, the AIHW, in partnership with the National Mental Health Commission and the Australian Department of Health, has developed the National Suicide and Self-harm Monitoring System. This system brings together existing and new data on suicide and self-harm in Australia. The overall aim of this system is to assist the Australian Government and state and territory governments to achieve the objectives of the Fifth National Mental Health and Suicide Prevention Plan (8). These include the commitment to improving the quality, accessibility and timeliness of suicide and self-harm data. Improved national surveillance and data will support mental health and suicide prevention policy makers, service providers, communities, and researchers to identify trends, emerging areas of concern and priority groups in the population. Improved surveillance and data will assist these stakeholder groups to better respond to suicide and self-harm through appropriate policy making and suicide prevention and postvention activities, and in time, will hopefully lead to a reduction in suicide and self-harm in the community.

The National Suicide and Self-harm Monitoring System includes a Public-Facing Monitoring Site which is designed for public users, and the State and Territory Information Portal which is currently in design and will be for authorised users. The AIHW, through the broader National Suicide and Self-harm Monitoring Project has also focused on ongoing data development to improve the collection, supply and timeliness of suicide and self-harm data. The Public-Facing Monitoring Site provides to the Australian public, a vast amount of data, research and, visualisations of suicide and self-harm data in the Australian population including numbers, rates, demographical and geographical breakdowns of confirmed suicides and instances of self-harm over time. The AIHW present in accessible ways, robust high-quality data on annual population suicide rates, numbers and breakdowns based on the Australian Bureau of Statistics (ABS) Cause of Death Data which is reported on annually and which depends on coroner reported suicide deaths from the National Coronial Information System (NCIS). The NCIS includes all deaths due to injury and unnatural causes in Australia. A death by suicide is only counted by the NCIS once a full coronial investigation is complete which can take significant time; a median time of 19 months (9). Therefore, by the time of reporting, national data is already not reflective of the current state. It is therefore not as useful for informing timely responses to events that may be occurring in the community (e.g., natural disasters and pandemics) where there is a need to monitor real-time impacts of these on population suicide numbers and trends. Acknowledging the need for more timely suicide data but also responding to the COVID-19 Pandemic, The National Suicide and Self-harm Monitoring System also collates and publishes data on suspected suicides flowing from some of the jurisdictional suicide registers (e.g., the Victorian Suicide Register, the Queensland Suicide Register, the Tasmanian Suicide Register). These registers have been set up within the coroners' courts in specific jurisdictions to code 'probable suicides' within 24–48 hours of the death being reported and prior to coroner case closure. This has increased provision of timely reporting to government departments within the same jurisdiction to inform suicide prevention efforts, though access to, and reporting of these data to the broader suicide prevention sector was previously limited. The AIHW have also been working with state coroners and Department of Health officials in states and territories without established suicide registers, providing advice and support to assist them to establish registers. As of late 2021, nearly all states and territories had established suicide registers. For more information on the aforementioned suicide mortality surveillance systems and processes and the suicide registers, refer to Section 4 of this report.

In reference to self-harm data, the National Suicide and Self-harm Monitoring System has also made available to the public, for the first time, data, and data visualisations from the National Ambulance Surveillance System (NASS) covering 90% of the Australian population. What was initially developed in 2012 as part of a project by Turning Point, Eastern Health, and Monash University in Victoria has led to consistent coding of ambulance clinical records for presentations of suicidal ideation, suicide attempt, and self-injury across most Australian states and territories (10). These data complement data on hospital admissions for intentional self-harm counted in the NHMD, which has traditionally been relied on as the main source of national self-harm data. For

further information and assessment of the aforementioned data sources in the National Suicide and Self-harm Monitoring System and the system itself, refer to Section 4 and 5 of this report.

The National Suicide and Self-harm Monitoring System also aims to provide data and information on population sub-groups who are over-represented in suicide and self-harm statistics which is important for tailoring suicide prevention efforts. Currently on the Public-Facing Monitoring Site, there are dedicated webpages presenting suicide and intentional self-harm data in young people (aged 15–24) and Indigenous Australians and a dedicated webpage to monitoring of suicide in ADF member populations (see Section 1.2.4 for further details). While this is a promising start to the reporting of data on sub-groups alongside whole of population data, the AIHW must contend with some barriers with these data including that it is often difficult to report data for sub-groups of the population because small numbers mean that cells must be suppressed to ensure confidentiality. There are also issues with respect to a lack of availability and accuracy of data identifying these sub-groups within suicide and self-harm related datasets, as well as population datasets (e.g., Census data).

1.2.4. Suicide and self-harm monitoring of ADF member populations

At present, the most accessible and up to date source of data and information on suicide in the serving and ex-serving ADF members can be found on the AIHW National Suicide and Self-harm Monitoring System Public-Facing Monitoring Site (1) . Here, data visualisations are presented using data from the more detailed AIHW veteran health-specific publications including the recent AIHW report published in 2021 titled, *Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019* (11).

The main data presented on the AIHW National Suicide and Self-harm Monitoring System Public-Facing Monitoring Site is the rate of suicide by service status (i.e., permanent, reserve, or ex-serving) and sex from 2002–04 to 2017–19 while the aforementioned report provides expanded information and further breakdowns of suicide data by age, sex, rank, length of service, time since separation, and reason for separation. Since 2017, the AIHW has been commissioned by the Department of Veterans' Affairs (DVA) to provide annual updates to monitor the incidence of suicide in permanent, reserve, and ex-serving ADF members. The AIHW are provided intermittent extracts of Department of Defence (Defence) historical personnel data and data from the Defence Personnel System data, (which contains information necessary to identify veteran status, and links this to suicide deaths data in the AIHW National Death Index (NDI) which in turn, contains records of all deaths occurring in Australia since 1980 obtained from the Registrars of Births, Deaths and Marriages in each State and Territory. The AIHW publications include information on suicide deaths among all ADF members who have served at least one day in the ADF since 1 January 1985 and who died by suicide between 1 January 2001 and 31 December 2019.

In 2021, the AIHW also published an independent review of past Defence and veteran suicide for the interim National Commissioner for Defence and Veteran Suicide Prevention which included an assessment of risk and protective factors associated with suicide deaths of ex-serving ADF members who died by suicide between 2001 and 2018 (2). Further information and results of this study are reported in Section 3.3.3 of this report. This study reported on a wide range of demographic, and risk and protective factors for those who died by suicide, with comparisons made to the ADF sample population and age matched Australian general population. At present, it is unclear whether this will be an ongoing analysis with regular updates, and whether this information will be published on the AIHW National Suicide and Self-harm Monitoring System's Public-Facing Monitoring Site. The site also does not provide routinely collected data or information on probable suicides or information on self-harm or other indicators of suicidality, including suicide ideation in the ADF member population.

While the AIHW publications do provide some information on suicide deaths in ADF member populations that is accessible to the public, the interim Commissioner, Dr Boss noted in Chapter 10 of the Preliminary Interim Report, a number of issues pertaining to the capture and reporting of suicide related data on ADF members and veterans (3). These included issues related to the lack of an authoritative count available of the number of veterans in Australia (leading to issues of identification) and the lack of routine collection and timely sharing of data on suicide, suicide attempts and self-harm (3). These data issues are viewed as barriers to targeted and responsive suicide prevention for the ADF member population and the interim commissioner set out three recommendations (i.e., 10.1–10.3 in the Interim Report) to address these issues: 1) the Australian Government should ensure the continuation of the work [I have] begun on compiling a register of suspected or confirmed deaths by suicide of Australian Defence Force (ADF) members and veterans; 2) The Australian Government and state and territory governments should ensure that processes are in place so that deaths by suicide of ADF

members and veterans are identified as early as possible and recorded consistently by Coroners; and 3) Defence and the Department of Veterans' Affairs should ensure that they are capturing all data relevant to suicide risk and protective factors where these issues relate to service and issues arising during service.

2. The project: Suicide and self-harm monitoring of the serving and ex-serving Australian Defence Force member population - The data landscape, short-term opportunities and, a roadmap to real-time monitoring

2.1. Purpose and objectives for Part 1 of this project

In alignment with the Interim Commissioner's interim advice (3) and current inquiries into suicide and related data of ADF members being conducted as part of the Royal Commission into Defence and Veteran suicide, our team at the University of Melbourne was tasked with exploring the current availability of suicide and self-harm data relevant to serving and ex-serving ADF members. We also aimed to identify opportunities for data development to improve and move towards real-time suicide and self-harm data monitoring that may help inform tailored suicide prevention efforts.

The project was conducted sequentially in two parts, with Part 1 designed to inform Part 2. A series of key research questions were provided by the Royal Commission and are presented in Appendix 1. Accounting for these research questions, the key objectives for Part 1 were:

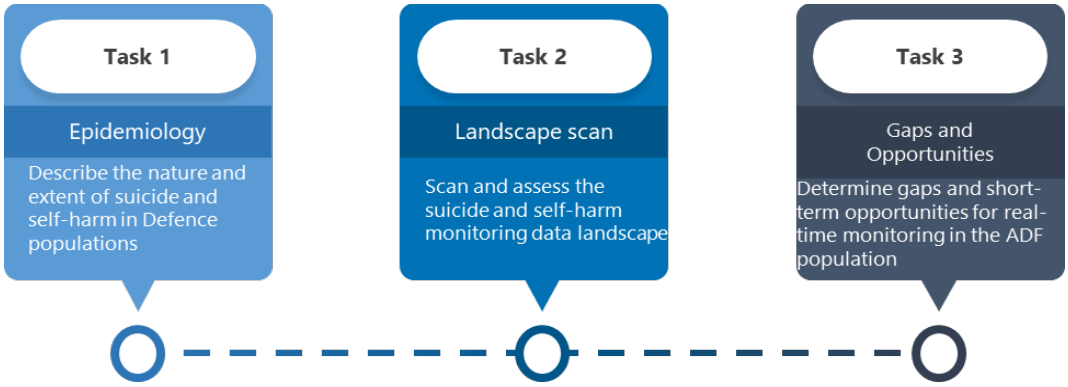
- To provide an overview of the nature and extent of suicide, intentional self-harm, suicide ideation, and known risk and protective factors for suicide in the ADF member populations compared to the Australian general population; and provide some international evidence from a selection of countries to understand how numbers and trends in Australia and other countries might compare.
- To conduct a scan of the data landscape in Australia to identify current data holdings and data availability relevant to suicide and self-harm monitoring in the general population and ADF member groups; and assess attributes, strengths and deficiencies of current suicide and self-harm monitoring efforts of ADF member populations.
- To identify short-term opportunities to improve suicide and self-harm monitoring for serving and ex-serving ADF member populations.
- To provide some insights into the types of data collection, monitoring and reporting of suicide and self-harm in defence populations currently occurring in other countries as a point of comparison to the data landscape in Australia.

Part 2 will involve the creation of a longer-term road map to improve suicide and self-harm monitoring including a move towards real-time monitoring. It will also consider the potential benefit of such actions to informing suicide prevention intervention and postvention services. Part 2 will be reported in a separate report in due course.

2.2. Part 1 research approach

To address the objectives described in Section 2.1, Part 1 of the project was broken down into three main tasks (see Figure 1.) These tasks and the associated methods used are described below. An important caveat for this work is that we only utilised publicly available resources, and the knowledge of our research team and network of colleagues to ascertain information and advice on specific data sets, rather than accessing individual data sets. The latter would have required formal ethics applications and would have been time limiting.

Figure 1. Tasks associated with Part 1 of the project.



2.2.1. Describing the nature and extent of suicide and self-harm in serving and ex-serving ADF populations and selected international evidence

To provide an overview of the epidemiological evidence of the nature and extent of suicide and self-harm in serving and ex-serving Defence populations, we conducted a time-bound desktop search of the grey literature, and a rapid review of the peer-reviewed literature. We aimed to retrieve review studies (i.e., systematic reviews and meta-analyses), government or other policy reports, and individual studies (where review studies were not available), and to access databases and data tables for relevant information. During March 2022 we searched:

- Grey literature using Chrome/Firefox on relevant government department/agency websites including: Defence, Veterans, Government Statistics and Health agencies in Australia and selected countries (the United States (US), Canada, the United Kingdom (UK), New Zealand and Denmark). We selected international countries based on them being comparably high-income and westernised; potentially having relevant data available and/or having a policy focus on Defence and veteran suicide prevention.
- Peer-reviewed literature for systematic review studies and individual studies using the following:
    - Databases: Web of Science and Pub-Med.
    - Search terms: suicid*, self-harm, self-injury, and Defence, veteran*, serving, ex-serving, military, service personnel, service member, military reserve, armed forces, and combat.

We also reached out to all research team members and other stakeholders working in suicide prevention and/or Defence settings for any further information.

We aimed to report on:

- Numbers and rates of suicide and instances of self-harm in the serving and ex-serving ADF member and international veteran populations (based on currently accessible and publicly available data) and provide comparisons to the Australian general population.
- What is known about risk and protective factors for suicide globally, in the Australian general population, and within the ADF member or other international defence populations.

2.2.2. Performing a scan and review of the data landscape in Australia in relation to suicide and self-harm monitoring

We conducted a scan of the data landscape in Australia to identify current data holdings and availability of suicide and self-harm data for the general population and for ADF member groups that could be used for the purpose of suicide and self-harm monitoring in ADF populations.

The following sources were eligible: 1) individual datasets that recorded suicide and self-harm or suicidal ideation; 2) suicide and/or self-harm data monitoring systems; 3) population data sources that could be

potentially linked to existing data on ADF populations; and 4) population surveys that record ADF member status, at a minimum of one time point.

Between March and May of 2022, we conducted:

- A systematic search of state and territory data linkage services, department of health websites and the Population Health Research Network website to identify:
    - Individual data sources containing suicide, self-harm and suicidal ideation variables; and existing suicide and self-harm monitoring and/or surveillance systems.
- A search of AIHW and ABS, and DVA websites to identify:
    - National data sources; linked datasets; and monitoring or surveillance systems associated with suicide, self-harm, suicidal ideation, and Defence data, and
    - Population surveys that record ADF membership at a minimum of one time-point.

We also reached out to all research team members and other stakeholders working in suicide prevention and/or Defence settings to check whether there were additional sources beyond what we had already identified.

For each relevant data source, information on relevant variables was sought from publicly available data dictionaries, variable lists, or peer review publications. If the data dictionary or variable list was not publicly available (e.g., it required follow-up with data-custodians, or was not retrievable from public facing websites, peer reviewed literature or white paper reports) then it was labelled as not publicly available. For each data source, we identified from the relevant variable list or data dictionary: 1) the suicide or self-harm outcomes recorded; 2) the relevant ADF member population (if recorded); 3) the presence of additional risk factor variables; 4) the specific data sources involved (for monitoring systems that comprise multiple data-sources); 5) the time period of data collection; and 6) the data custodian and/or system administrator.

We next conducted a pragmatic assessment of the data sources and surveillance and/or monitoring systems. The assessment aimed to determine: 1) accessibility; 2) quality and completeness; 3) timeliness of data collection; 4) suitability for real-time monitoring; and 5) data limitations. Additionally, as part of our assessment of accessibility, we included assessment of the factors for and against making suicide and self-harm monitoring data (i.e., data related to ADF member groups and the general population) more accessible to researchers and academics. The purpose of the assessment was to identify the strengths and deficiencies of current suicide and self-harm monitoring efforts of ADF populations, but also more broadly of the Australian suicide and self-harm monitoring landscape in the general population.

The assessment of data sources and surveillance and/or monitoring systems was based on the coding procedures and variable lists specific to the source and system under review. Therefore, we did not conduct a pragmatic assessment of independent data sources that may be used by such systems. For example, the National Hospital Morbidity Database comprises a subset of variables from multiple state and territory hospital admission datasets which were not independently assessed.

In the data landscape review, we make an important distinction between a) monitoring of suicide and self-harm; and b) close to real-time monitoring of suicide and self-harm. For example, some monitoring systems receive data on suicides in real-time (e.g., within the first 48 hours of a known suicide upon notification of a sudden death). If established correctly, close to real-time monitoring systems can trigger an immediate response including the activation of postvention support for people impacted by the suicide loss. Other systems may collate data on a monthly, quarterly, or yearly basis. These monitoring systems may be useful for observing trends and conducting epidemiological research, but do not have the temporal resolution to provide real-time insights.

2.2.3. Identification of data gaps and opportunities

On completion of the review of epidemiological evidence (Section 2.2.1) and the data scan and assessment (Section 2.2.2), we identified data gaps related to the current state of suicide and self-harm monitoring in ADF member populations. We also identified some opportunities for data development to address these data gaps in the immediate future and enable a shift towards close to real-time monitoring of suicide and self-harm in ADF member populations. In Part 1 we provide an overview of these immediate opportunities and will further assess

the potential of these opportunities in Part 2 of the project, alongside identification and assessment of longer-term opportunities. Full assessment of these opportunities in Part 2 will include consideration of:

- the importance/benefit to real-time monitoring in ADF member groups especially those at higher risk of suicide,
- relative feasibility (cost/effort/ease),
- identified facilitators and/or barriers to implementation,
- time period to achieve (short/medium/long term), and
- utility to suicide prevention policy and service responses.

To further support the assessment and prioritisation of the identified opportunities documented in Part 2, we will consult with several important stakeholders in ADF member suicide data monitoring and prevention. This will include representatives of the AIHW Suicide and Self-harm Monitoring and veteran health teams who are currently involved in ADF suicide and self-harm monitoring efforts, the National Suicide Prevention Office as lead implementors of National suicide prevention policy, and ADF serving or ex-serving members with a lived experience perspective of suicide or self-harm, whose voices are integral for guiding suicide prevention policy and practice.

2.3. Terminology used in this report

The terms used throughout this report to refer to ADF members (i.e., serving ADF member, serving permanent ADF member, reserve ADF member, and ex-serving ADF member) have been defined in the glossary of key terms. These terms and definitions have been selected for consistency with the Royal Commission into Defence and Veteran suicide. Other countries and documents referenced have used different terms and categories for Defence members. Where data from another country or document has been presented in this report, the terms used by that source have been used to describe their information.

Terminology relating to suicide and self-harm has also been defined in the glossary of key terms. These specific terms and meanings have been selected for consistency with current national and international work, as well as for safe communication about these sensitive topics (7). Some of the data presented and discussed in this report were from sources which used different language and definitions for these topics. Where possible, the terms defined in the glossary of key terms have been used, however where these language and definition differences impacted on the interpretation of data presented, the original language from the data sources has been used.

3. Suicide and self-harm in the general population and Defence populations

Our rapid review of the peer-reviewed literature and grey literature has two parts – first, rates of suicides and self-harm in Australian and international veteran populations, and second, the relevant risk and protective factors for these events.

It is important to consider first what these reviews will and won't be able to achieve. Both parts are broad rather than specific, and descriptive rather than explanatory. This is very suitable in describing rates of suicides and self-harm but less so in explaining risk and protective factors. Literature reviews of the latter elsewhere usually focus on one particular risk factor and one specific adverse health event such as suicide or self-harm. Reviews of the latter type are most familiar to researchers as systematic, Cochrane-style reviews that assess how robust the evidence is for this association. They usually use PRISMA reporting guidelines.

Our rapid review is more similar in nature to a scoping review which can be defined as a type of research synthesis that aims to 'map the literature on a particular topic or research area and provide an opportunity to identify key concepts; gaps in the research; and types and sources of evidence to inform practice, policymaking, and research' (12).

The aims of a scoping review are thus to make a statement about the literature (its maturity – what we know so far, what we don't know, where there are gaps in research done to date and what should be done in the future to address these gaps). The purpose of a scoping review typically does NOT make an assessment about how robust the evidence is regarding the strength of association of one particular risk factor and suicide. Similarly, while a scoping review might offer some guidance on which of a large number of risk factors that have been identified is likely to be the most important, it is unlikely to be definitive in its guidance. It can recommend studies though, where this sort of knowledge might be further advanced, usually in the mid- or long-term, that may lead on to the systematic reviews that examine the strength of association of one particular risk factor and suicide.

The exception to this characterisation of scoping studies is where the literature is broad and rigorous enough to permit meta-analyses of (a number of) individual factors and their associations with the adverse health effect being studied. This occurred in the meta-analysis of risk and protective factors for suicide and self-harm conducted by Franklin et al in 2017 (13).

3.1. Suicide

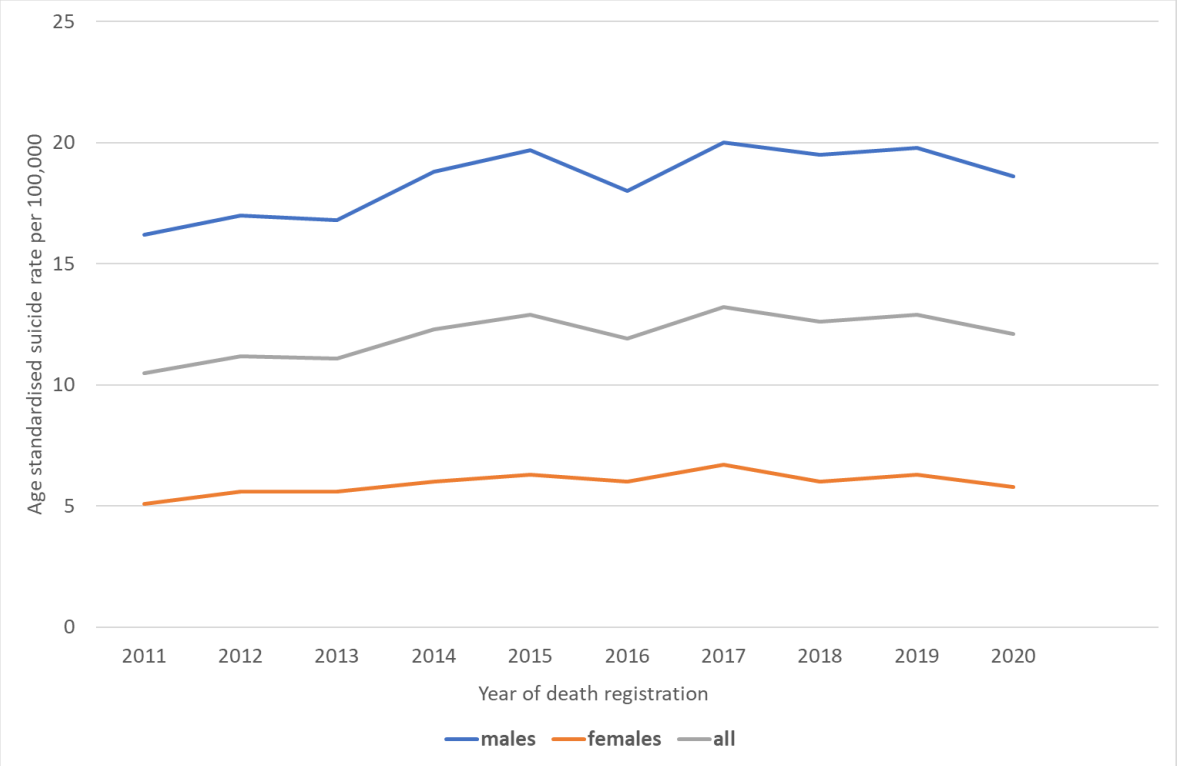
3.1.1. Suicide in the Australian general population

The latest ABS statistics show that during 2020, at least 3,139 Australians died by suicide, a national age-standardised suicide rate of 12.1 per 100,000 population (14). Males accounted for the majority of suicides (n=2,384, 75.9%) and had an age-standardised suicide rate of 18.6 per 100,000 population compared to 5.8 per 100,000 for females.

Age-standardised suicide rates for males, females, and all Australians over the period 2011–20 are presented in Figure 2.

- The suicide rate for all Australians increased from 10.5 per 100,000 population in 2011 (Confidence Interval (CI): 10.1, 11.0) to 12.1 per 100,000 in 2020 (CI: 11.6, 12.5).
- The suicide rate for males increased from 16.2 per 100,000 population in 2011 (CI: 15.5, 17.0) to 18.6 per 100,000 in 2020 (CI: 17.8, 19.3).
- There was no significant change in the rate of suicide for females, the rate was 5.1 per 100,000 population in 2011 (CI: 4.7, 5.5), and 5.8 per 100,000 in 2020 (CI: 5.3, 6.2).

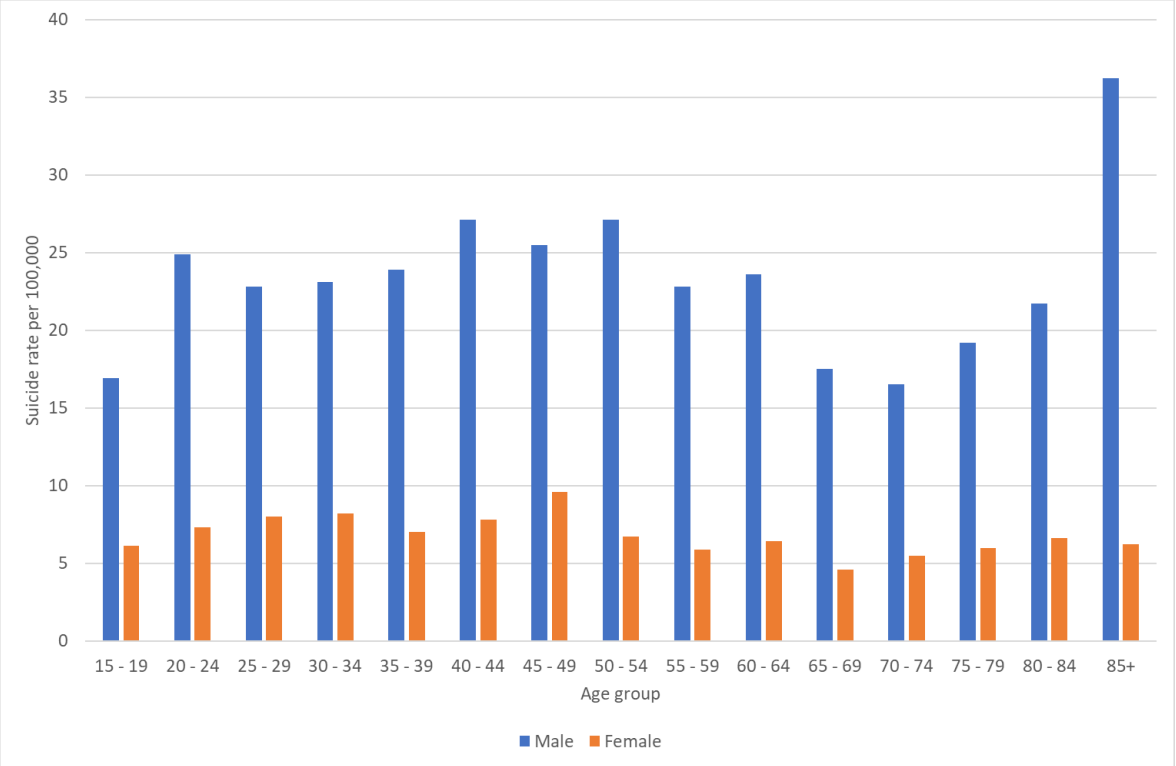
Figure 2. Age-standardised suicide rates, Australian general population, 2011–2020.



Source: Causes of Death Australia, 2020, cat.no. 3303.0. [Internet]. 2021. Available from: https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/latest-release#intentional-self-harm-suicides-key-characteristics. (14).

Age-specific suicide rates for Australian males and females in the general population in 2020 are shown in Figure 3. Male suicide rates were highest among those aged 85 years and older (36.2 per 100,000 population; although this age group accounted for just 3.1% of male suicides), whereas female rates were highest among those aged 45–49 years (9.6 per 100,000 population; and this age group accounted for the highest proportion of female suicides with 10.9%). Males had higher age-specific rates of suicide than females in all age groups. Male suicide rates were generally three to four times higher than female suicide rates except among those aged 85 years and older (male suicide rates were 5.8 times higher than females for this age group).

Figure 3. Suicide by age and sex: age-specific death rates in the Australian general population, 2020.



Source: Causes of Death Australia, 2020, cat.no. 3303.0. [Internet]. 2021. Available from: https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/latest-release#intentional-self-harm-suicides-key-characteristics. (14).

3.1.2. Suicide in serving and ex-serving ADF members

In 2014, the DVA and AIHW established a partnership to build a comprehensive profile of the health and welfare of Australia's veteran population (1). Consequently, the best source of data on suicide in serving and ex-serving ADF members comes from recent AIHW reports (1, 2, 11). These data are available due to a data matching exercise involving Defence personnel records, the National Death Index and State Coroners' records. Previous AIHW reports in the series included data on ADF members who served since 1 January 2001; however, the latest report includes members with at least one day of ADF service since 1 January 1985 (11). As of 31 December 2019, almost 373,500 Australians had served at least one day in the ADF since 1 January 1985. Unless stated otherwise, the data in this section were sourced from the most recent fourth report (and associated data downloads) titled "Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019" (11).

Over the period 2001–19 there were a total of 48,944 suicides recorded for the Australian population, and of these, 2.6% (n=1,273) occurred among people who had served at least one day in the ADF since 1985 (Table 1). ADF service members accounted for 3.1% of total male deaths by suicide and 0.9% of total female deaths by suicide over the same period (2001–19).

Of the 1,273 ADF members who died by suicide, 1,169 were males and 104 were females (Table 1). Of the 1,169 males who died, 114 were serving permanent, 85 were reserve, and 970 were ex-serving members of the ADF. Of the 104 females who died, seven were serving permanent, five were reserve, and 92 were ex-serving members of the ADF.

Table 1. Number of deaths by suicide among ADF members and the Australian population, 2001–19.

	Males		Females		All	
	n	% of male suicides	n	% of female suicides	n	% of all suicides
Permanent	114	0.30	7	0.06	121	0.25
Reserve	85	0.23	5	0.04	90	0.18
Ex-serving	970	2.59	92	0.80	1,062	2.17
All ADF members	1,169	3.13	104	0.90	1,273	2.60
All Australian population	37,402	100	11,542	100	48,944	100

Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Absolute numbers of suicide are shown in Table 1; however, suicide rates give a better indication of the risk of suicide across the different service status groups that make up the ADF population.

Note: Suicide rates for currently serving ADF members compared to the general population are presented in section 3.1.3, and for ex-serving ADF members compared to the general population in section 3.1.5.

The number of suicides and the suicide rate by service status and sex over the period 2002–19, are shown in Table 2. The suicide rate for ex-serving males was 29.8 per 100,000 per year, which was higher than the rates for serving permanent males (11.3 per 100,000) and reserve males (12.5 per 100,000), and also higher than the rate for ex-serving females (14.9 per 100,000). Suicide rates were not reported for serving female ADF members, due to the small population and small number of suicides occurring in this group.

Table 2. Number of suicides, and suicide rate by service status group and sex, 2002–19.

	Males		Females	
	Number	Rate/100,000 per year	Number	Rate/100,000 per year
Serving				
• **Permanent**	98	11.3	np	np
• **Reserve**	115	12.5	np	np
Ex-serving	928	29.8	87	14.9

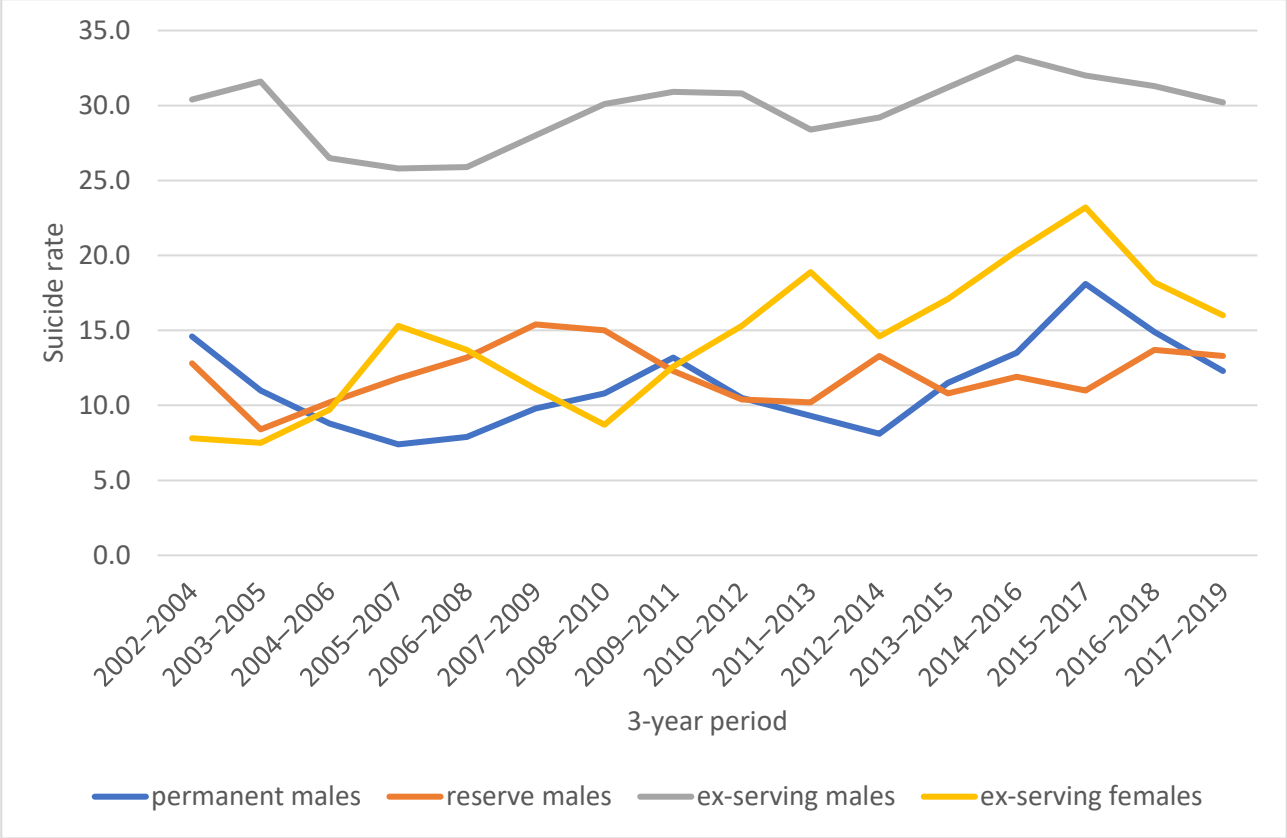
Note: "np" represents data that is not published due to small numbers. Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Male suicide rates by service status over the period 2002–19 are shown in Figure 4. In almost all of the three-year rolling periods, ex-serving males had higher suicide rates than serving permanent or reserve males. Female suicide rates for ex-serving members are also shown in Figure 4, however equivalent data for permanent and reserve females are not available due to small numbers. Although there were fluctuations in suicide rates by service status over the period 2002–19, none of the fluctuations from the lowest rate to the highest rate was statistically significant:

- The suicide rate for serving permanent males remained relatively constant, from a low of 7.4 per 100,000 population per year in 2005–07 to a high of 12.3 per 100,000 in 2017–19.
- The suicide rate for males in the reserves remained relatively constant, from a low of 8.4 per 100,000 population per year in 2003–05 to a high of 13.3 per 100,000 in 2017–19.

- The suicide rate for ex-serving males remained relatively constant, from a low of 25.8 per 100,000 population per year in 2005–07 to a high of 33.2 per 100,000 in 2014–16.
- The suicide rate for ex-serving females has remained relatively constant, however due to small numbers has fluctuated from a low of 7.5 per 100,000 population in 2003–05 to a high of 16.0 per 100,000 in 2017–19.

Figure 4. Rates of suicide by service status for males, 3-year rolling averages 2002–04 to 2017–19.



Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

3.1.3. Suicide in the serving ADF population

Suicide rates for serving ADF members compared to the general population

Standardised Mortality Ratios (SMR) reported in Table 3 compare the rate of suicide in the given service status groups with the suicide rate in the Australian population. The SMRs show that compared with the Australian population, suicide rates were 51% lower for serving permanent males and 48% lower for serving reserve males. There were insufficient data to make reliable comparisons for serving permanent and reserve women; however, a previous AIHW report based on the population who served from 2001 (rather than 1985) and included deaths over the period 2002–18 showed the suicide rate for serving reserve females was 53% lower than the Australian population rate (2).

Table 3. Comparative rates of suicide among serving males by service status compared with age- and sex-matched Australian population, 2002–19.

	SMR	Confidence intervals	
		Lower	Upper
Serving: permanent males	0.49	0.40	0.59
Serving: reserve males	0.52	0.42	0.65

Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Suicide rates by age group for serving permanent and reserve males

Suicide rates by age group for serving permanent and reserve males over the period 2002–19 are shown in Table 4. There were insufficient data to provide any relevant breakdowns of suicide rates by age group in the serving female population. The suicide rates for serving permanent and reserve males did not vary by age group at the time of suicide.

Table 4. Suicide rates for serving permanent and reserve males over the period by age group, 2002–19.

	Serving permanent males			Reserve males		
	Rate	Lower CI	Upper CI	Rate	Lower CI	Upper CI
Under 30	12.6	9.5	16.5	11.3	6.8	17.7
30–39	9.9	6.4	14.6	14.6	9.6	21.5
40 years and over	10.3	6.3	15.9	11.8	8.2	16.4

Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

3.1.4. Suicide in the serving Defence populations in other countries

The US

According to the US Department of Defense Suicide Event Report Calendar Year 2020 Annual Report, in 2020, 580 service members (i.e., Active component, Reserve, National Guard) died by suicide. The suicide rate in the Active Component was 28.7 suicide deaths per 100,000 service members and when further broken down by service arm: 19.3 per 100,000 in the Navy; 24.3 per 100,000 in the Air Force; 33.9 per 100,000 in the Marines Corps; and 36.4 in the Army (15). For the Reserve and National Guard, the rates were 21.7 and 27.0 suicide deaths per 100,000 service members. The report also provides trends over time including that there was a statistically significant rise in suicide rates in the Active Components between 2015 and 2020 (20.3 to 28.7 suicides per 100,000 service members) but no statistical change noted in rates over time for the same period for the Reserve or National Guard (15).

When making comparisons between rates of suicide in service members and the U.S general population, the report highlights that the rates for 2019 and rates over time from 2015 to 2019 for Active Component, Reserve, and National Guard were comparable to the US population, after accounting for age and sex (though the report does not include the actual data on the age and sex-matched population suicide rate). The demographic profile of the service members who died by suicide in 2020 were similar across all service member groups and overall reflective of the total force though those members who were Enlisted, were male and under the age of 30 were at higher risk for suicide compared to the service population average. The majority of service members who died by suicide died by firearm (ranging from 64.3% to 79.8%, across service populations) (15).

Since 2017, the US Department of Defense Suicide Event Report has also included annual counts and rates of deaths by suicide in Military family members. It provides a clear definition of who is counted as a Military family

member (i.e., spouses and dependents who are eligible to receive military benefits and who are registered on the military administrative system DEERS) and utilises both military and civilian data to collect suicide data involving family members. There were 202 reported suicide deaths among Military family members in 2019. The family member suicide rate was 7.7 per 100,000 Military family members. However, there are some caveats and limitations to the Military family data and the authors of the Department of Defense report conclude that further years of data collection are required before longer term trends can be identified (15).

The UK

The 2020 annual report of suicides in the UK regular armed forces (16) reported that the suicide rate of males in the UK regular armed forces was lower than that of males in the general UK population (11 per 100,000 compared with 20 per 100,000), however the suicide rate of males in both groups had increased during the previous five years. The age-standardised rate was eight per 100,000 people for the UK regular armed forces, and separately for each service was: seven per 100,000 for those in the Naval Service (includes Royal Navy and Royal Marines), 10 per 100,000 for those in the Army, and five per 100,000 for those in the Royal Air Force. Compared with the UK general population, the UK regular armed forces personnel had a reduction of risk of suicide of 56% (62% decreased risk for Naval Services, 45% for Army, and 74% for Royal Air Force). Army males under 20 years of age were at significantly higher risk of suicide compared with the general population in the 1990's but had the same risk to their general population counterparts since 2000. The most common suicide method for male UK regular armed forces personnel was hanging, strangulation and suffocation (56%) followed by firearms and explosives (17%). Since 1986 several changes to legislation have been made to reduce access to methods including for catalytic converters to be fitted in all vehicles, restriction of use of firearms in the army and restriction of the amounts of over-the-counter painkillers that can be purchased. The decrease in suicide by these methods may be responsible for the increase in hanging, strangulation, and suffocation suicides (16).

Canada

The 2020 Report on Suicide Mortality in the Canadian Armed Forces (1995 to 2019) reported that between 1995 and 2019, there were no statistically significant increases in the overall suicide rates of males in the Canadian Armed Forces (female suicide rates are not reported due to small numbers). The number of Regular Force males that died by suicide was not statistically higher than expected based on male suicide rates in the Canadian general population for five-year time periods evaluated between 1995 and 2019 (17).

Rate ratios comparing Regular Force males with a history of deployment to those without this history did not establish a statistically significant link between deployment and increased suicide risk, though recent findings (2015–19) suggest that the suicide rate in those with a history of deployment was slightly higher but not statistically different when compared to those with no history of deployment (age-standardized suicide rate ratio: 1.13 [95% CI: 0.59, 2.16]). This report highlighted that this finding was concordant with the 10-year (2005–14) pattern which indicated that those with a history of deployment were possibly at a higher risk of suicide than those who were not deployed (age-adjusted suicide rate ratio: 1.46 [95% CI: 0.98, 2.18]). Trends in data over time since 2006 suggested that being part of the Army command was associated with a higher risk of suicide relative to those who were part of the other commands (age-standardized suicide rate ratio: 2.13 [95% CI: 1.62, 2.79]) (17).

New Zealand

An investigation of suicide rates in the New Zealand Defence Force using data from the health information management system estimated that suicide rates were lower in the Defence Force population than the New Zealand general population. The Defence Force rate was reported at 12 per 100,000 (averaged 2008–12) while the national weighted average was 14.9 per 100,000 for that period (18).

3.1.5. Suicide in the ex-serving ADF population

Suicide rates for ex-serving ADF members compared to the general population

Standardised Mortality Ratios reported in Table 5 compare the rate of suicide in the ex-serving ADF population with the Australian population. The SMRs show that over the period 2002–19, suicide rates were 24% higher for ex-serving males and 102% higher for ex-serving females when compared with the Australian population.

Table 5. Comparative rates of suicide by sex and service status compared with age- and sex-matched Australian population, 2002–19.

	SMR	Confidence intervals	
		Lower	Upper
Australian population	1.00 (reference)		
Ex-serving: males	1.24	1.16	1.32
Ex-serving: females	2.02	1.62	2.49

Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Suicide rates for ex-serving male and female ADF members by age group

Among ex-serving males, those aged 50 or more years of age have significantly lower rates of suicide (18.9 per 100,000 population) than males in each of the other age groups (Table 6). Among ex-serving females, there were no significant differences in suicide rates across the age groups (Table 6).

Table 6. Suicide rate by age group, ex-serving males and females, 2002–19.

	Ex-serving males			Ex-serving females		
	Rate	Lower CI	Upper CI	Rate	Lower CI	Upper CI
Under 30	34.0	27.6	41.5	20.3	10.5	35.4
30–39	38.1	34.0	42.6	12.1	7.6	18.3
40–49	33.0	29.6	36.8	19.2	13.8	25.9
50 years and over	18.9	16.4	21.8	9.0	4.5	16.1

Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Suicide rates for ex-serving ADF members by age group, compared to the Australian population

Suicide rates for ex-serving males and females were higher than the suicide rates in the general population for each of the age groups under 50 (Table 7). In contrast, there was no significant difference in suicide rates for ex-serving males or females aged 50 years and older when compared to the general population (Table 7).

Table 7. Age-specific suicide rates, ex-serving males and females, and Australian males and females, 2002–19.

	Males			Females		
	Ex-serving Rate	Australian rate	Significant Difference	Ex-serving Rate	Australian rate	Significant Difference
Under 30	34.0	20.2	Yes	20.3	6.6	Yes
30-39	38.1	25.5	Yes	12.1	7.4	Yes
40-49	33.0	26.3	Yes	19.2	8.6	Yes
50+ years	18.9	20.6	No	9.0	6.6	No

Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Suicide rates for ex-serving ADF members by service-related characteristics

Suicide rates for ex-serving male and female ADF members by service-related characteristics are shown in Table 8. A summary of the suicide rates by four service-related characteristics are listed below.

- Service branch: ex-serving males who separated from either the Navy (33.1 per 100,000) or the Army (30.9 per 100,000) had higher suicide rates than ex-serving males who separated from the Air Force (21.7 per 100,000). In contrast, there was no difference in rates of suicide for ex-serving females across the three service branches.
- Rank: ex-serving males who separated when ranked something other than commissioned officer had a higher suicide rate (31.8 per 100,000) than ex-serving males who were commissioned officers at the time of separation (15.1 per 100,000). In contrast, there was no difference in rates of suicide for ex-serving females who were commissioned officers to ex-serving females ranked other than commissioned officer.
- Length of service: the rate of suicide among ex-serving males was higher for those who served less than one year (46.4 per 100,000) when compared with all other lengths of service, and lowest in those who served more than twenty years (15.4 per 100,000) when compared with all other lengths of service. In contrast, ex-serving female suicide rates were similar regardless of length of service.
- Reason for separation: ex-serving males whose reason for separation was involuntary medical had a higher suicide rate (73.1 per 100,000) when compared to those who had a different involuntary separation (44.2 per 100,000) or those who had a voluntary separation (22.2 per 100,000). In contrast, ex-serving female suicide rates were similar regardless of reason for separation.

Table 8. Suicide rates for ex-serving male and female ADF members by service-related characteristics, by service-related characteristics, 2002–19.

	Males			Females		
	Rate	Lower CI	Upper CI	Rate	Lower CI	Upper CI
Total ex-serving	29.8	27.9	31.8	14.9	12.0	18.4
Service						
• **Navy**	33.1	28.2	38.6	15.2	8.3	25.5
• **Army**	30.9	28.6	33.4	16.6	12.7	21.2
• **Air Force**	21.7	17.8	26.2	9.5	4.7	17.0
Rank						
• **Commissioned officer**	15.1	11.4	19.6	11.8	5.1	23.2
• **All ranks other than commissioned officer**	31.8	29.7	34.0	15.4	12.2	19.1
Length of service						
• **< 1**	46.4	40.3	53.2	18.9	11.5	29.2
• **1 – < 5**	30.3	26.9	34.1	15.8	10.9	22.3
• **5 – < 10**	32.1	27.8	37.0	14.2	8.5	22.1
• **10 or more**	29.1	24.6	34.1	10.7	5.9	18.0
• **20 or more**	15.4	12.5	18.8	NA	NA	NA
Years since separation						
• **< 1**	31.3	21.3	44.4	27.9	9.1	65.2
• **1 – < 5**	30.9	26.2	36.2	10.9	4.7	21.5
• **5 – < 10**	28.0	23.6	33.0	14.6	8.2	24.1
• **10 – < 20**	30.2	27.2	33.4	15.5	10.9	21.4
• **20 or more**	29.7	26.2	33.6	14.7	9.2	22.2
Reason for separation [(1)]						
• **Involuntary Medical**	73.1	56.7	92.9	NA	NA	NA
• **Other Involuntary**	33.8	27.0	41.7	NA	NA	NA
• **Involuntary(e)**	44.2	37.5	51.8	17.3	8.3	31.8
• **Voluntary**	22.2	17.2	28.2	20.6	10.7	36.1

Notes: [(1)] Due to a change in the way the reasons for separating from the ADF was recorded during 2002, analysis includes only ADF members who left from 1 January 2003 onwards. These members comprise 40% of the total alive and died ex-serving members with at least 1 day of service since 1 January 1985. Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

Given the elevated risk among males with involuntary separation (particularly involuntary medical separation) – Table 9 shows the number and rate of suicides by separation reasons and service-related characteristics. Due to a change in the way the reasons for separating from the ADF was recorded during 2002, analysis includes only ADF members who left from 1 January 2003 onwards.

Compared with all ex-serving males, elevated suicide risk was apparent for ex-serving males who:

- experienced involuntary medical separation (73.1 per 100,000),
- were aged under 50 years and had involuntary medical separation (78.1 per 100,000) or other involuntary separation (39.3 per 100,000),
- served in the navy, army or air force and had involuntary medical separation (107.7 per 100,000, 65.2 per 100,000, 75.4 per 100,000, respectively),
- had a rank other than commissioned and had involuntary medical separation (75.1 per 100,000) or other involuntary separation (41.0 per 100,000),
- served for less than 10 years and had had involuntary medical separation (70.8 per 100,000) or other involuntary separation (44.9 per 100,000), and
- served for more than 10 years and had involuntary medical separation (76.2 per 100,000).

Table 9. Number and suicide rate (per 100,000 population per year) for ex-serving males by separation reasons, and by service-related characteristics, 2003–19[(1)].

	Voluntary Separation		Other involuntary Separation		Involuntary medical separation	
	n	Rate	n	Rate	n	Rate
Total ex-serving males	67	22.2	86	33.8	67	73.1
Age group (years)						
• **under 50**	60	25.2	79	39.3	61	78.1
• **50 years and over**	7	11	7	13.1	6	44.3
Service						
• **Navy**	11	30.2	13	38	16	107.7
• **Army**	45	20.1	67	35	44	65.2
• **Air Force**	11	26.7	6	20.5	7	75.4
Rank group						
• **Commissioned officer**	14	20.4	n.p.	n.p.	5	55
• **All other ranks**	53	22.7	84	41.0	62	75.1
Length of service (years)						
• **< 10**	37	22.3	69	44.9	37	70.8
• **10 or more**	30	22.1	17	16.7	30	76.2
Time since separation (years)						
• **< 10**	57	22.7	67	31.3	n.p.	n.p.
• **10 or more**	10	19.8	19	46.6	n.p.	n.p.

Notes: [(1)] Due to a change in the way the reasons for separating from the ADF was recorded during 2002, analysis includes only ADF members who left from 1 January 2003 onwards. These members comprise 40% of the total alive and died ex-serving members with at least 1 day of service since 1 January 1985. Source: Australian Institute of Health and Welfare 2021: Serving and ex-serving Australian Defence Force members who have served since 1985: suicide monitoring 2001 to 2019. Cat. no. PHE 290. Canberra: AIHW.

3.1.6. Suicide in the ex-serving Defence population in other countries

The US

According to the 2021 annual National Veteran Suicide Prevention Report: in the US, the age and sex-adjusted suicide rate for the non-veteran US adult population increased from 14.8 per 100,000 in 2001 to 17.7 per 100,000 in 2019. During this same period, the rate within the veteran population rose from 17.1 per 100,000 in 2001 to 26.9 per 100,000 in 2019 (19). The difference in adjusted rates between veterans and non-veterans was highest in 2017 (for the 2001–19 period), when veteran adjusted rates were 66.3% greater than those for non-veteran adults; with this difference decreasing to 52.3% in 2019. Veterans aged 55–74 were the largest population sub-group, accounting for 38.6% of veteran suicide deaths in 2019 (of which 96% were men), however the highest age-specific crude suicide rates were reported for young male veterans aged 18–34 (50.6 per 100,000). Additionally, while numbers of female veteran suicides only made up a very small proportion of the total veteran suicides (less than 5% in 2019), age-adjusted female veteran suicide rates in 2019 were more than double the rates of the non-veteran US female population age-adjusted rates in the same year (15.4 per 100,000 and 7.5 per 100,000 respectively) (19).[1]

The UK

In 2021, the UK Office for Veterans' Affairs, the Ministry of Defence, and the Office for National Statistics announced they would be working together on a new method to record suicides of ex-service personnel in England and Wales for the first time (20). This would use the veterans' question from the 2021 Census and be matched with suicide data from the Office for National Statistics. A 10-year look back was also being conducted, though details of the data sources included were not available. Investigations on how to include Scotland and Northern Ireland were also being conducted.

Reporting of ex-serving personnel in the UK had only been done through research studies. A cohort study of ex-Armed Forces personnel using linked national databases of discharged personnel and suicide deaths was conducted in 2009 (21). It found that the overall suicide rate was 20.9 per 100,000 person years which was not greater than that of the general population, but the rate for men aged less than 25 years was two to three times higher than the same group in the general and serving populations (the same age group had the lowest rate of specialist mental health contacts). Men aged 30–49 years had lower suicide rates than the same group in the general population. The greatest risk was for personnel who were male, served in the army, had a shorter length of service, had a lower rank, and possibly for those within the first two years post-discharge.

A 30-year retrospective cohort study of suicide in Scottish military veterans (22) linked data from the National Health Service, routine acute hospital data, mental health care data, and death certificates. They found a similar but slightly lower suicide rate for veterans compared with non-veterans but a significantly higher risk of suicide for women veterans compared with women non-veterans. There was a lower incidence of suicide for younger veterans, higher for those aged over 40, and the risk was slightly higher for early service leavers in the older age groups.[2]

Canada

According to the 2019 Veteran Suicide Mortality Study, over a 39-year observation period, the risk of suicide for both male and female veterans was observed to be consistently higher than in the Canadian general population (23). In this cohort study of more than 230,000 people released from the Canadian Armed Forces between 1976 and 2014 (Regular Force and Reserve Class C only), male veterans overall had a 1.4 times higher risk of dying by suicide compared to the male Canadian general population, with the youngest group at highest risk (2.5 times higher risk than the male Canadian general population). Female veterans overall had a 1.9 times higher risk of dying by suicide compared to the female Canadian general population, and this risk was relatively consistent across age groups. Over the 39-year period however, the observed risk of suicide neither increased or decreased (23).

Denmark

In Denmark, a register-based study investigated the occurrence of suicide among military personnel veterans who had been deployed on international missions at least once in the period 1992–2014 and compared to a matched control population (i.e., matched on gender, year of birth at first deployment date, and had never been deployed). The study found that among the veterans 0.18% died by suicide, and within the matched controls 0.22% died by suicide. There was no difference between veterans and controls in risk of dying by suicide although those who were deployed to Croatia in the 1990's did have a higher risk of suicide compared to other veterans. The median number of years from first mission to a death by suicide was 10.26 years (24). This study was also cited by its author in a recent study within the peer reviewed literature (25) as providing evidence that there was no difference in suicide rates in Danish veterans compared to the Danish general population, though we could not validate this within the original study as only an executive summary of the study report was translated into English which provided a summary of the aforementioned findings.

3.1.7. Summary of findings for suicide in the serving and ex-serving ADF population

The most recent AIHW analysis (1) undertaken on suicides in the ADF population who served since 1985, identified that suicide rates among serving ADF members were lower than suicide rates in the Australian general population, specifically, suicide rates were 51% lower for permanent males and 48% lower for reserve males when compared to the general population. In this most recent AIHW analysis there were insufficient data to make reliable comparisons for serving women; however, a previous AIHW report (2) based on the population who served from 2001 (rather than 1985) showed the suicide rate for serving and reserve females was 53% lower than the Australian population rate.

In contrast, to the lower suicide rates identified in the serving population, suicide rates were 24% higher for ex-serving males and 102% higher for ex-serving females who served since 1985, when compared with the matched sexes of the wider Australian population. Suicide rates for ex-serving males and females were higher than the suicide rates in the general population for each of the matched age groups under 50. In contrast, there was no significant difference in suicide rates for ex-serving males or females aged 50 years and older when compared to the general population.

Among ex-serving males, the service-related characteristics associated with elevated suicide rates were separating from the Navy or Army (compared to the Air Force), being any rank other than a commissioned officer, having served less than one year, and having separated for medical reasons or other involuntary reasons. In contrast, among ex-serving females, suicide rates were similar regardless of service-related characteristics.

3.1.8. Summary of findings for suicide in serving and ex-serving Defence populations in other countries with cross-country comparisons

It is difficult to make direct comparisons between countries on rates of suicide in serving and ex-serving populations due to methodological differences such as how each country identifies cases, the time periods in which they collect and report on data, and the data analysis approaches, and types of statistics presented in the reporting of these data. However, when viewing the international data presented overall, there are some consistent trends across countries. Based on the most recent data from the international countries previously reported (see Section 3.1.4) and including Australia, the rates of suicide in current serving populations are either comparable with, or lower than their age and sex-matched general population counterparts. The US and Canada reported mostly comparable rates over time to their age and sex-matched general population (though historically at times they may have been higher); New Zealand was slightly lower to their general population; and the UK and Australia were much lower (approximately 50%) compared with their age and sex-matched general populations. In all countries, rates varied by the service type (i.e., Permanent versus Reserve) or service group (i.e., Army, Navy, Air Force, etc.) with some consistent findings across countries that being a member of the Army is associated with higher suicide risk compared to other service groups. In most countries, younger serving males are at the highest risk of suicide compared to other serving males and females.

For ex-serving populations, findings from the US, Canada and Australia are consistent and demonstrate that suicide rates in ex-serving defence populations in each of these countries are significantly higher than in the

general population which is in contrast with findings from the UK and Denmark which did not record a difference between the ex-serving and general population in each country respectively.

Data on national suicide statistics for ex-serving New Zealand Defence force members or current serving Defence members in Denmark could not be located and so comparisons for these are not possible.

3.2. Suicidality including suicide ideation, plans and attempts, and intentional self-harm

3.2.1. Suicidality in the Australian general population

Although not timely, the best evidence about suicidality in the Australian general population comes from the 2007 ABS National Survey of Mental Health and Wellbeing of people aged 16 to 85 years (26). In this study, 2.4% of the total population reported some form of suicidality in the previous 12 months. Specifically, 2.3% reported suicidal ideation, 0.6% made suicide plans and 0.4% made a suicide attempt, and the 12-month prevalence of suicidal ideation was higher in females (2.7%) than in males (1.9%) (26). Although there was not a statistically significant difference between males and females for suicide plans and attempts, both aspects of suicidality were slightly higher in females (Table 10).

Table 10. Prevalence of 12-month suicidality by sex, 2007.

	Male (%)	Female (%)	All (%)
Suicide ideation	1.9	2.7	2.3
Suicide plans	0.4	0.7	0.6
Suicide attempts	0.3	0.5	0.4
Any suicidality	1.9	2.8	2.4

Source: 2007 ABS National Survey of Mental Health and Wellbeing (26).

Among females, suicidality was highest in those aged 16–24 years (5.1%) and generally decreased with increasing age. In contrast, among males, suicidality did not vary much across age groups; approximately 2.5% of males aged 25–34 years and 35–44 years reported suicidality whereas approximately 1.5% of males in all other age groups reported suicidality.

An update to this 2007 survey is imminent as the National Study of Mental Health and Wellbeing 2021 commenced data collection from the first cohort in December 2020 and the results are due to be released in July 2022. These results will provide a useful update to this data regarding suicidality in the Australian general population.

3.2.2. Suicidality in the ADF

There have been a number of research studies into the mental health and wellbeing of serving and ex-serving ADF populations in Australia, particularly over the most recent decade. The evidence summarised in this section regarding suicidality in the ADF population comes from the two major reports (27, 28) outlined in Table 11.

In contrast to the section on suicide in the ADF population, all the data presented in this section has been sourced from surveys rather than surveillance data or linked data studies.

The first report includes information about suicidality in the serving ADF population, and covers the findings of the 2010 ADF Mental Health Prevalence and Wellbeing Study (27). The target population for the study was all regular ADF personnel who were serving in 2010 (n=50,049). ADF personnel were surveyed using a self-report screening questionnaire and 12-month suicidality data presented here includes data derived from respondents endorsing the following three questions:

- ‘In the last 12 months, have you ever felt so low that you thought about committing* suicide?’ (suicide ideation),

- ‘In the last 12 months, have you made a suicide plan?’ (suicide plan), and
- ‘In the last 12 months, have you attempted suicide?’ (suicide attempt).

*We acknowledge this language is no longer considered appropriate, but it is provided here as it was the language used in the survey.

Where the term “any suicidality” is used in this section of the report it includes those who endorsed any of the three questions covering suicide ideation, suicide plans or suicide attempts. Researchers were able to compare personnel who responded to the survey with personnel who did not, and therefore weight the data so that estimates of prevalence that are representative of the entire serving regular ADF could be produced. In addition, the researchers used data from the 2007 ABS National Survey of Mental Health and Wellbeing (26) to compare the estimated prevalence of suicidality in the serving ADF population and the Australian community. Therefore, the final report provides the most comprehensive data on the prevalence of suicidal thoughts, plans and attempts among serving ADF personnel. There is no information available on intentional-self harm in this population.

The second report, the Mental Health Prevalence Report (28), was published as part of the Transition and Wellbeing Research Program which was a comprehensive study undertaken to examine the impact of military service on the mental, physical and social health of ADF members and their families. Twelve-month self-reported suicidality was assessed using the same items as in the 2010 ADF Mental Health Prevalence and Wellbeing Study described above. Again, there is no information available on intentional-self harm in this population. The report includes data on suicidality in regular (full-time serving) ADF members serving in 2015 and transitioned ADF members (the population of ADF members who transitioned from full-time ADF service between 2010 and 2014, including those who transitioned into the active reserves, inactive reserves, and ex-serving). Consequently, in contrast to the suicide section of this report (Section 3.1) which included reserve members in the serving population sections, it was necessary to include reserve members in the transitioned population in this section.

More importantly, while suicide data was presented separately for ex-serving members in Section 3.1.5, for most of this section it was necessary to report on suicidality in the transitioned population overall (including ex-serving). However, where separate data was available for the different groups, it has been provided (see Tables 12 and 15).

Table 11. Summary of Australian research reports used for reporting on suicidality in the ADF population.

Report name and lead author	Year/s	Sample	Relevant measures
2010 ADF Mental Health Prevalence and Wellbeing Study (27)	2010–11	All current-serving regular ADF members (weighted n = 50,049)	Ideation, plans, attempts
Mental Health Prevalence, Mental Health and Wellbeing Transition Study (28)	2015	Regular ADF members serving in 2015 (weighted n = 52,500), and members who had transitioned between 2010 and 2014 (weighted n = 24,932)	Ideation, plans, attempts

Suicidality in the serving ADF population compared to the transitioned ADF population

Although the 2010 ADF Mental Health Prevalence and Wellbeing Study is the most comprehensive report covering suicidality in the serving ADF population, it does not include any data on the ex-serving ADF population. Therefore, data from the Mental Health and Wellbeing Transition Study (28) is shown in Table 12 to give some indication of differences in 12-month suicidality in serving versus ex-serving ADF members.

The data shows that prevalence of some aspects of 12-month suicidality was higher in transitioned ADF members compared to in serving members. Specifically, the transitioned ADF members had significantly higher rates of any suicidality, suicidal ideation and plans compared to the serving regular ADF included in the study:

- 21.7% versus 8.8% reported any suicidality,
- 21.2% versus 8.6% reported suicide ideation, and
- 7.9% versus 1.8% reported making a suicide plan.

Further to this, ex-serving members had higher prevalence of all aspects of suicidality when compared to the serving population, specifically:

- 31.5% versus 8.8% reported any suicidality,
- 30.7% versus 8.6% reported suicide ideation,
- 13.1% versus 1.8% reported making a suicide plan, and
- 3.8% versus 0.6% reported making a suicide attempt.

Table 12. Estimated prevalence of suicidality in transitioned ADF and current serving regular ADF in 2015.

	Regular ADF members		Transitioned ADF members			
	All regular (weighted n = 52,500)		All transitioned (weighted n = 24,935)		Ex-serving (subset of transitioned) (weighted n = 11,440)	
	%	95% CI	%	95% CI	%	95% CI
Suicide ideation	8.6	(6.4, 11.3)	21.2	(19.8, 22.8)	30.7	(28.1, 33.4)
Suicide plan	1.8	(1.0, 3.3)	7.9	(7.0, 8.9)	13.1	(11.4,15.0)
Attempted suicide	0.6	(0.2, 1.6)	2.0	(1.6, 2.6)	3.8	(2.9,5.0)
Any suicidality	8.8	(6.7, 11.6)	21.7	(20.2, 23.3)	31.5	(28.8, 34.2)

Source: Mental Health and Wellbeing Transition Study (28).

3.2.3. Prevalence of suicidality in ADF serving population

The results of the 2010 ADF Mental Health and Wellbeing Prevalence Study (27) provided evidence of the prevalence of suicidal thoughts, plans and attempts among serving ADF personnel. As mentioned, the findings from this survey are especially valuable as the data is weighted and therefore can be considered representative of the entire serving regular ADF in 2010.

The main findings of this study regarding suicidality in the serving ADF population were:

- The estimated prevalence of 12-month suicidality (defined as 12-month suicide ideation, plans or attempts) in current serving ADF personnel was 4.0% (3.8% in males and 5.1% in females).
- The estimated prevalence of 12-month suicidal ideation in current serving ADF personnel was 3.9%, and females were 39% more likely to report ideation than males (3.7% in males and 5.1% in females).
- There was no difference in the prevalence of suicide ideation between different ADF Services, with similar rates reported for the Navy (7.2%), the Army (6.6%), and the Air Force (6.5%).
- ADF personnel who had never been deployed were more likely to report experiencing suicide ideation within the previous 12 months than those who had been deployed (7.3% compared to 6.4%).
- The estimated prevalence of making a suicide plan within the most recent 12 months in current serving ADF personnel was 1.1%, and there was no difference in prevalence in males or females (1.1% in males and 1.2% in females).
- The estimated prevalence of attempted suicide within the most recent 12 months in current serving ADF personnel was 0.4%, and there was no difference in prevalence in males or females (0.4% in males and 0.5% in females).

Results from the Mental Health and Wellbeing Transition Study (28) provide some evidence that there might have been an increase in some aspects of suicidality over time in the serving ADF population. Authors compared the results of the 2015 Mental Health and Wellbeing Transition Study to the 2010 ADF Mental Health and Wellbeing Prevalence Study, and found serving ADF members in 2015 were more likely than those in 2010 to report suicide ideation (8.6% compared to 3.9%) and any suicidality (8.8% compared to 4.0%) (Table 13).

Table 13. Comparison of 12-month prevalence of suicidality in serving ADF population in 2010 and 2015.

	2010 ADF Mental Health and Wellbeing Prevalence Study (n=50,049)		2015 regular ADF (n=52,500)	
	%	95% CI	%	95% CI
Suicide ideation	3.9	(3.7, 4.1)	8.6	(6.4, 11.3)
Suicide plan	1.1	(1.0, 1.2)	1.8	(1.0, 3.3)
Attempted suicide	0.4	(0.3, 0.5)	0.6	(0.2, 1.6)
Any suicidality	4.0	(3.7, 4.2)	8.8	(6.7, 11.6)

Sources: 2010 ADF Mental Health Prevalence and Wellbeing Study (27) ; Mental Health and Wellbeing Transition Study (28)

Comparison of prevalence of suicidality in serving ADF members and the general population

The 2010 ADF Mental Health Prevalence and Wellbeing Study (27) included a comparison of suicidality in the serving ADF population to a sample from the Australian community matched on employment status (i.e., employed/not employed), sex, and age (Table 14). Results showed:

- A higher proportion of serving ADF members compared to the matched general population experienced any 12-month suicidality (defined as suicidal ideation, suicide plan or attempted suicide) (4.0% compared to 1.8%).
- A higher proportion of serving ADF members compared to the matched general population experienced 12-month suicidal ideation (3.9% compared to 1.7%).
- A higher proportion of serving ADF members compared to the matched general population reported making a suicide plan in the previous 12-months (1.1% compared to 0.4%).
- The current serving ADF personnel were no more likely to have attempted suicide in the past 12 months than the matched general population (0.4% compared to 0.3%).

Table 14. Comparison of 12-month suicidality in the serving ADF population to a matched sample.

	2010 ADF Mental Health and Wellbeing Prevalence Study			Community sample		
	Males	Females	All	Males	Females	All
Suicide ideation	3.7%	5.1%	3.9%	1.5%	2.8%	1.7%
Suicide plan	1.1%	1.2%	1.1%	0.3%	0.5%	0.4%
Attempted suicide	0.4%	0.5%	0.4%	0.3%	0.4%	0.3%
Any suicidality	3.8%	5.1%	4.0%	1.6%	2.8%	1.8%

Source: 2010 ADF Mental Health Prevalence and Wellbeing Study (27).

3.2.4. Prevalence of suicidality in the transitioned ADF population

The most comprehensive analysis of suicidality in the transitioned ADF population is provided in the Mental Health and Wellbeing Transition Study (28). As mentioned in Section 3.2.2, the transitioned ADF population is the population of ADF members who transitioned from fulltime ADF service between 2010 and 2014, including those who transitioned into the active and inactive reserves and those who had discharged completely (i.e., ex-serving members). Overall, as shown in Table 12 and in Table 15 below, ex-serving members had high prevalence of all aspects of suicidality, specifically: 31.5% reported any suicidality, 30.7% reported suicide ideation, 13.1% reported making a suicide plan, and 3.8% reported making a suicide attempt.

Table 15 compares the estimated prevalence of suicidality by transition status. Overall, ex-serving ADF members have higher suicidality than inactive or active reservists (31.5% compared to 15.7% and 12.4% respectively). The prevalence of suicide plans is significantly higher among ex-serving members (13.1%) than among inactive or active reservists (4.7% and 2.7%, respectively). In addition, the prevalence of suicide attempts is also significantly higher among ex-serving members (3.8%) than among inactive or active reservists (1.1% and 0.1%, respectively).

Table 15. Estimated prevalence of suicidality in transitioned ADF members, by transition status.

		Suicide ideation	Suicide plan	Attempted suicide	Any suicidality
Ex-serving	%	30.7	13.1	3.8	31.5
	95% CI	(28.1, 33.4)	(11.4, 15.0)	(2.9, 5.0)	(28.8, 34.2)
Inactive reservists	%	15.2	4.7	1.1	15.7
	95% CI	(12.9, 18.0)	(3.4, 6.4)	(0.5, 2.3)	(13.3, 18.4)
Active reservists	%	12.3	2.7	0.1	12.4
	95% CI	(10.2, 14.7)	(1.8, 3.9)	(0.0, 0.4)	(10.3, 14.9)

Source: Mental Health and Wellbeing Transition Study (28).

The estimated prevalence of suicidality in transitioned ADF members (including ex-serving members) by demographic factors is shown in Table 16, and by service-related factors in Table 17. The data is not provided separately for the component of the population that is the ex-serving population, instead, it includes all transitioned members. The points below summarise the main suicidality-related findings from the Mental Health and Wellbeing Transition Study and highlight the significant results.

Demographic factors:

- The same proportion of transitioned males and females reported any suicidality (21.7%; males 95% CI 20.1, 23.4; females 95% CI 18.4, 25.4). There were also no significant differences in the estimated prevalence of suicide ideation, suicide plans or attempted suicide between males and females.
- When comparing age groups, there were no significant differences in the estimated prevalence of any suicidality, suicide ideation, suicide plans or attempted suicide.

Table 16. Estimated prevalence of suicidality in transitioned ADF members, overall and by sex and age group.

		Suicide ideation	Suicide plan	Attempted suicide	Any suicidality
Sex					
• **Males**	%	21.2	7.9	1.8	21.7
	95% CI	(19.6, 22.9)	(6.9, 9.0)	(1.4, 2.5)	(20.1, 23.4)
• **Females**	%	21.2	7.7	3.2	21.7
	95% CI	(17.9, 24.9)	(6.1, 9.7)	(2.0, 5.2)	(18.4, 25.4)
• **All**	%	21.2	7.9	2.0	21.7
	95% CI	(19.8, 22.8)	(7.0, 8.9)	(1.6, 2.6)	(20.2, 23.3)
Age group					
• **18–27**	%	23.5	8.3	3.4	23.6
	95% CI	(19.6, 27.9)	(6.0, 11.4)	(2.0, 5.6)	(19.6, 27.9)
• **28–37**	%	21.0	7.9	1.9	21.1
	95% CI	(18.4, 23.9)	(6.4, 9.8)	(1.2, 2.8)	(18.5, 24.0)
• **38–47**	%	23.8	7.9	1.9	23.8
	95% CI	(21.0, 26.9)	(7.8, 11.7)	(1.2, 3.2)	(21.0, 26.9)
• **48–57**	%	18.3	9.5	1.3	19.1
	95% CI	(15.8, 21.0)	(5.5, 8.5)	(0.7, 2.4)	(16.5, 21.9)
• **58+**	%	14.0	6.9	0.2	14.4
	95% CI	(11.2, 17.4)	(2.6, 5.4)	(0.0, 0.9)	(11.5, 17.7)
• **All**	%	21.2	7.9	2.0	21.7
	95% CI	(19.8, 22.8)	(7.0, 8.9)	(1.6, 2.6)	(20.2, 23.3)

Source: Mental Health and Wellbeing Transition Study (28).

Main service-related factors:

Service group:

- There was a general pattern for the highest prevalence of the different aspects of suicidality to be in those transitioned from the Army, followed by the Navy and then the Air Force (e.g., 22.7% of Army, 21.7% of Navy and 18.4% of the Air Force had any suicidality).
- However, the only significant difference identified was for 12-month suicide plans – those who transitioned from the Army had increased odds of reporting making a suicide plan in the last 12 months compared with those who transitioned from the Navy (Odds Ratio (OR) 1.6, 95% CI 1.1, 2.3).

Rank:

- Analysis compared suicidality in the following three categories: Officers, Non-Commissioned Officers and Other ranks. Overall, Officers reported the lowest prevalence of any suicidality (13.2%), suicidal ideation (12.9%), plans (5.6%), and attempts (0.7%).
- Compared to Officers, Non-Commissioned Officers were significantly more likely to report suicidal ideation (OR 1.9, 95% CI 1.6, 2.2), plans (OR 1.5, 95% CI 1.2, 1.9), and attempts (OR 2.3, 95% CI 1.3, 4.1).
- Compared to Officers, those in Other Ranks were also significantly more likely to report suicidal ideation (OR 2.3, 95% CI 1.7, 2.9), plans (OR 1.4, 95% CI 1.0, 2.0) and attempts (OR 2.7, 95% CI 1.2, 5.8).

Reason for discharge:

- Those who reported that they were medically discharged reported higher prevalence of any suicidality than those who reported another reason for discharge (42.6% compared to 16.0%).
- Specifically, those who reported that they were medically discharged were significantly more likely to report any suicidality (OR 3.9, 95% CI 3.2, 4.8), suicidal ideation (OR 3.9, 95% CI 3.2, 4.8), plans (OR 5.3, 95% CI 4.0, 7.1), and attempts (OR 7.7, 95% CI 4.4, 14.3) than those reporting another reason for discharge.

Table 17. Estimated prevalence of suicidality in transitioned ADF members, by service-related factors.

		Suicide ideation	Suicide plan	Attempted suicide	Any suicidality
Service					
• **Navy**	%	21.6	6.0	2.3	21.7
	95% CI	(18.4, 25.2)	(4.5, 7.9)	(1.3, 4.1)	(18.5, 25.3)
• **Army**	%	22.5	9.1	2.2	22.7
	95% CI	(20.5, 24.6)	(7.8, 10.6)	(1.6, 3.0)	(20.7, 24.8)
• **Air Force**	%	18.2	6.7	1.2	18.4
	95% CI	(15.7, 21.1)	(5.2, 8.6)	(0.7, 2.0)	(15.8, 21.5)
Rank					
• **Officer**	%	12.9	5.6	0.7	13.2
	95% CI	(11.5, 14.5)	(4.7, 6.7)	(0.4, 1.2)	(11.7, 14.8)
• **Non-Commissioned Officers**	%	21.5	8.3	1.8	21.8
	95% CI	(20.0, 23.1)	(7.4, 9.4)	(1.4, 2.3)	(0.3, 23.4)
• **Other Ranks**	%	24.3	8.6	2.6	24.4
	95% CI	(21.7, 27.1)	(6.9, 10.4)	(1.8, 3.8)	(21.7, 27.2)
Reason for discharge					
• **Medical**	%	42.4	20.3	6.6	42.6
	95% CI	(38.7, 46.2)	(17.4, 23.4)	(4.9, 8.8)	(38.9, 46.4)
• **Other**	%	15.8	4.6	0.9	16.0
	95% CI	(14.3, 17.5)	(3.8, 5.6)	(0.5, 1.5)	(14.4, 17.7)

Source: Mental Health and Wellbeing Transition Study (28).

3.2.5. Summary of suicidality in the ADF population

In contrast to the section about suicide in the ADF population, all the data presented in this section has been sourced from surveys rather than surveillance data or linked data studies. The evidence summarised in this section regarding suicidality in the ADF population comes from the two major studies, the 2010 ADF Mental Health Prevalence and Wellbeing Study (27) and the Mental Health and Wellbeing Transition Study (28). In each study, 12-month self-reported suicidality (including suicide ideation, suicide plans and suicide attempts) was assessed using a self-report questionnaire.

In summary, transitioned ADF members had significantly higher rates of any suicidality, suicidal ideation, and plans (but not suicide attempts) compared to the serving regular ADF. In particular, evidence suggests ex-serving members had high prevalence of all aspects of suicidality when compared with other transitioned members. Specifically, ex-serving ADF members have higher suicidality than inactive or active reservists (31.5% compared to 15.7%, and 12.4 % respectively) and the prevalence of suicide plans and attempts is significantly higher among

ex-serving members than among inactive or active reservists. The main risk factors for suicidality in the whole transitioned population (including ex-serving members) include the rank of the person and the reason for discharge. In this transitioned population, non-commissioned officers were significantly more likely than officers to report suicidal ideation, plans, and attempts. In addition, those in other ranks were significantly more likely to report suicidal ideation, plans and attempts compared to officers. Those who reported that they were medically discharged reported much higher prevalence of any suicidality than those who reported another reason for discharge (42.6% compared to 16.0%). Specifically, those who reported that they were medically discharged were significantly more likely to report any suicidality, suicidal ideation, plans and attempts. This survey data regarding service-related factors is not provided separately for the different populations making up the transitioned population and therefore we do not know if the factors differ for ex-serving members compared to other transitioned members (i.e., inactive and active reservists).

Australian evidence from the 2010 ADF Mental Health Prevalence and Wellbeing Study, suggests that a higher proportion of serving ADF members compared to the matched general population experienced any 12-month suicidality. However, while suicide ideation and plans were more common in the serving ADF population, the serving ADF population was no more likely to have attempted suicide in the past 12 months than the matched general population. Comparison of suicidality in the transitioned population compared to a matched community population was not provided in the 2015 Mental Health and Wellbeing Transition Study as the most recent Australian national statistics from the 2007 National Survey of Mental Health and Wellbeing (26) had not been updated and the sample in the study was not intended to be a representative sample of the ADF population in the same way that the 2010 ADF Mental Health Prevalence and Wellbeing Study was (28, 29).

3.2.6. Suicidality in serving and ex-serving Defence populations from other countries

The following provides a selection of findings and estimates from active surveillance systems, cross-sectional or cohort studies of suicidal behaviours (capturing suicidal attempts, plans and intentional self-harm with or without suicidal intent) and suicide ideation in serving and ex-serving populations from selected countries. A summary at Section 3.2.7 provides an overview of notable findings overall for serving versus ex-serving populations.

A timely study by Moradi and colleagues from 2021 (30) provides a comprehensive global review of relevant cross-sectional studies in military populations. The authors conducted a systematic review and meta-analysis using military studies from around the world to determine the pooled prevalence of depressive disorders, suicidal thoughts, and attempts in the military (including both serving and ex-serving populations). The study included quantitative synthesis (i.e., meta-analysis) of 133 studies that focused on depression; 48 studies for suicide attempts; 49 studies for suicide thoughts; and 58 studies that focused on suicide as the outcome of interest. The results of meta-analysis determined that the prevalence of suicidal ideation and attempts in the military was 11% (95% CI: 10–13%) and 11% (95% CI: 9–13%), respectively. The prevalence of suicide ideation and attempts in drug-using military was 18% (95% CI: 7–33%) and 30% (95% CI: 23– 36%), respectively. The prevalence of suicidal ideation and attempts in military consuming alcohol were 9% (95% CI: 4–13%) and 8% (95% CI: 7–10%), respectively. In militaries with AIDS /HIV, the prevalence of suicide attempts was 5% (95% CI: 4–8%) (30).

The US: Serving

The US Department of Defense Suicide Event Report 2019 (31) reports data on all cases of deaths by suicide and suicide attempts among military service members in the US Air Force, Army, Marine Corps, Navy, and Space Force collected in the Department of Defense Suicide Event System (32) (see Section 3.4 for more information on this web-based surveillance system and report, and Table 24 in Appendix 2). In 2019, 1,462 suicide attempts were reported by 1,388 unique individuals highlighting that some individuals had more than one attempt. The report also notes that four active-component 2019 suicides were associated with one or more previously reported suicide attempt(s) that occurred between 2010 (when attempts were first entered into the system; 2008 for Army) and 2019. The 2019 report (31) also included the prevalence of many different demographic, situational and risk factors present in suicide attempt instances (see Section 3.3.4 on risk factors in Defence

populations in other countries) including that drug and/or alcohol overdose was the most common method of attempted suicide cited, accounting for 53.1% of suicide attempts reported in 2019.

Using data collected from another army specific surveillance system, the Army Behavioural Health Integrated Data Environment Surveillance System for 2017, Brookes and colleagues reported 459 suicide attempts in Army active duty soldiers resulting in a rate of 98 per 100,000 (95% CI: 88.8–106.7) (33). Most cases were male (75%), 17–24 years old (66%), white (51%), single (54%), enlisted as a junior (75%), and had no history of deployment (71%). Female Soldiers had a higher rate of suicide attempts at 165 per 100,000 (95% CI: 134.8–195.0) compared to 86 per 100,000 for males. Soldiers aged 17–24 years had the highest suicide attempt rate of any age group, with 168.7 attempts per 100,000, compared with 67 and 33.1 attempts per 100,000 for those aged 25–34 years and 35–59 years. For suicide ideation, there were 3,402 cases of suicidal ideation reported in 2017 equating to a rate of 724 per 100,000 Army active-duty soldiers (95% CI: 700.0–748.7) with rates of suicidal ideation trending upwards (β=49.13, p value=0.01) from 2008 to 2017. The majority of cases were male (76%), aged 17–24 (62%), white (51%), single (53%) and junior enlisted (74%). Over two-thirds (70%) had no history of deployment. Female soldiers had a higher rate of suicidal ideation compared to males (33).

A study by Leard Mann and colleagues in 2021 focused on the association of combat experiences with suicide attempts among active-duty US Service Members (34). It used data from the Millennium Cohort Study, an ongoing prospective longitudinal study of US service members from all military branches and linked it to data ascertained from military electronic hospitalization (inpatient) and ambulatory (outpatient) medical encounter data using ICD-9 data from October 1, 2000, to September 30, 2015. Among 57,841 participants (76.2% male) and during a mean follow-up period of 5.6 years (SD = 4.0 years), 235 participants had a suicide attempt (0.4%). High combat severity and certain combat experiences (i.e., being attacked or ambushed, seeing dead bodies or human remains, and being directly responsible for the death of a non-combatant) were associated with suicide attempts. However, these associations were mostly accounted for by mental disorders, especially post-traumatic stress disorder (34).

According to a study involving secondary analyses of two representative surveys of active-duty soldiers (n = 21 449) and newly enlisted soldiers (n = 38,507) from the Army Study to Assess Risk and Resilience in Service members, the lifetime prevalence of non-suicidal self-injury (i.e., intentional self-harm without suicidal intent) was reported at 6.3% (1.2% 12-month prevalence) in active-duty soldiers and 7.9% (1.3% 12-month prevalence) in new soldiers (35). Demographic risk factors for lifetime non-suicidal self-injury in the sample included: female sex; younger age; white ethnicity; not married, and lower educational attainment. In both active-duty and new soldiers, non-suicidal self-injury was associated with increased odds of subsequent onset of suicidal ideation (adjusted OR = 1.66–1.81) and suicide attempts (adjusted OR = 2.02–2.43), although not with the transition from ideation to attempt (adjusted OR = 0.92–1.36). Soldiers with a history of non-suicidal self-injury were more likely to have made multiple suicide attempts, compared with soldiers without non-suicidal self-injury (35). Lifetime prevalence of non-suicidal self-injury in the US adult population has been reported at 5.9% including 2.7% who had self-injured five or more times with the 12-month prevalence being 0.9% (36).

The US: Ex-serving

A recent study by Nichter and colleagues in 2021 used data from two waves of the National Health and Resilience in Veterans Study, a population-based prospective cohort study, to assess longitudinal changes in suicide ideation and attempts during COVID-19 in 3,078 US veterans (mean [SD] age, 63.2 [14.7] years) (37). The study reported 10.6% of the cohort experienced past year suicide ideation at baseline (95% CI, 9.6–11.8%) which dropped to 7.8% peri pandemic (95% CI, 6.9–8.8%) at follow up 10 months later. Eight veterans (0.3%) reported attempting suicide at the peri pandemic follow-up. A total of 82 veterans (2.6%) developed new-onset suicidal ideation over the follow-up period. After adjusting for sociodemographic and military characteristics, the strongest risk factors and COVID-19-related variables for new-onset suicidal ideation were low social support, suicide attempt history, lifetime post-traumatic stress disorder and/or depression, past-year alcohol use disorder severity, COVID-19 infection, and worsening of social relationships during the pandemic (37).

In the National Veteran Suicide Prevention Annual Report 2021 (19), there is reference to Veteran Affairs monitoring week by week trends in Veteran Health Administration patient encounters and site-reported indicators of suicide-related behaviour (e.g., Veteran Health Administration emergency department visits for

suicide attempts and on-campus suicide attempts and deaths) from March 2020; at the start of the COVID-19 pandemic. While it is difficult to ascertain week by week numbers from the figures in the report or to identify rates over time, the report summary states that there were no observed increases in documentation of the above suicide related behaviours.

The UK

Several surveys have been conducted with UK armed forces personnel about self-harm and the prevalence has been reported as 1.0–5.6% (38). A 2013 postal survey found the overall prevalence of self-harm was 2.3% with higher prevalence for UK military personnel who were discharged, separated, of lower rank, female, younger, had no close friends or family, participated in few social activities, and experienced adverse events during childhood (38). A study with UK armed forces personnel found that 5.6% had ever intentionally self-harmed (including self-harm and attempted suicide) however a significantly higher proportion of ex-serving personnel reported ever having self-harmed compared with serving personnel (10.5% and 4.2% respectively) (39). In a more recent survey conducted as part of a cohort study, 2% of men and 4% of women in the UK military reported ever having self-harmed (40).

Hawton and colleagues (41) used the Oxford Monitoring System for Attempted Suicide database to identify people who presented to the general hospital in Oxford with intentional self-injury or self-poisoning. Armed forces personnel were identified through routinely collected information about employment. There were four major UK military sites in the area over the 15-year study period however the number of total personnel with access to the hospital over the time could not be calculated so self-harm rates could not be obtained. Over the 15-year period 166 armed forces personnel presented with self-harm, of whom 72.3% were male, 62.7% were under 25 years of age, 62.0% reported relationship problems, 43.9% reported employment problems and 40.5% reported alcohol misuse (41).

Canada

A study by Sareen and colleagues in 2016, assessed the lifetime and past-year prevalence of suicidal ideation, plans and attempts, as well as use of mental health services comparing population survey data from Canadian military personnel (2013 Canadian Forces Mental Health Survey) and the general population (Canadian Community Health Survey) for 2002 and 2012/13 (42). The study found that in 2012/13, military personnel had significantly higher odds of both lifetime and past-year suicidal ideation than the general civilian population (lifetime suicide ideation: adjusted OR 1.32, 95% CI 1.17–1.50; past year suicide ideation: adjusted OR 1.34, 95% CI 1.09–1.66). A similar result was reported for suicidal plans (lifetime: adjusted OR 1.64, 95% CI 1.35–1.99; past year: adjusted OR 1.66, 95% CI 1.18–2.33). The prevalence of suicide attempts was not found to be significantly different between military personnel and the civilian population for 2012/13 (42).

Denmark

Studies in Denmark have utilised the Danish Civil Registration System to identify military populations and then either surveyed a sample or gathered linked data from relevant Danish National Registers. A study investigating risk and protective factors for suicidal ideation and suicide attempts among deployed Danish Soldiers (1990–2009), surveyed a sample of soldiers and reported a prevalence of 13.5% for suicide ideation and 1.7% for suicide attempts in the sample (43). A more recent study by Vedtofte and colleagues gathered post deployment questionnaire data from Danish Army Military personnel who returned from deployment in international missions between 1998 and 2016 and retrieved data on suicide attempts from national registry data of multiple registries. This study reported that 83 suicide attempts (0.7%) were registered after homecoming from 12,218 military personnel (25).

3.2.7. Summary of findings for suicidality in serving and ex-serving Defence populations from other countries

It is important to first acknowledge that within the literature, there is much variation in how terms such as self-harm, suicide attempt and suicide ideation are defined and measured as well as whether studies have been conducted specifically in serving or ex-serving or all of Defence populations. This makes it very difficult for comparing rates reported across studies, countries, settings, and populations. However, even with this caveat, based on the data presented, it does appear that across countries (including Australia) transitioned or ex-serving Defence populations have higher rates of suicide ideation and suicide planning than current serving Defence, but also when compared to the matched general population. However, the prevalence of suicide attempts in Defence populations overall was not found to be significantly different when compared to the matched general population.

3.3. Risk and protective factors for suicide in the general population and Defence populations

3.3.1. Global overview of risk and protective factors for suicide

Suicide prevention aims to identify and address factors that increase a person's suicide risk (i.e., risk factors) but also enhance or facilitate factors that are known to protect people from suicide (i.e., protective factors). It is widely understood that suicide, like many other human behaviours, is complex with multiple contributing factors and causal pathways to suicide. Many different risk factors can interact or work cumulatively over time, to increase a person's risk of thinking, attempting, or dying by suicide, though the presence of a particular risk factor does not suggest a person will necessarily ever experience suicidality. Risk and protective factors for suicide can be fixed or constant (e.g., genetic factors), or they can be modifiable (e.g., alcohol and substance misuse). They may also be related to background factors (e.g., history of childhood abuse) or be related to more recent life stressors (e.g., losing a job). The presence of these factors and how they impact an individual over their lifetime is highly variable and, also varies by demographics (e.g., age, sex), culture and other characteristics.

There has been considerable research over many decades that provides evidence of a very wide range of risk and protective factors for suicide, though the strength of the evidence to support specific factors is highly variable (13). The literature has also been critiqued for being imprecise due to failure to consider the interaction between risk factors, and their chronology (44). Additionally, the literature highlights that the evidence for specific risk factors applies to different outcomes across the spectrum of suicidal behaviour (i.e., suicide ideation, self-harm, suicide attempts, completed suicide). While the non-fatal expressions of suicidality do increase a person's suicide risk, it is important to acknowledge that most people who experience suicidal thoughts may never go on to attempt or die by suicide. Despite these challenges, there have been a number of comprehensive studies that have systematically reviewed the literature (including reviews by Cramer and Kapusta (45) and Franklin and colleagues (13)), and subsequently have articulated a fulsome list of risk and protective factors, including those most strongly associated with at least one aspect of suicide-related thoughts and behaviour. Table 18 sourced from Cramer and Kapusta (45), lists a selection of key risk and protective factors for suicidality grouped by socio ecological level (i.e., individual, relationship/interpersonal, community and societal levels) for which there is a reasonable body of supportive evidence. Risk factors with the strongest evidence are in bold. There are fewer protective factors listed which reflects a dearth of research on protective factors for suicide more broadly compared to risk factors. Many of the factors in Table 18 are often cited in suicide prevention policy documents including from the World Health Organisation (46), the Australian Government (8) and the US Centers for Disease Control and Prevention (47) as they underpin multi-level or systems approaches to suicide prevention.

Table 18. Known risk and protective factors for suicidality.

	Risk Factors	Protective Factors
Individual		
• **Biological**	▪ Male sex (completions)/Female sex (attempts)* ▪ **Family history of suicidal behaviour** ▪ Genetic factors (e.g., serotonin dysfunction)	▪ SSRI/Lithium/mood stabilizer/Clozapine usage
• **Socio-demographic**	▪ Gender (e.g., transgender status)* ▪ Lesbian, gay, or other sexual minority identity* ▪ Religiosity/spirituality (i.e., suicide as a solution to problems)* ▪ Ethnicity (e.g., Indigenous, other country specific)* ▪ Age (young adult, middle age)* ▪ Some professions (e.g., military, law enforcement)* ▪ Incarceration*	▪ Heterosexual sexual orientation ▪ Religiosity/ spirituality (i.e., beliefs about suicide being wrong)*
• **Psychiatric/ mental health issue**	▪ **Mental health diagnoses/symptoms (e.g., depression, bipolar, post-traumatic stress disorder)** ▪ **Personality disorders (e.g., Borderline Personality)** ▪ **Substance and alcohol use/abuse**	▪ Treatment motivation
• **Psychological**	▪ **Prior suicide attempt** ▪ **Current suicidal thinking** ▪ **Presence of suicidal intent** ▪ **Presence of suicide plan** ▪ **Hopelessness** ▪ **Feelings of burdensomeness** ▪ **Rejection/thwarted belongingness** ▪ Internalising/externalising psychopathology	▪ **Coping skills** ▪ **Hopefulness/positive future orientation** ▪ **Additional reasons for living**
• **Other Psychosocial**	▪ Chronic pain and illness ▪ High perceived/subjective stress ▪ Job loss/unemployment ▪ Financial strain ▪ Bullying/bias crime victimization ▪ Response to childhood abuse ▪ Experience of discrimination ▪ Housing instability	
Relationship/ interpersonal	▪ Family violence/trauma ▪ **Abuse** ▪ Relationship instability ▪ Death of a loved one ▪ Intimate relationship breakup ▪ Social isolation/withdrawal ▪ Combat exposure*	▪ **Social support** ▪ Social connectedness ▪ Help-seeking behaviour
Community	▪ **Exposure to suicide contagion/cluster in community** ▪ Barriers to access mental healthcare (local)	▪ Access to mental health treatment and **school-based support programs**
Societal and health system	▪ Economic depression/downturn/poverty ▪ War/conflict/ natural disasters ▪ Access to means ▪ Barriers to healthcare/mental healthcare (societal) ▪ Inappropriate media reporting and social media use	▪ Healthy economy ▪ Restrictive firearm laws ▪ Funding/availability of healthcare/mental healthcare

Notes: *Risk or protective factor of importance for a specific population. **Bold font** identifies those risk/protective factors with the strongest supporting evidence. Source: based on a table presented in Cramer and Kapusta, 2017 and also informed by Ribeiro et al, 2017.

Nevertheless, Franklin and colleagues (13) in their meta-analysis of studies in the general population, that aimed to predict specific outcomes related to suicide thoughts and behaviours did sound a caution. While the study could not be comprehensive for all risk and protective factors, the factors or categories of factors that were studied, were demonstrated to be weak and inaccurate. The authors noted that, given the characteristics of existing research, risk and protective factor associations could only be studied within very narrow methodological limits that did not address most theories about suicide thoughts and behaviours. They recommended that future studies should shift in focus away from individual risk factors to machine learning-based risk algorithms that were able to cover complex hypotheses.

Cramer and Kapusta (45) follow-up this recommendation of Franklin and colleagues with their Social-Ecological Suicide Prevention Model. The authors use this multi-level perspective to provide an integration of general and population-specific risk and protective factors. Although their model calls for further empirical testing, they argue it is suitable in further developing current prevention and intervention programs. They articulate a set of characteristics of social-ecologically based suicide prevention programs. These include the need to address risk and protective factors with the strongest degree of empirical support at each multi-level layer, incorporate a comprehensive program evaluation strategy, and use a variety of prevention techniques across levels of prevention.

3.3.2. Risk factors for suicide in the Australian general population

The National Suicide and Self-harm Monitoring System's Public Facing Monitoring Site includes dedicated webpages presenting risk factors and behaviours associated with suicide and self-harm in Australia (48). The webpages include contemporary data and results of empirical research studies conducted either by the AIHW or by others that have investigated some of the risk factors (but not protective factors per se) noted in Table 18. For example, while there is no national standard for the collection of data on psychological and social risk factors (termed 'psychosocial' risk factors) as part of the National Suicide and Self-harm Monitoring System, the AIHW funded the ABS in 2021 to identify and code (using ICD-10) psychosocial risk factors for deaths referred to a coroner, including deaths by suicide (48). The ABS also added codes for the capture of the COVID-19 pandemic as a risk factor. The research stated that for the period 2017–20:

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

In addition to the aforementioned research, the AIHW Public Facing Monitoring Site also presents data on: i) the contribution of various modifiable risk factors associated with the disease burden for suicide and self-inflicted injuries from the Australian Burden of Disease Study 2015 (49); ii) a bespoke AIHW project using Multi-Agency Data Integration Project, to identify social characteristics associated with greater risk of death by suicide; and iii) suicide deaths and intentional self-harm hospitalisations by socio economic areas (48). A selection of top line findings from the additional studies include:

- 'Child abuse and neglect' during childhood was the leading behavioural risk factor contributing to the years of healthy life lost due to suicide and self-inflicted injuries in both males and females in 2003, 2011 and 2015.
- In males, the second and third leading risk factors contributing to the years of healthy life lost due to suicide and self-harm were 'alcohol use' and 'illicit drug use' across all years of the Australian Burden of Disease Study 2015.
- For females, the second greatest contributor to the years of healthy life lost due to suicide and self-harm was 'intimate partner violence' (estimated in females only) which was consistent over time (2003, 2011 and 2015).
- Based on the AIHW study using Multi-Agency Data Integration Project data , the multivariate regression model showed that the strongest associations with deaths by suicide (relative to respective reference groups, and after adjusting for other variables in the model) included: being male (Hazard Ratio (HR) = 3.12; 95% CI 2.93–3.32), being widowed, divorced or separated (HR = 1.95; 95% CI 1.79–2.12), being in a lone person household (HR = 1.72; 95% CI 1.57–1.87), being unemployed (HR = 1.75; 95% CI 1.55–1.99), or not in the labour force (HR = 1.80; 95% CI 1.64–1.99)
- The AIHW analysis of deaths by suicide by socio-economic areas showed that for the period 2010–20, age-standardized suicide rates were highest for those who lived in low socioeconomic areas (i.e., the most disadvantaged) and generally decreased as the level of disadvantage lessened. This trend was also reflected in an analysis of 2019–20 hospitalisations for intentional self-harm and socioeconomic areas with the lowest socioeconomic area presenting the highest rates.

For a comprehensive overview of all results presented, visit the website at: https://www.aihw.gov.au/suicide-self-harm-monitoring.

3.3.3. Risk and protective factors associated with suicide in serving and ex-serving ADF populations

An important starting point for considering risk and protective factors in the serving and ex-serving population, is to acknowledge that many of the general population risk factors described in Sections 3.3.1 and 3.3.2 will also apply to this population. This is because factors may be related to a person's own demographics and broader life experiences regardless of whether they are a Defence member or a civilian. Additionally, Defence members, at points in their life journey will be, or have been, experiencing both civilian and defence life, such as members who are at the beginning of their service, those reservists who have been called to active duty, those transitioning away from service or who are no longer serving at all. For this reason, it is unsurprising that some risk factors for suicide in Defence member populations in Australia and from other similar high-income countries (see Section 3.3.4) will share some similar trends with those seen in the general population, including demographic characteristics (e.g., male, younger to middle aged), certain mental health issues, prior suicide attempts, and some life and relationship stressors (e.g., relationship breakdown).

Conversely, there are also likely to be differences in the suicide risk factor profile, (as well as the broader health risk factor profiles) of serving and ex-serving populations compared to the general population that may, in part, be attributed to exposure to the defence life experience. While those in the defence services are trained for physical and mental fitness and benefit from access to comprehensive healthcare, there are unique workplace stressors and experiences such as exposure to combat, periodic geographical relocations, separation from family, and exposure to life threatening situations that may contribute to mental trauma and moral injury (50). Additionally, other factors experienced through working in defence may be protective against suicide, such as the social support and team connectedness afforded by being part of a specific unit or team.

Within the Australian context, as part of the interim advice report of the interim National Commissioner for Defence and Veteran Suicide Prevention (3), 44 risk and protective factors relevant to ADF member and veteran deaths by suicide were summarised and identified from selected research studies and data. While the majority of the identified risk and protective factors align with those listed in Table 18 (i.e., risk and protective factors for suicidality for the general population), there were some service specific factors identified, the evidence for which was mostly based on a data linkage research study conducted by the AIHW. In 2021, the AIHW published the final report of an independent review of past defence and veteran suicides which included an assessment of risk and protective factors associated with suicide deaths of ex-serving ADF members (2). This report was based on a large data linkage project that the AIHW undertook that examined a cohort of serving, ex-serving and reserve ADF members who died by suicide between 1 January 2001 and 31 December 2018 and had at least 1 day of service since 1 January 2001. The analysis used Defence and DVA administrative population datasets, and combined them with data from other sources, including the NDI and Medicare Consumer Directory. Psychosocial risk factors analysed in the report were identified from coronial case investigation reports in the NCIS, coded by analysts at the ABS. The ABS, as part of a broader pilot project, recorded risk factors for each veteran suicide if they appeared in one or more of the reports in the coronial system: including police, coroner or pathology reports. Psychosocial risk factors primarily arose in police and coronial reports. This study reported on a wide range of demographic and risk and protective factors for those who died by suicide with comparisons made to the ADF sample population and age matched Australian general population. Beyond the age and sex profile, and serving status of ADF members already reported in Section 3.1.2 of this report, some key findings from the report are listed below (2).

Key factors associated with ADF member deaths by suicide 2001–18

Service-related characteristics:

- Officers were less likely to die by suicide than general enlistees.
- The suicide rate for ex-serving males with 10 years of service was lower than for ex-serving males with less than 1 year of service.
- Ex-serving males who separated for medical reasons or other involuntary reasons were more likely to die by suicide than those who separated for voluntary reasons.

Socioeconomic status and selected demographics:

- ADF members (serving, reserve or ex-serving) who died by suicide were less likely to be married or in de-facto relationships than the ADF population (40% compared with 72%) and more likely to be never married (39% compared with 12%).
- 21% of ADF members who died by suicide between 2001 and 2018 were unemployed at time of death.

Psychosocial risk factors:

- The three most common psychosocial risk factors for those who died by suicide were the same for the ADF population and the Australian population yet were identified in a higher proportion of male ADF members:
    - Personal history of self-harm: 1 in 3 (29%) ADF males compared with around 1 in 5 (21%) Australian males,
    - Disruption of family by separation and divorce: over 1 in 4 (27%) ADF males compared with around 1 in 6 (16%) Australian males, and
    - Problems in relationship with spouse or partner: 1 in 5 (21%) ADF males compared with around 1 in 9 (11%) Australian males.

Department of Veterans' Affairs Clients:

- Between 2001 and 2018, there were 42,798 (36%) ex-serving ADF members who were DVA clients; comprising 37,023 (37%) males and 5,775 (32%) females.

- This pattern was similar among those who died by suicide, with one in three (33%) or 154 ADF members who were DVA clients at the time of death: 146 males and 8 females.
- Male ex-serving non-DVA clients were less likely to die by suicide compared with male ex-serving DVA clients.

Use of health services:

- Between 2001 and 2018, 88% of ex-serving males and 96% of ex-serving females who died by suicide used at least one Medicare-subsidised or DVA-funded health service in the year before death. Similarly, 86% of Australian males and 95% of Australian females who died by suicide used a Medicare-subsidised health service in the year before death.
- Among the ex-serving DVA clients who received hospital-based (secondary) care between 2001 and 2018, 25% received care for mental and behavioural disorders.
- Between 2001 and 2018, 20% of ADF members who died by suicide and were DVA clients received admitted patient care.

Use of medicines:

- 60% of ex-serving males who died by suicide were dispensed medications used for mental health conditions in the year before death compared with 54% of Australian males who died by suicide.
- For all ex-serving members, diazepam was the most commonly dispensed mental health medication. Diazepam was the leading medicine dispensed to ADF members who died by suicide. For Australians who died by suicide, paracetamol and codeine combination product was the most commonly dispensed medicine, while diazepam was the most commonly dispensed mental health medication.

3.3.4. Risk and protective factors associated with suicide in defence populations in other countries

In August 2021, the US Department of Veteran Affairs published a systematic review of US studies (published since 2011) and an evidence map to identify risk and protective factors across socioecological levels of risk associated with suicide or suicide attempts in the general US veteran or active military personnel populations (51). Overall, 63 studies were included in the review, but eight studies were identified as high risk of bias leaving 55 studies rated as low or moderate risk of bias. The heterogeneity of studies and overall quality of studies precluded quantitative synthesis. Of the 55 studies included, 50 reported on individual level factors, 22 on relational level factors, three on community level factors, and no studies reported on societal level factors. At the individual level, in addition to demographic factors (e.g., male, younger adults, white race) the most common reported factors included: prior suicide attempts, suicide ideation, post-traumatic stress disorder (consistently shown to be a risk factor for suicide attempt but not always suicide), other mental illnesses (e.g., depression, anxiety), and alcohol or drug use. Financial and life stressors, criminal or legal problems, high health care service use, experiences of physical illnesses or pain, and homelessness were also reported but inconsistently. Aspects of military occupation, combat exposure and deployment status, though variably defined across studies yielded the following associations: i) less time in service and separation from service were associated with both deaths and attempts; ii) no association between job class and risk of death from suicide but those with a higher pay grade experienced a protective effect for risk of death from suicide; iii) combat exposure may increase the risk of suicide or suicide attempt, though the evidence was not conclusive; and iv) never or previously being deployed were found to be risk factors for suicide attempts, but not currently deployed. At the relational level, marital status and relationship problems were most frequently reported. The authors of the review do caveat the results by acknowledging that for many factors, results were informed by few studies. They also noted that it was not always easy to assess the validity of the reported results due to issues with assessment of potential confounding in studies as well as the independent effect of the identified factors on deaths and suicide attempts (51).

As previously mentioned in Section 3.2.5, in the US, the Department of Defense Suicide Event Report System (the official standardised surveillance and reporting system for all deaths by suicide and suicide attempts among US Service members) also tracks an extensive number of suicide-related risk factors and other contextual factors found to be present for every suicide attempt and death. These include:

- personal information (i.e., age, sex, ethnicity, education, marital status);
- military information (i.e., job code, duty status, permanent duty, station);
- event information (i.e., access to firearms, event method, use of drugs and alcohol, self-harm characteristics, event setting and location);
- medical history (i.e., behavioural health and medical history including diagnosis of a mental health disorder, health service utilisation, use of medications,);
- military history (i.e., deployment history, disciplinary action); personal history (developmental and family history); and
- current stressors and contextual factors (i.e., relationships, death in the family, administrative and legal problems, financial issues and debt, workplace difficulties (i.e., including supervisor/co-worker issues, physical, sexual or emotional abuse/assault/harassment or victimization in the last year).

Since 2010, these data have been reported in an annual report as part of the Department of Defense Suicide Event Report. Based on the latest report for 2019 (32), which was released in March 2021, the top line findings reported for the active component and reservists were:

Active Component Data Summary:

- Firearm use was the most common method of injury cited, accounting for 59.9% of all suicides in 2019.
- Drug and/or alcohol overdose was the most common method of attempted suicide cited, accounting for 53.1% of reported suicide attempts in 2019.
- Less than half (43.6%) of those who died by suicide in 2019 had a documented behavioural health diagnosis.
- Regardless of whether or not an individual voluntarily disclosed – or was assessed for – suicidal thoughts, feelings, or behaviours, approximately half (52.4%) of all individuals who died by suicide in 2019 made contact with the Military Health System in the 90 days prior to death.
- The prevalence of various risk factors, protective factors, and other suicide event characteristics among suicide and suicide-attempt records in 2019 were generally consistent with levels observed for previous years.

Reserve Component Data Summary:

- Firearm use was the most common method of injury cited in 2019 suicide records for the Reserve (67.9%) and the National Guard (72.7%).
- Drug and/or alcohol overdose was the most common method of attempted suicide cited in 2019, accounting for 46.6% of reported suicide attempts for the Reserve and 44.8% of attempts for the National Guard.

These reports provide tables on all tracked risk and related factors, summarising the number and proportion of the presence of those factors for all suicides and suicide attempts and also providing a break down by the service group (i.e., Air Force, Army, Marine Corps, Navy). For further information on the Department of Defense Suicide Event Report system and reports, refer to Section 3.4 below.

According to the Ministry of Defence 2020 report into Suicides in the UK Regular Armed Forces (1984–2019) (16), while unemployment, economic hardship and marital breakdown in middle aged men within the UK general population are high-risk factors for suicide, the authors suggest it is problematic to compare these risk factors with UK regular armed forces personnel matched for age and sex as these personnel are in full employment with a regular income; the lower age-specific mortality rates in the UK regular armed forces may therefore be partially explained by the 'healthy worker effect' observed in occupational studies. The 'healthy worker' effect refers to the observation that workers are found to have lower mortality and other adverse health outcome rates compared with the general population because certain groups of people are excluded from employment (i.e., those with illness and disability). This is likely to impact studies of current serving defence populations as they are selected based on higher levels of fitness and health, and lower levels of ill health. The report also makes note that there may be protective factors at play as a result of service life

including “the strong group loyalty, bonding and mutual dependence encouraged at all levels in the services, particularly in small combat units.” (16)

3.4. Summary of identified approaches to monitoring and reporting of suicide and self-harm in Defence populations in Australia and other countries

Based on the previously reported suicide and self-harm data for the ADF and defence populations in other countries, we have also taken note of the types of source data and/or reporting that we were able to locate in the public domain and within the project timeframe to utilise for this report.

In Australia, the data on deaths by suicide and risk factors for suicide in the ADF population was sourced from AIHW web pages and reports. The AIHW in turn sourced population wide suicide surveillance data (i.e., NDI data which includes Coroner confirmed cases for suicide) and other health related surveillance data and conducted linked data studies by working with Defence and DVA administrative datasets. The AIHW appear to be updating these data intermittently though, it was not possible to determine the frequency of future updates. In contrast, data presented on suicidality in the ADF population was sourced from survey data (reported in peer review journal articles and research reports) rather than from surveillance data or linked data studies. These surveys were the ADF Mental Health Prevalence and Wellbeing Study, and the Mental Health and Wellbeing Transition Study conducted in 2010 and 2015 respectively. While these studies provide useful insights into the prevalence of suicidality in ADF populations, they are not a timely source of data. At the time of conducting this project, we could not locate, in the public domain, any timelier source of data on suicidality in either serving or ex-serving populations nor any routine reporting of risk factors more broadly for ADF members and especially, for those experiencing suicidality.

In relation to monitoring systems and reporting of data in other countries, Appendix 2 provides an overview of some notable routine monitoring and/or reporting of suicide and self-harm from selected countries. In the US setting, for data on deaths by suicide, there is annual reporting for both current serving and ex-serving populations. These annual reports are compiled and published by the US Department of Defense for current serving, and the US Department of Veteran Affairs for ex-serving populations, and there appears to be relevant statutory laws in the US setting governing what is published and when (32). For the serving population, the most up to date data on suicide rates was sourced from the US Department of Defense Suicide Event Annual Report Calendar Year 2020 (referred to as the Annual Suicide Report) published in September 2021. These data were sourced from the Department of Defense Suicide Event Report System which is a Defence specific web-based surveillance system that collects, organizes, and secures a standard set of case-level data for every service member who dies by suicide or makes a suicide attempt, regardless of military service, component, or duty. There are a variety of sources of Department of Defense data that are entered into that system, including data from the Armed Forces Medical Examiner System which captures the cases of suicide and self-harm determined by Defence specific medical examiners and civilian examiners. The Department of Defense Suicide Event Report System counts both confirmed and suspected suicide deaths as suicides to reduce the potential for underestimating the extent of suicide mortality in the serving population (31). The system also tracks a variety of suicide-related risk factors and other contextual factors prevalent for each suicide event (i.e., both deaths by suicide and suicide attempts). These data are usually reported on comprehensively in a yearly report. The most recent report is for 2019 and was generated in March 2021 and the 2020 report is still pending (as of the writing of this report in May 2022). Therefore, it appears that from 2020 onwards, the Annual Suicide Report provides timelier data on suicide rates to the public compared with the more comprehensive report but does not include detailed data on risk factors for suicide or information on suicide attempts which altogether is likely to take longer to collate and report on. For the ex-serving reporting, both the Department of Veteran Affairs and the Department of Defense provide administrative data to support identification of the veteran population, and then work closely with the Centers for Disease Control and Prevention to match administrative data from the Departments with national death surveillance data that the Centers for Disease Control and Prevention compile and report on. Furthermore, in both annual reports, suicide prevention activities are reported alongside the suicide data making the link to what is being done to address the issue.

In the UK, while there is regular data collection and annual reporting of deaths by suicide in the UK regular Armed Forces with comparisons made to the UK general population, there is currently no routine reporting of ex-serving personnel; data for this group has only emerged from research studies. However, as previously mentioned, in 2021, the UK Office for Veterans’ Affairs, the Ministry of Defence, and the Office for National

Statistics announced they would be working together on a new method to record suicides of ex-service personnel in England and Wales using a question on veteran status from the 2021 Census matched with suicide data from the Office for National Statistics. In Canada, while regular collection of deaths by suicide in the Canadian Armed Forces is occurring, it seems that reporting is periodic providing trend data for a specific period rather than annual reporting, though annual updates may be forthcoming. The 2020 Report on Suicide Mortality in the Canadian Armed Forces by the Canadian Surgeon General also included data on the prevalence of risk factors present (e.g., mental health factors, work and life stressors, deployment history etc.) for deaths in 2019. Also in the Canadian context, Veterans Affairs Canada, Department of National Defence and Statistics Canada conducted the 2019 Veteran Suicide Mortality Study, an update on the 2017 study that used linked administrative and national death register data for a cohort of Canadian Armed Forces between 1976 and 2014.

When focusing on efforts in other countries to monitor suicidality in serving and ex-serving Defence populations, most of the data that are reported on in previous sections of this report were collected from specific research studies which used surveys to collect either cross-sectional or longitudinal data, with the exception of the US setting where there are Defence wide and service specific surveillance systems in place for routinely capturing suicidality data in serving populations (e.g., the US Department of Defense Suicide Event Report System and the Army Behavioural Health Integrated Data Environment Surveillance System). Additionally, in the US National Veteran Suicide Prevention Annual Report 2021 (19), there is reference to Veteran Affairs monitoring week by week trends in Veteran Health Administration patient encounters and site-reported indicators of suicide-related behaviour (e.g., Veteran Health Administration emergency department visits for suicide attempts and on-campus suicide attempts and deaths) from March 2020. In the US context where there is a significant network of Military hospitals and services, it is likely that service use data is available and is being utilised for monitoring of suicidality beyond what has been noted in this report.

In Denmark, data on suicides in Defence populations is possible due to the presence of the Danish Civil Registration System; a national register containing basic personal information on all who have a civil registration number (i.e., the whole Danish population). This makes it very easy to identify military populations and then link these data to other relevant Danish National Registers, including suicide specific registers to conduct bespoke linked research studies when a problem or need is identified. While Denmark has the necessary systems in place, there did not appear to be routine reporting of suicide or suicidality in the Danish Defence populations, perhaps reflecting that the issue of suicide in the Danish Military is not as prevalent as in countries like the US and Australia.

3.5. Summary of key findings to inform monitoring of suicide and suicidality in the ADF member population

Section 3 has described the risk of suicide and suicidality in the general and Defence populations of Australia and other countries, the risk and protective factors for suicide, and the current state of monitoring and reporting of this information for Defence populations. This information provides guidance about who are at most risk of suicide and suicidality, both while serving and when they are no longer serving, and highlights international differences in the available monitoring and reporting. Key findings from this work will help to focus efforts to where data is most needed to inform suicide prevention policy and service responses alongside the ADF journey.

3.5.1. Suicide and suicidality

Key findings regarding suicide in defence populations include that the suicide rates for serving ADF members were approximately half that of the Australian population while for ex-serving members, they were higher (24% higher for males and 102% higher for females). This highlights a sharp contrast between serving and ex-serving ADF member groups with suicide rates of completed suicide in ex-serving ADF males more than double that of serving ADF males. Suicide rates were higher for ex-serving ADF members who were younger, separated from the Navy or Army (compared with those who separated from the Air force), served less than one year, or separated for involuntary medical reasons. The numbers of suicide for female members were too small to be presented in many breakdowns. The suicide rates for serving members across the US, Canada, UK and NZ were either comparable with, or lower than their age and sex-matched general population counterparts. In these countries, younger serving males, and those serving in the Army tended to have higher suicide rates compared with older ages, females, and those serving in other service groups. The US, Canada and Australia reported

significantly higher suicide rates in ex-serving defence populations compared with the general population while the UK and Denmark did not record a difference between their ex-serving and general populations.

The main data available about ADF suicide deaths has been published in reports by the AIHW and has included population wide suicide surveillance data and linked data studies through work with Defence and DVA administrative datasets. These data include Coroner certified deaths only. In the US setting, the US Departments of Defence and Veteran Affairs publish annual reports of suicide deaths in serving and ex-serving populations, utilising data from Defence specific suicide surveillance systems for the current serving population or matching their administrative data with suicide surveillance data sets from the Centers for Disease Control and Prevention for the ex-serving population. For counts and rates of suicide deaths in serving populations, the US Department of Defense count both confirmed and suspected (or pending) cases, so as to not underestimate the extent of suicide mortality in the serving population, which is a point of difference to what is included in the Australian data. Canada and Denmark have produced suicide reporting periodically rather than annually, while the UK has produced annual reports for serving members only. The US Department of Defense has also recently included annual counts and rates of deaths by suicide in Military (or current serving) family members; this type of monitoring is not seen to be occurring in, or being reported on, in other countries, or in ex-serving Defence populations.

Key findings that will inform future data monitoring work regarding suicidality in defence populations were that a higher proportion of serving ADF members experienced suicidal ideation and reported making a suicide plan compared to the matched general population, however, there was no difference in the rates of attempted suicide. Ex-serving ADF members experienced higher suicidality, including suicide ideation, making a suicide plan and suicide attempt when compared with serving members. Internationally, ex-serving Defence populations had higher rates of suicide ideation and suicide planning in comparison to both serving and the matched general populations. The prevalence of suicide attempts in international defence populations was similar to the matched general populations. The development of a monitoring system that captures suicidality over time in the ADF member population has the potential to provide insight into the protective factors associated with ADF service and the modifiable risk factors associated with heightened risk of suicidality in ex-serving ADF members.

Data about suicidality in Australian Defence populations was sourced from survey data from 2010 and 2015 rather than from surveillance data or linked data studies. The survey data are not timely sources of data and are not as useful for real-time monitoring of suicidality in Defence populations. Data about suicidality of Defence members internationally was mostly sourced from research studies which used surveys to collect either cross-sectional or longitudinal data. Exceptions that were identified included three data systems in the US: the Department of Defense Suicide Event Report System which captures all suicide deaths and attempts among all US military service members (as well as the prevalence of different demographic, situational and risk factors present for each death by suicide and suicide attempt case), the Army Behavioural Health Integrated Data Environment Surveillance System that routinely collects data on suicide ideation and attempts, and Veteran Affairs monitoring of week by week trends in Veteran Health presentations for suicide ideation and attempts. These systems can provide more timely information on the prevalence of suicidality in Defence populations at any given time but also, importantly, this information may alert and inform timely and tailored service and policy responses to support Defence members and ultimately prevent deaths by suicide.

3.5.2. Understanding of risk and protective factors

Risk and protective factors for suicide have been well studied in the general population and, to a lesser extent, in the Defence population. A number of risk factors and categories of risk factors have been identified for the latter. However, evidence for these is variable and is not always robust. There are very few systematic reviews and meta-analyses of individual risk (and protective) factors. To some extent, this reflects the complexity of the phenomenon (suicide). Many events and circumstances can occur over the lifetime of someone whose life has ended in suicide, and these events may have been a factor in their life ending this way. Quite possibly, there may have been even more events and circumstances over the lifetime of a Defence member even given the traumatic stress associated with service life and combat. The literature suggests that suicide risk factors can operate over a long period of time before a suicide event, thereby increasing the possibility for real-time prevention.

It is unlikely that a complete picture of the circumstances and factors leading to suicide will emerge in the near future. Action on prevention of suicide and self-harm should not wait for this. This is not only for ethical reasons,

but also because understanding of suicide and the factors associated is well advanced, despite its limitations. It is more important to develop 'best buys' at this stage of our knowledge than wait for meta-analysis-generated estimations of relative rates, odds ratios, and beta coefficients for several individual factors of suicide and self-harm.

A good place to start identifying best buys is Table 18 and the dot points listed in Section 3.3.2. Factors listed there that are amenable to policy (obviously not age and sex) and where the introduction of programs are likely to have a quick and major effect, are most appropriate.

On this basis, the most obvious candidates for best buys are:

- previous mental health conditions (including substance and alcohol use) and/or a prior history of suicide attempt and self-harm, and
- use of mental health services and most importantly, interruption of use of these services.

Other candidates for best buys are:

- Targeted supports for more intensive and multidimensional treatment for Defence members presenting with mental health conditions and those at risk (according to categories listed in Table 18) aimed at improving access and effectiveness.

Further support for these proposals is that at least one psychosocial risk factor was identified for approximately two-thirds of suicide deaths in Australia. Personal history of self-harm was the most common risk factor for people aged under 65, and relationship breakdowns and problems were other top risk factors for those aged under 55, highlighting the importance of monitoring self-harm in the Australian community to enable appropriate and timely service responses. Similarly, in the ADF population, a personal history of self-harm, disruption of family by separation and divorce, and problems in relationships with spouses or partners were also the top three risk factors associated with suicide, though they were proportionally more prevalent in the ADF population compared to the general population. Furthermore, mental health issues, while also a risk factor for suicide in the general population, appear to be more prevalent in the ex-serving ADF population as reflected through higher rates of health service utilisation and dispensing of pharmaceuticals including Diazepam; a common medication prescribed for a number of anxiety related conditions including post-traumatic stress disorder, and which was the leading pharmaceutical dispensed to ex-serving ADF members.

All three best buys benefit from better identification of ADF members during their treatment phase. These are promoted by the initiatives in data collection in the earlier part of this Section 3.3.2 above.

Nevertheless, it is important that research into suicide and self-harm of Defence members continue along the lines suggested by Franklin and colleagues (13) and Cramer and Kapusta (45). While ADF members are also exposed to unique workplace stressors and experiences (e.g., combat, relocation, separation from family, medical or involuntary separation, familiarity, and access to firearms etc.), aspects of serving Defence life also increases exposure to some protective factors including social support, team connectedness, access to healthcare, and employment. Understanding how these factors protect or mitigate other suicide risk factors that may be present in an ADF serving member, as well as what happens once an ADF member is no longer serving and therefore may not be experiencing this protection, appears to be less understood. Better understanding these risk and protective factors and how they may change over time and in relation to the ADF member journey may enable further identification of optimal points for intervention.

3.5.3. Some additional final observations

Veteran suicide and firearms

Firearms are frequently mentioned as a risk factor for suicide of Defence members compared with non-Defence personnel (52). It is interesting therefore that in AIHW's Final report to the Independent Review of Past Defence and Veteran Suicide (2), that firearms were only used in 7% of ADF member suicides, almost the same proportion (5%) as in non-ADF member suicides.

Healthy worker effect

The Royal Commission has heard testimony about the 'healthy worker' effect and conversely, the difficulty of comparing medically discharged ADF members against the general population. The healthy worker effect is a phenomenon initially observed in studies of occupational diseases where workers usually exhibit lower overall death rates than the general population because the severely ill and chronically disabled are ordinarily excluded from employment (53). It should be noted that the general population consists of both workers and those outside the workforce, so the healthy worker effect is not relevant there.

Against this, there is a healthy soldier effect which is a particular case of the healthy worker effect. Serving military have lower rates of suicide as well as lower rates of overall mortality compared to the general population (54). This is noted above – that suicide rates for serving ADF members were approximately half that of the Australian population while for ex-serving members they were higher (24% higher for males and 102% higher for females). This highlights a sharp contrast between serving and ex-serving ADF member groups with suicide rates of completed suicide in ex-serving ADF males more than double that of serving ADF males.

4. Suicide and self-harm monitoring data landscape in Australia for the general population and ADF member populations

4.1. Overview

Section 4 presents results of an environmental scan of the data landscape in Australia. The purpose of the environmental scan was to identify: suicide and self-harm monitoring and surveillance systems in the general population and ADF member populations; individual datasets that capture information on suicide, self-harm, and suicidal ideation; and datasets that identify ADF member populations that could be used for data linkage to other national suicide and self-harm sources, and/or as a source of information on risk and protective factors for suicide in ADF member populations.

The results of the environmental scan are presented in Tables 19, 20, and 21. The tables include information of the types of data collected for each data source or system as well as an assessment of the accessibility, quality and completeness, timeliness, data limitations and suitability for close to real-time monitoring of suicide and self-harm in ADF member populations. As part of the assessment of accessibility, quality and completeness, timeliness, and suitability for close to real-time monitoring of the data sources, we included a pragmatic ranking (i.e., low, moderate, high) to provide some indication of the extent to which specific data sources demonstrated these attributes. When we could not locate sufficient information for a data source to enable an assessment of an attribute, we have noted this as 'not assessed'. Sections 4.1.1–4.1.3 provide summaries of the key findings related to the assessment of these data sources and systems. Based on the findings, Section 4.2 concludes with a discussion of the main strengths and deficiencies of the existing Australian data landscape for monitoring of suicide and self-harm in the general population and the ADF member populations.

Table 19. National datasets and surveys which identify serving and ex-serving ADF members.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
Department of Defence personnel system data	Department of Defence personnel system data compiles current and historical Defence personnel systems covering ADF members who have served since 1 January 1985. Department of Defence personnel system data has established linkage with the NDI and other national datasets.	Suicide-related outcomes not recorded.	ADF population recorded. Permanent (serving), reserve, and ex-Serving.	Unknown. Included variables were not able to be determined from publicly available information. Data dictionary not publicly available.	Moderate -high. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Public reports available that use Department of Defence personnel system data. Data dictionary not publicly available.	High. The data captures current and historical Defence personnel systems from 1985.	High. Data is available from 1985. Department of Defence personnel system data can provide real-time information on ADF member status.	High. It is necessary for linking ADF personnel to existing suicide and self-harm registries, as well as other national datasets that have been used for the National Suicide and Self-harm Monitoring System.	Only captures personnel data of ADF members who have served since 1 January 1985 and not prior to this date.
DVA client data	The DVA client database is an administrative database that contains demographic and service information on DVA clients	Suicide-related outcomes not recorded.	Subset of ADF population recorded. DVA specific database but it is unclear what specific ADF member populations are recorded. Routinely recorded for all DVA clients since at least 2001.	Unknown. Included variables were not able to be determined from publicly available information. Data dictionary not publicly available.	Low. Established linkage with other national data sets. Data dictionary not publicly available.	Low-Moderate. Not all ex-serving ADF members are DVA clients. Approximately 36% of ex-serving ADF members are DVA clients[1].	Not assessed Cannot be determined from publicly available information.	Not assessed Further information required on the type of member populations included, the timeliness of the data, the types of variables, and the potential for data linkage with other national datasets.	Limited due to the absence of publicly available information on the included variables and modes of collection.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
ABS Census of population and housing	The Census provides a whole of population snapshot of the economic, social, and cultural composition of the country and is conducted every 5 years.	Suicide-related outcomes not recorded. Has established data linkage with the National Suicide and Self-harm Monitoring System.	Self-reported ADF population recorded from 2021. Current serving, ex-serving, current reserves, ex-Reserves. Routinely recorded (every 5 years 1911–2021).	Included. Comprises household composition, economic, social, and cultural variables.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	High. Standardised collection via the ABS. Provides a whole of population snapshot.	Low. Data available from 1911. Data are collected once every 5 years.	Low. Data is not available in real-time. Due to the timeliness of data collection (every 5 years), it is not suitable for real-time monitoring. However, it has high linkage potential with other risk factors and variables of interest to the veteran population.	Self-reported veteran status may result in undercounting.
Melbourne Institute Household, Income and Labour Dynamics in Australia (HILDA) Survey	Dataset hosted by Melbourne Institute that records longitudinal information about economic and personal well-being, labour market dynamics and family life of approximately 17,000 Australians each year since 2001.	Suicide-related outcomes not recorded.	ADF population not routinely recorded. Not recorded as a standalone variable but ADF members may be inferred from ANZSCO Occupation Code, which is routinely recorded. A subset of veteran status can be determined from questions on Veterans Affairs	Included. Records longitudinal information about economic and personal wellbeing, labour market dynamics and family life in a representative living sample of Australians.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets Public reports available.	High. Standardised annual collection with 60.7% of original sample[2]. Current completion rates from original sample is approximately 90%. Includes 23 waves to date[2].	Moderate. Data available from 2001. Data is collected annually and reported annually.	Low. Data is not available in real-time. Not suitable for real-time monitoring for suicide or self-harm. Has not been linked to suicide or self-harm data.	Self-reported occupation status may result in undercounting. Representative of the general Australian population, but not representative of the ADF member population.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
			Treatment Entitlement Card status that is routinely recorded.		Aggregated data available. Data dictionary available.				
AIHW-Specialist Homelessness Services Collection (SHSC)	The SHSC collects information about people who are referred to, or seek assistance from, specialist homelessness services agencies.	Suicide-related outcomes not recorded.	Self-reported ADF population recorded since 2017. Current ADF members, former ADF members. Routinely recorded. Part-time current or former Reservists not recorded.	Included. -Records reasons for seeking homelessness services, disability status, prior mental health diagnosis, duration of previous services, living arrangements, income, labour force status etc.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	High. Standardised collection via the AIHW. Comprises data from all government funded non-for-profit organisations providing homelessness services.	High. Data available from 2011. Data is collected monthly and reported quarterly by AIHW.	Low. Data is not available in real-time. Not suitable for real-time monitoring for suicide or self-harm. Contains important risk factor variables that could be linked to suicide data for ADF member populations.	May under-report homelessness because it relies on data from help seeking individuals. Part-time current or former Reservists not recorded.
ABS National Health Survey (NHS) 2017-18	The 2017-18 NHS is an Australia-wide survey that collects information on the prevalence of long-term health conditions; health risk factors such as smoking, overweight and obesity, alcohol	Suicide-related outcomes not recorded. Information on suicide-related behaviours is potentially identifiable as free text under the prompt 'any other mental	Self-reported ADF population recorded. Current ADF member, former ADF member. Routinely recorded.	Included. Records a wide range of health and mental health variables including demographic, income, and household information, as well as health,	High. Used for research and reporting statistics. Unit record data available for research by permission.	High. Standardised collection via the ABS. The survey includes approximately 21,000 people in over 16,000	Low. Data is available from 2017. Data is collected approximately every 5 years.	Low. Data is not available in real-time. Not suitable for real-time monitoring for suicide or self-harm. Contains important risk factor variables	Self-reported and may undercount ADF member status and other related risk factor variables. Representative of the general Australian population, but not representative

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
	consumption and physical activity; and demographic and socioeconomic characteristics.	health or behavioural condition'.	Current and former ADF members include reservists.	disability, mental health, and medication usage.	Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	private dwellings. Previous surveys were conducted in 1989-90, 1995, 2001, 2004-05, 2007-08, 2011-12, and 2014-15.		that could be linked to suicide data for ADF member populations.	of the ADF. member population.
ABS National Study of Mental Health and Wellbeing (NSMHW) 2021	The 2021 NSMHW was designed to provide lifetime prevalence estimates for mental disorders in Australians aged 16–85 years. It takes the form of a survey and is a component of the DOH wider Intergenerational Health and Mental Health Study. Previous national mental health and wellbeing surveys are available from 1997 and 2007.	Not able to be determined from publicly available information. Detailed methods outlining the specific indicators are pending release in June 2022[3].	Self-reported ADF population recorded. Ever served in the ADF (full-time, Reservists, and National Service). No Prior Service. ADF service indicator will be available from 2020 survey pending public release in June 2022.	Included. Records mental health disorders in an Australian representative population.	High. Used for research and reporting statistics. Micro data available for research. Reports are publicly available. Aggregated data available. Data dictionary will be available.	Moderate-high. Standardised collection by the ABS. Nationally representative sample. Data from 2021 had 5,554 fully responding households, a response rate of 57.1%.	Low. Data is available for 1997, 2007, and 2021. 2021 data is not currently available but is being released in 2022.	Low. Data is not available in real-time. Not suitable for real-time monitoring for suicide or self-harm. Contains important risk factor variables that could be linked to suicide data for ADF member populations.	Self-reported and may undercount ADF member status and other related risk factor variables. Representative of the general Australian population, but not representative of the ADF member population.
ABS Personal Safety Survey (PSS)	The PSS records statistics for family, domestic, sexual violence, physical assault,	Not able to be determined from publicly	Self-reported ADF population recorded	Included. A range of safety variables are recorded	High. Used for research and reporting statistics.	Moderate. Standardised collection by the ABS.	Low. Data is available for 2016 and 2020.	Low. Data is not available in real-time. Not suitable	Self-reported and may undercount ADF member status and other

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
	partner emotional abuse, child abuse, sexual harassment, stalking and safety in Australians aged 18 years and above. Previous survey data available from 2016.	available information. Detailed methods outlining the specific indicators are pending release in 2023[3].	Ever served in the ADF (full-time, Reservists, and National Service). No Prior Service. ADF service indicator will be available from 2020 pending release in 2023.	including family, domestic, sexual violence, physical assault, partner emotional abuse, child abuse, sexual harassment, stalking and safety.	Micro data available for research Reports are publicly available. Aggregated data available. Data dictionary will be available.	Nationally representative sample.	Data from 2020 not currently available. Expected release is 2023.	for real-time monitoring for suicide or self-harm. Contains important risk factor variables that could be linked to suicide data for ADF member populations.	related risk factor variables. Representative of the general Australian population, but not representative of the ADF member population.
ABS Survey of Income and Housing (SIH)	The 2019–20 SIH collects information on sources of income, amounts, household net worth, housing, household characteristics and personal characteristics. Previous survey data available every 2-years from 1994 onwards.	Suicide-related outcomes not recorded.	Self-reported ADF population recorded Ever served in the ADF (full-time, Reservists, and National Service). No Prior Service. ADF service indicator will be available from 2020 survey pending release in June 2022.	Included.	Not Assessed (pending release of 2019-20 data).	Not Assessed (pending release of 2019-20 data).	Not Assessed (pending release of 2019-20 data).	Not Assessed (pending release of 2019-20 data).	Not Assessed (pending release of 2019-20 data).
ABS Time Use Survey (TUS)	The TUS measures the daily activity patterns, time use profiles, patterns of paid and unpaid work across the community, considering family, work, and life	Suicide-related outcomes not recorded.	Self-reported ADF population recorded Ever served in the ADF (full-time, Reservists, and National Service)	Included. A range of variables including activity patterns, pain and unpaid work, family obligations,	Not Assessed (pending release of 2020-21 data).	Not Assessed (pending release of 2020-21 data).	Not Assessed (pending release of 2020-21 data).	Not Assessed (pending release of 2020-21 data).	Not Assessed (pending release of 2020-21 data).

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
	balance in Australians aged 15 years and above. Previous survey data available from 2006 and 2008.		No Prior Service. ADF service indicator will be available from 2020 survey pending release in June 2022.	income and household structure.					
Australian Public Service Commission (APSC) Employee Census	The APSC Census measures Australian Public Sector Employees opinions on workplace issues such as leadership, learning and development, and job satisfaction. Previous survey data available from 2012.	Suicide-related outcomes not recorded.	Self-reported ADF population recorded. Ever served in the ADF (full-time, Reservists, and National Service) No Prior Service.	Included. A range of variables including workplace issues, leadership, learning, development, and job satisfaction.	Moderate. Used for research and reporting statistics. Reports are publicly available from each agency separately for 2020. Aggregated data available. Data dictionary available.	Moderate. Standardised collection by APSC. Completion rates for the most recent 2020 survey is not currently available.	Moderate. Data available from 2001. Data is collected annually and reported annually.	Low. Data is not available in real-time. Not suitable for real-time monitoring for suicide or self-harm. Has not been linked to suicide or self-harm data.	Self-reported occupation status may result in undercounting. Representative of the general Australian population, but not representative of the ADF member population.

Sources: [1]Australian Institute of Health and Welfare 2021. Final report to the Independent Review of Past Defence and Veteran Suicides. Cat. no. PHE 295. Canberra: AIHW. [2]Melbourne Institute of Applied Economic and Social Research. The Household, Income and Labour Dynamics in Australia Survey. [3]Australian Bureaus of Statistics. 2021. First insights from the National Study of Mental Health and Wellbeing, 2020-21. Available at: https://www.abs.gov.au/articles/first-insights-national-study-mental-health-and-wellbeing-2020-21#future-releases Canberra: ABS.

List of abbreviations: ADF: Australian Defence Force; NDI: National Death Index; DVA: Department of Veterans Affairs; ABS: Australian Bureau of Statistics; HILDA: Household, Income and Labour Dynamics in Australia Survey; ANZSCO: Australian and New Zealand Standard Classification of Occupations; AIHW: Australian Institute of Health and Welfare; SHSC: Specialist Homelessness Services Collection; NHS: National Health Survey; NSMHW: National Study of Mental Health and Wellbeing; DOH: Department of Health; PSS: Personal Safety Survey; SIH: Survey of Income and Housing; TUS: Time Use Survey; APSC: Australian Public Service Commission.

Table 20. National registers, datasets, and surveillance and other systems which include data on suicide, self-harm and relevant risk factors.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
National Suicide and Self-harm Monitoring System (NSSHMS), hosted by AIHW	The NSSHMS was established to identify suicide and self-harm episodes in Australia, identify the nature and risk factors associated with suicide in the general population, Aboriginal and Torres Strait Islander populations, and the ADF population. Data sources: AIHW National Mortality Database; Cause of Death Unit Record Files from state and territory RBDM, coded by ABS and stored by AIHW; NHMD; NASS; MADIP;ADF Suicide Data Sources; Australian Burden of Disease Study; DSD.	Suicide-related outcomes recorded. Suspected suicide. Coroner certified suicide. Intentional self-harm hospitalisations. Ambulance attendance for self-injury (without suicidal intent). Ambulance attendance for suicidal ideation. Ambulance attendance for suicide attempt.	ADF population recorded Permanent (serving), Reserve (current), ex-serving members. ADF member population identified through data linkage between ABS cause of death and Department of Defence personnel system data. ADF member populations reported separately from the general population statistics in the system.	Included. Comprises demographic details, self-harm hospitalisations, self-harm, and suicidal ideation from ambulance presentations. Variables are reported separately by age, sex, and for young people, Indigenous Australians and ADF populations.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	High. Standardised collection coordinated by AIHW. Ambulance data available for all state and territories for the general population except South Australia.	Moderate. Data is available from 2019. Most data are updated annually. The system is contingent on coroner certified suicides and established coding systems for cause of death via the ABS. Ambulance data is contingent on NASS timelines.	Low. Most data are updated annually and are therefore not suitable for real time monitoring. However, some data sources (e.g., NASS) are presented more frequently but are currently only available for the reporting of statistic in the general population.	Dependencies from the included linked datasets have been outlined in Tables 19, 20, and 21, and apply to the NSSHMS. Information on self-harm, suicidal ideation, and other risk factors from linked data sources (e.g., burden of disease study) is not currently reported for ADF member populations in the NSSHMS.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
National Coronial Information System (NCIS)	The NCIS is a national repository and data retrieval system containing data on external causes of deaths reported to a coroner in Australia and New Zealand. Data covers 2000-present. Data sources: Police sudden death reports; autopsy reports; toxicology reports; medical records; coronial findings including witnessed affidavits; ABS/ACR Indigenous Status and Place of Birth codes; ABS Cause of Death ICD-10 codes; Safe Work Australia occupation, industry, and injury type 3.0.	Suicide related outcomes recorded. Suspected suicide and coroner certified suicide. Routinely recorded from state and territory jurisdictions.	ADF population not routinely recorded. Not routinely recorded as a standalone variable. ADF members can be determined from ANZSCO Occupation Code, which is routinely recorded. Ex-serving ADF population is not routinely recorded but may be recorded in the free text of the police or coroner reports, if recorded during the police or coroner investigation.	Available. Core NCIS code set includes main demographic details: age, sex, date of birth, ethnicity, circumstances of death, employment status, and ABS geocoded data that is routinely recorded. Psychosocial, mental health, substance use, family circumstances etc are not routinely recorded in the core coreset but may be available for cases in the free text of attached reports.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available. Access fee $2500; custom reports $450.	High. Standardised collection. All coroner certified suicides are recorded in the general population. Case completeness is reported for each year since 2000 and ranges between 99.9% complete and 88.8% complete for 2021.	High. Data is available from 2000. Suspected suicides are recorded within 24–48 hours of sudden death notification to the coroner. Case details are prospectively updated during and at the conclusion of the coronial investigation. Confirmed suicides are contingent on Coroner findings which have delays of up to 2 years.	Moderate-high. The system has real-time monitoring capabilities for suspected suicides. However, information on ADF member populations is not likely to be identified for suspected suicides as this variable is not routinely recorded and may only become apparent upon completion of the police and coroner investigation.	Institutional practices and legislative differences within jurisdictions may result in under-reporting of suicide and the under reporting of ADF-member populations. However, there is high linkage potential with the Department of Defence personnel system data via the personal identifying information recorded in the NCIS (e.g., name, date of birth, address).
National Ambulance Surveillance System (NASS)	The NASS is a novel monitoring system that provides data on ambulance attendances for suicide attempts, suicidal ideation, self-injury, and mental health.	Suicide-related outcomes recorded. Suspected suicide. Intentional self-harm.	ADF population recorded. Current ADF Service History. Past ADF Service History	Available. 30 variables including main demographic details, employment, psychosocial, mental health,	High. Used for research and reporting statistics. Unit record data available for	High. Standardised collection from state and territory-based	Moderate. Data available from 2019. Published in the NSSHMS.	Low-moderate. The system allows for real-time surveillance on a monthly basis.	Limited by the quality and quantity of the paramedic attendance notes and may miss key variables.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
	It is hosted by Turning Point, Monash University. Data sources: Paramedic Electronic Patient Care Records provided by Australian state and territory ambulance services.	Non-intentional self-harm. Suicidal ideation. Suicide-related outcomes are coded from ambulance records of ICD-10 codes and free text of ambulance reports.	ADF member status routinely recorded (according to data-dictionary)[1] but depends on the availability of this information in free text or other data fields in ambulance reports provided by each state and territory.	healthcare service contact, prior suicidal behaviour.	research by permission. Established linkage with other national datasets. Reports are publicly available. Data dictionary available in publication[2].	ambulance data. Information on self-harm is subject to state-based ambulance data collection practices. Excludes South Australia ambulance data.	Provides 1-month per quarter snapshots from VIC, TAS, ACT, for 2019, and from the second quarter of 2019 for NSW.	It does not currently report self-harm for ADF members however these data are collected.	Suicidal thoughts and behaviours not requiring ambulance attendance underreported.
Defence Suicide Database (DSD)	The DSD is maintained by Defence. It contains information on confirmed deaths due to suicide of personnel serving full time since 1 January 2000. Data sources: ADF investigative service; NDI; Department of Defence personnel system data.	Suicide related outcomes recorded. Coroner certified suicide. Data is routinely recorded from ADF investigative service and verified by NDI data.	ADF population recorded. Permanent (serving), and partial reserve population (current). Routinely recorded due to it being a defence specific database.	Not assessed Limited information on the included variables from publicly available information.	Not assessed. Access permission not indicated from publicly available information. Data dictionary not publicly available.	Not assessed.	Not assessed. Suspected suicides registered by ADF investigative service and later verified by NDI. But timeliness of reporting is unknown.	Not assessed.	Not assessed.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
National Hospital Morbidity Database (NHMD)	The NHMD is a compilation of episode records of admitted patient morbidity data collection systems in Australian hospitals. It is a comprehensive data set from all public and private hospitals, private acute, and psychiatric hospitals in Australia.	Suicide-related outcomes recorded. Suspected suicide. Intentional self-harm. Data are routinely recorded and for the National Minimal Data Set (NMDS) for Admitted Patient Care for all Australian states and territories.	ADF population not routinely recorded. Not routinely recorded as a standalone variable. Data are excluded from hospitals operated by the ADF. Individual state datasets include DVA Insurance Cover Code and hospitals operated by the ADF are included in the state datasets that inform the NHMD, but these variables are not themselves recorded by the NHMD.	Available. Administrative, demographic, clinical, length of stay, diagnosis, hospital procedures, external causes of injury and poisoning codes.	Moderate. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	Moderate. Standardised collection. Information on self-harm is subject to jurisdictional variations in coding and collection.	Moderate. Data available from 1993. Updated annually from National Minimum Data Set records from each Australian state and territory.	Low. Data is updated annually and is therefore not suitable for real time monitoring. ADF outcomes not reported in the NMDS.	Standardised, but relies on primary diagnosis codes assigned to self-harm. May undercount comorbid presentations, unknown intent, and jurisdiction variations in coding conventions. Does not include less medically severe cases that don't require admission.
National Mortality Database (NMD)	The NMD holds records for deaths in Australia from 1964. It is hosted by AIHW. Data sources: RBDM (state and territory); NCIS.	Suicide-related outcomes recorded. Coroner certified suicide. Data is routinely recorded by the	ADF not recorded. Has established data linkage with the Department of Defence	Not included. No linkage potential.	High. Used for research and reporting statistics. Unit record data available for	High. Standardised collection via ABS. All deaths from the general	Moderate. Data available from 1964. Updated annually from RBDM data from each Australian	Low. No linkage potential. Must use NDI data for linkage with other national	Standardised across state jurisdictions and nationally. Some inconsistencies exist due to underreporting

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
		ABS from ICD-10 codes extracted from RBDMs certificates and the NCIS coroner findings.	personnel system data .		research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	population are recorded.	state and territory. Contingent on coroner with delays of up to 2 years.	and state-based datasets.	of suicide in coroner statistics.
National Death Index (NDI)	The National Death Index is a catalogue of death records that is used in data linkage for epidemiological studies. NDI records are supplemented with cause of death information using a once-off data linkage with the NMD. This enhancement enables research on the fact of death (whether a person died) and cause of death (what the person died from).	Suicide-related outcomes recorded. Coroner certified suicide. Data is routinely recorded by the ABS from ICD-10 codes extracted from RBDMs certificates and the NCIS coroner findings.	ADF not recorded. Has established data linkage with the Department of Defence personnel system data.	Not included. High linkage potential with other datasets containing relevant variables.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available. Aggregated data available. Data dictionary available.	High. Standardised collection via ABS. All deaths from the general population are recorded.	Moderate. Data available from 1980. Updated annually from RBDM data from each Australian state and territory. Contingent on coroner with delays of up to 2 years.	Low. Due to contingency on coroner certification, it is not likely to be suitable for real-time surveillance.	Standardised across state jurisdictions and nationally. Some inconsistencies exist due to underreporting of suicide in coroner statistics.

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
Multi-Agency Data Integration Project (MADIP)	MADIP is a secure data asset combining information on health, education, government payments, income and taxation, employment, and population demographics (including the Census) over time. Data sources: ABS Causes of Death; ACLD; Census; NHS; SDAC; PIT-IRT; PIT-PS; ATO; AAIP; AEDC; HEIMS; AIR; DEX; DOMINO; TRAVELLERS; VISA; DERIVED; TVA; NDIS; MBS; PBS; MCD; PROVDIR.	Suicide-related outcomes recorded. Coroner certified suicide. Data is routinely recorded from the ABS Causes of Death dataset in the form of ICD-10 codes.	ADF population not recorded. Has data linkage potential with The Department of Defence personnel system data due to the range of national datasets with pre-existing linkage potential (ABS Causes of Death and ATO datasets).	Included. Census data, NHS data, Disability data, ATO, Higher Education, Immigration, Medicare benefits, Pharmaceutical benefits.	Moderate-high. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Data dictionary available.	High. Standardised collection via ABS. All deaths from the general population are recorded.	Moderate. Data available from 2017. Updated yearly. Contingent on NDI and NMD data availability. Individual datasets included in MADIP differ in their coverage.	Low. Due to contingency on coroner certification, it is not likely to be suitable for real-time surveillance.	Standardised across state jurisdictions and nationally. Some inconsistencies exist due to underreporting of suicide in coroner statistics. Limitations of other linked data sources to be considered.
Pharmaceutical and Repatriation Pharmaceutical Benefits Schemes (PBS/RPBS) data collection	The PBS/RPBS records all medications that are dispensed to Australian residents, including veterans. The PBS is available to all Australian residents and overseas visitors covered by a reciprocal health-care agreement. The RPBS and its subsidies are available to DVA Gold or White card holders.	Suicide related outcomes not recorded. Available from data linkage with other national datasets.	ADF population recorded. ADF specific prescriptions available via the RPBS. Has been linked previously to veterans through The Department of Defence personnel system data and the DVA Client Database[1].	Included. Comprises information on medication that is dispensed and can include proxy variables for mental-ill health via prescriptions of psychotropic medications.	Moderate-high. Used for administrative and research/reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Data dictionary available.	High. Standardised collection via ABS. All deaths from the general population are recorded.	High. Data available from 1984. Updated quarterly.	Moderate. Data is available on a quarterly basis and can be linked to existing data on suicide, self-harm, and veteran status but is not currently integrated into real-time monitoring systems.	PBS/RPBS do not cover medicines supplied to public hospital in-patients, over-the-counter medicines, or private dispensing. The data do not contain information on clinical diagnoses. The PBS/RPBS does not capture data on

Name	Description & data sources	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
									prescriptions that are not filled by the patient or those who do not use the PBS/RPBS.

Sources: [1]Lubman, D. I., Heilbronn, C., Ogeil, R. P., Killian, J. J., Matthews, S., Smith, K., Bosley, E., Carney, R., McLaughlin, K., Wilson, A., Eastham, M., Shipp, C., Witt, K., Lloyd, B., & Scott, D. (2020). National Ambulance Surveillance System: A novel method using coded Australian ambulance clinical records to monitor self-harm and mental health-related morbidity. PloS one, 15(7), e0236344.

List of abbreviations: NSSHMS: National Suicide and Self-harm Monitoring System; AIHW: Australian Institute of Health and Welfare; ADF: Australian Defence Force; NASS: National Ambulance Surveillance System; ABS: Australian Bureau of Statistics; The Department of Defence personnel system data : ADF Personnel Management System; NCIS: National Coronial Information System; ACR: Australian Coordinating Registry (primary registry receiving and coding all state and territory BDM data; ANZSCO: Australian and New Zealand Standard Classification of Occupations; ICD-10: International Classifications of Disease version 10; NASS: National Ambulance Surveillance System; DSD: Defence Suicide Database; Defence: Department of Defence; NDI: National Death Index; NHMD: National Hospital Morbidity Database; NMDS: National Minimal Data Set; DVA: Department of Veteran's Affairs; NMD: National Mortality Database; RBDM: Register of Birth Deaths and Marriages; MADIP: Multi-Agency Data Integration Project; ACLD: Australian Census Longitudinal Dataset; Census: Census of Housing and Population; NHS: National Health Survey; SDAC: Survey of Disability, Ageing and Carers; PIT-ITR: Personal Income Tax Return; PIT-PS: Personal Income Tax Payment Summary; ATO-CR: Australian Taxation Office Client Register; AAIP: Australian Apprenticeships Incentives Programme; AEDC: Australian Early Development Census; HEIMS: Higher Education Information Management System (Previously HIED); AIR: Australian Immunisation Register; DEX: Department of Social Services Data Exchange; DOMINO: Data Over Multiple Individual Occurrences ; TRAVELLERS: Net Overseas Migration Travellers; VISA: Visa data from the Travel and Migration Processing System (TRIPS) and Settlements Database (SDB); DERIVED: Person information derived from MADIP spine; TVA: Total VET Activity; NDIS: National Disability Insurance Scheme (NDIS); MBS: Medicare Benefits Schedule; PBS: Pharmaceutical Benefits Scheme; MCD: Medicare Consumer Directory (previously MEDB); PROVDIR: Medicare Provider Directory; RPBS: Repatriation Pharmaceutical Benefits Scheme.

Table 21. State-based registers including state monitoring and surveillance systems.

Name	Description & data source	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
Tasmanian Suicide Register (TSR)	The TSR is a state-based database of suicides maintained by the Magistrates Court of Tasmania Coronial Division. Data sources: Police sudden death reports; autopsy reports; toxicology reports; medical records; coronial findings including witnessed affidavits.	Suicide-related outcomes recorded. Suspected suicide. Coroner certified suicide. Routinely Recorded by research officers located within the Tasmanian Coroner's office.	ADF population recorded. Current military service. Past military service. Routinely Recorded (based on variable in the data dictionary) however the availability of information is contingent on the police and coroner investigation.	Included. Comprises 100 variables including main demographic details, employment, psychosocial, mental health, healthcare service contact, prior suicidal behaviour.	Moderate-high. Used for research and reporting statistics. Unit record data available for research by permission. Reports are publicly available. Data dictionary available.	High. Standardised collection. All deaths from the general population are recorded.	Low-moderate. Data on suspected suicides are reported within 48 hours. Coroner certified suicide contingent on Coroner findings which have delays of up to 2 years.	Low-moderate. Unclear from the available information. Due to contingency on coroner certification, it is not likely to be suitable for real-time surveillance.	Information on the risk factors, including ADF member status, is subject to the quality and quantity of the police and coroner investigations.
Victorian Suicide Register (VSR)	The VSR is a surveillance system of all suspected and coroner certified suicides in Victoria. Data sources: Police sudden death reports; autopsy reports; toxicology reports; medical records; coronial findings including witnessed affidavits.	Suicide-related outcomes recorded. Suspected suicide. Coroner certified suicide.	ADF population recorded. Current ADF service and ex-serving ADF. Routinely recorded (based on variable in the data dictionary) however the availability of information is contingent on the police and coroner investigation and may not be recorded at the time of initial	Included. Comprises 150 variables including main demographic details, employment, psychosocial, mental health, healthcare service contact, prior suicidal behaviour.	Moderate. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets.	High. Standardised collection. All deaths from the general population are recorded.	High. Data on suspected suicides are reported within 48 hours. Coroner certified suicide contingent on Coroner findings which have delays of up to 2 years.	High. Has real-time capability through police reports of suspected suicides. However, collection of relevant ADF variables is contingent on coronial investigation and is unlikely to be included in the minimum data collection for suspected suicides	Information on the risk factors, including ADF member status, is subject the quality and quantity of the police and coroner investigations.

Name	Description & data source	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
			reporting for a suspected suicide.		Reports are publicly available.			reported by police death notifications.	
Queensland Suicide Register (QSR)	The QSR is a surveillance system of all suicides occurring in Queensland and contains detailed information on those who die by suicide and the circumstances surrounding their deaths. Data sources: Police sudden death reports; autopsy reports; toxicology reports; medical records; coronial findings including witnessed affidavits.	Suicide-related outcomes recorded. Suspected suicide. Coroner certified suicide.	ADF population recorded. Current ADF service and ex-serving ADF. Routinely recorded however the availability of information is contingent on the police and coroner investigation.	Included. Comprises 150 variables including main demographic details, employment, psychosocial, mental health, healthcare service contact, prior suicidal behaviour.	Moderate. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Reports are publicly available.	High. Standardised collection. All deaths from the general population are recorded.	High. Data on suspected suicides are reported within 48 hours. Coroner certified suicide contingent on Coroner findings which have delays of up to 2 years.	Low. Separate system is available for real-time monitoring (iQSR). However, collection of relevant ADF variables is contingent on coronial investigation and is unlikely to be included in the minimum data collection for suspected suicides reported by police death notifications.	Information on the risk factors, including ADF member status, is subject the quality and quantity of the police and coroner investigations.
interim Queensland Suicide Register (iQSR)	The iQSR is a real-time surveillance system of all suicides occurring in Queensland. Data sources: Police sudden death reports.	Suicide-related outcomes recorded. Suspected suicide. Police sudden death reports	ADF population recorded. Current ADF service and ex-serving ADF. Routinely Recorded however the availability of information is contingent on the police and coroner investigation and	Unknown. Variables included in the iQSR could not be identified from publicly available sources.	Low-moderate. Information on access not available from public sources.	High. Standardised collection. All deaths from the general population are recorded.	High. Police reports of suspected suicides are available within the first 48 hours.	Moderate-high. The system allows for real-time surveillance. However, the collection of ADF variable is unknown.	There may be underreporting of suspected suicides by police. The availability of risk factors, including ADF member status, is subject to the quality and quantity of the

Name	Description & data source	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
			may not be recorded at the time of initial reporting for a suspected suicide.						police investigation.
NSW Suicide Monitoring System (SMS)	The NSW SMS is a real-time surveillance system of all suspected suicides occurring in NSW hosted by the NSW Ministry of Health.	Suicide-related outcomes recorded. Suspected suicide. Coroner certified suicide. Police sudden death notifications of suspected suicide are routinely Recorded from the JusticeLink court case information system managed by NSW Department of Communities and Justice.	Not routinely recorded. Not routinely Recorded as a standalone variable. Could be potentially determined from police records. However, the variables recorded by JusticeLink are not publicly available.	Included. The SMS only reports demographic characteristics (age, gender, residential location, and year of death). Variables included in JusticeLink could not be identified from publicly available sources.	Low-moderate. Information on access not available from public sources.	High. Standardised collection. All deaths from the general population are recorded.	High. Police reports of suspected suicides are available within the first 48 hours.	Moderate-high. The system allows for real-time surveillance. However, the collection of ADF variable is unknown.	Limited public information available. Only appears to collect demographic information. There may be underreporting of suspected suicides by police. The availability of risk factors, including ADF member status, is subject to the quality and quantity of the police investigation.
WA Coronial Suicide Information System (WACSIS)	The WACSIS is a state-based database of suicides maintained by the WA Mental Health Commission. The WACSIS is not currently active.	Suicide-related outcomes recorded. Suspected suicide. Coroner certified suicide.	ADF population recorded. Current ADF service and ex-serving ADF. Records Army, Navy, Airforce, Special forces.	Included. Comprises 150 variables including main demographic details, employment, psychosocial, mental health, healthcare	The WACSIS is not currently active.	Not assessed.	Not assessed.	Not assessed.	Not assessed.

Name	Description & data source	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
			Routinely recorded however the availability of information is contingent on the police and coroner investigation and may not be recorded at the time of initial reporting for a suspected suicide.	service contact, prior suicidal behaviour.					
Cause of Death Unit Record File (COD URF)	All causes of death from each State and Territory RBDMs and from Chief Coroners through the NCIS.	Suicide-related outcomes recorded. Coroner certified suicide. ICD-10 coded. Coroner certified cause of death data are used to assign ICD-10 code to the RBDM registered death.	ADF population not recorded. Has been linked through the Department of Defence personnel system dataset in the Veterans Suicide Registry[1].	Not included.	High. Used for research and reporting statistics. Unit record data available for research by permission. Established linkage with other national datasets. Data dictionary available.	High. Standardised collection. All deaths from the general population are recorded.	Moderate. Updated annually. Contingent on coroner with delays of up to 2 years	Low. Due to contingency on coroner certification.	Standardised across state jurisdictions and nationally. With some known inconsistencies underreporting of suicide in coroner statistics.
Admitted Patient Data Collection	Records all episodes of care for admitted patients in all public and private acute and psychiatric hospitals, and alcohol and drug treatment centres in Australia.	Suicide-related outcomes recorded. Coroner certified suicide. Intentional self-harm.	ADF not routinely recorded. Not routinely recorded as a standalone variable. Could be potentially determined from	Included. Demographic information and comorbid medical conditions.	High. Recorded for administrated purposes. Unit record data available for	High. Standardised collection by the ABS. All hospital admissions are recorded.	Moderate. Data is available from 1993. Updated annually from NMDS records	Low. Available annually, requires new linkage to be established with ADF data.	Standardised, but relies on primary diagnosis codes assigned to self-harm. May undercount comorbid presentations, unknown intent,

Name	Description & data source	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
		ICD-10 coded. Included under NMDS for 'Primary diagnosis' and 'Additional diagnosis.'	DVA Insurance Cover Code and hospitals operated by the ADF,		research by permission. Established linkage with other national datasets. Data dictionary available. Separate state-based access[1].		from each Australian state and territory.	Possible linkage options through ADF hospitals, DVA insurance codes, and The Department of Defence personnel system data.	and jurisdiction variations in coding conventions. Does not include less medically severe cases that don't require admission.
Emergency Department (ED) Data Collection	Separate state and territory base administrative data collection that records all presentations to ED.	Suicide-related outcomes not routinely recorded. Suspected suicide. Intentional self-harm. Suicidal ideation. Information on suicide-related outcomes are not routinely recorded but can be potentially extracted from ICD-10 codes for primary diagnosis or from the free text notes of medical and clerical personnel.	ADF population not routinely recorded. Not routinely recorded as a standalone variable. Could be potentially determined from DVA Insurance Cover Code.	Included. Demographic information, comorbid medical conditions.	Moderate. Recorded for Administrative Purposes. Separate state-based access required for research purposes[1]. Data dictionary available.	Low. Jurisdiction variations in recording systems and completeness. Public hospitals only (coverage depends on state jurisdictions).	Moderate. Data availability depends on state jurisdictions. Most state-based ED data are updated and available on a quarter-year basis.	Low. Self-harm and suicidal ideation data are not standardised. Significant jurisdiction variations in reporting and record keeping systems. Possible linkage with DVA through The Department of Defence personnel system data or insurance codes.	Only covers public hospitals. Limited due to coding variations, differences between hospitals and jurisdictions on record keeping systems, non-standardised collection of SH, Ideation and DVA data. High potential for under-reporting based on diagnosis. May contain ICD-10 codes but primary diagnosis not reliable and requires codes by

Name	Description & data source	Suicide-related outcomes	ADF member population	Other relevant variables	Accessibility	Quality and Completeness	Timeliness	Suitability for real-time monitoring	Data limitations
									keyword searching.
Ambulance Data Collection	Paramedic Electronic Patient Care Records provided from Australian state and territory ambulance services.	Suicide-related outcomes not routinely recorded. Suspected suicide. Intentional self-harm. Non-intentional self-harm. Suicidal ideation. Information on suicide-related outcomes are not routinely recorded by can be potentially extracted from ICD-10 codes (up to 10) for each attendance and the free text case notes of ambulance staff.	ADF population not routinely recorded. Not routinely recorded as a standalone variable. Could be potentially determined from occupation codes and text description of responding ambulance personnel.	Included. Information on health and mental health history and psychosocial information may be available in the free text response of responding ambulance personnel.	Moderate. Recorded for administrative purposes. Available in NASS. Separate state-based access required for research purposes[1]. Data dictionary available.	Moderate. Standardised collection Excludes data from South Australia. 90% coverage via NASS.	Moderate. Data availability depends on state jurisdictions. Most state-based data are available monthly. National monitory available monthly for some states (VIC, NSW, QLT, TAS)	Moderate. Surveillance through NASS is possible on a monthly basis for some states and quarterly basis for other states. Possible linkage with Defence data through The Department of Defence personnel system. Would require linkage with ED and Admissions data for more complete picture of medically presenting self-harm and suicidal ideation.	Data is recorded for administrative purposes and requires pre-processing for self-harm-related variables that may miss related variables. Prone to undercounting for less medically serious self-harm or cases where ambulance do not attend. Does not include SA in National monitoring system.

Sources: [1]Data Linkage WA; Centre for Victorian Data Linkage (CVDL); Tasmania Data Linkage Unit (TDLU); SA NT DataLink; Data Linkage Queensland (DLQ); Centre for Health Record Linkage (*CHeReL* - NSW, ACT).

List of abbreviations: TSR: Tasmanian Suicide Register; ADF: Australian Defence Force; VSR: Victorian Suicide Register; QSR: Queensland Suicide Register; iQSR: interim Queensland Suicide Register; NSW SMS: New South Wales Suicide Monitoring System; WACSIS: Western Australian Coronial Suicide Information System; COD URF: Cause of Death Unit Record File; RBDM: Register of Birth Deaths and Marriages; NCIS: National Coronial Information System; ICD-10: International Classifications of Disease version 10; Department of Defence personnel system data: ADF Personnel Management System; NMDS: National Minimal Data Set; DVA: Department of Veteran's Affairs; ABS: Australian Bureau of Statistics; ED: Emergency Department.

4.1.1. National data sets which identify ADF member populations

Table 19 describes national data sources that record ADF member identifiers. The table includes ADF and DVA specific datasets (e.g., Department of Defence personnel system data and DVA client data) as well as national surveys that contain relevant data. Department of Defence personnel system data combines PMKeyS, Core HR system, D1, CENRESPAY (for reservists), ADFPAY (for permanent members) and other historical payment systems that contains information on all people with ADF service on or after 1 January 1985. Department of Defence personnel system data collects information on payroll and personnel management for Defence civilian employees and personnel management for Army, Navy, and Air Force personnel in Defence. DVA client data contains administrative data for providing support services to DVA clients.

The Department of Defence personnel system dataset is the main data source that has been used to link ADF member populations to national datasets (e.g., suicide and medication dispensing recorded by the Pharmaceutical Benefits Scheme and Repatriation Pharmaceutical Benefits Scheme) (11). Although there is a high probability that the Department of Defence personnel system data can be linked to other data sources, the absence of a public data dictionary or variable list means that we were unable to be precise about the opportunities for data linkage. What can be deduced from publicly available information (and has previously been mentioned in this report) is that the Department of Defence personnel system data database captures personnel information on all current serving ADF members, but only information on those ex-serving ADF members since 1 January 1985. This database will therefore only capture a proportion of the ex-serving ADF members in Australia (living or now deceased), and not all ex-serving members (i.e., those separated before 1 January 1985). Department of Defence personnel system data also provides information on important service-related variables (time since separation from the ADF, reason for separation, and rank) that may distinguish between high-risk groups within the ADF.

The DVA client database was also identified as a source of information on ex-serving ADF member status. The DVA client database has been used in reporting statistics for ADF member populations under the final report to the Independent Review of Past Defence and Veteran Suicides. However, there is limited publicly available information on the variables collected by the DVA client database. The DVA client database does not capture information on the broader population of ex-serving ADF members who do not have contact with the DVA.

A number of national surveys were also identified as potentially relevant data sources. The longest standing dataset that captures ADF member status is the Household, Income and Labour Dynamics in Australia Survey that has collected data annually since 2001 and is held by the Melbourne Institute of Applied Economic and Social Research. Although ADF member status is not collected directly as a stand-alone variable, information on ADF member status (and the transition from current to ex-serving) can be deduced from Australian and New Zealand Standard Classification of Occupations codes and information on the Veterans Affairs Treatment Entitlement Card status. The HILDA is a cohort study containing longitudinal data that is collected for each participant at multiple time points. This method provides information on potential changes in outcomes over time and importantly, the chronology between the exposure (e.g., duration since separation from the ADF) and subsequent outcome (e.g., onset of depression).

National reports have been published using data from the DVA nominal rolls (e.g., Cancer incidence study) that includes the names, conflict and serving number of ADF members who served in World War Two, Korean War and Vietnam War and Gulf War. The accessibility, quality, completeness, and timeliness of the nominal rolls were not assessed due to the absence of information on the availability of these data for research and linkage purposes.

A number of national ABS and AIHW datasets were identified as collecting ADF member indicators. However, indicators for ADF member status are relatively new, with most having been introduced within the last 5-years. For example, the ABS Census captured ADF member status for the first time in 2021, including information on current serving, ex-serving, and ex-reservists. Similarly, the 2021 National Study of Mental Health and Wellbeing introduced indicators for ADF member populations in 2021 that measured current serving, and former serving ADF member populations. In the National Study of Mental Health and Wellbeing, current and former serving ADF members are inclusive of reservists.

The remaining national datasets (e.g., from the Personal Safety Survey, Time Use Survey, and Specialist Homelessness Service) collected information on lifetime ADF membership as a binary (yes/no) variable. These datasets therefore do not distinguish between current serving, ex-serving, or reservist populations. It is important to note that the national survey data has been collected to be representative of the Australian general

population and are not necessarily representative of the ADF member population. This is likely to equate to very few ADF members being included in the sample thereby limiting the questions that the data from the survey can be used to answer for this specific population.

Lastly, based on written advice from the ABS, we identified two additional ABS national surveys that are scheduled to be administered for collection in 2022 and which will record lifetime ADF member status, namely, the National Aboriginal and Torres Strait Islander Health Survey and the Survey of Disability, Ageing and Carers. It is expected that data from these surveys will be released in late 2023.

It is important to note that survey data reported by the AIHW, and ABS are cross sectional by design. Although these surveys are collected at multiple time points, data from individuals are not linked over time. This means that the temporal association between exposure and outcome variables cannot be determined.

4.1.2. National systems and databases for the monitoring of suicide, self-harm and suicidal ideation

The National Suicide and Self-harm Monitoring system was established in 2019 and provides an overview of suicide, self-harm, and suicidal behaviours in the general population in Australia. Suicide statistics are available for the general population from 1907 to 2021 by age, sex, suicide method, and for each Australian state and territory. Suicide data are obtained from the National Mortality Database, NDI, NCIS and state suicide registers in Tasmania, Victoria, Queensland, and New South Wales (see Table 20). Information on coroner certified suicide is obtained from the National Mortality Database, NDI and NCIS. Whereas data from state-based suicide registers record information on suspected suicides from the police reports of sudden death notifications to the coroner. These data sources provide interim estimates of suicide in the general population, which are updated annually to account for coroner certified cause of death data, which can be delayed by up to 18 months.

The monitoring system reports suicide statistics for sub-groups of the population including young people, Indigenous Australians, and the ADF. Suicide rates for ADF member populations are available from 2002 to 2019 by ADF service status (ex-serving, reserve, and serving permanent ADF members) and sex. Data on ADF member populations are obtained through data linkage using Department of Defence personnel system data system indicators. Information on ADF suicides is sourced from an external report on suicide in serving and ex-serving ADF members (11) hosted by the AIHW that utilized data from the National Mortality Database, NDI, Department of Defence personnel system data, and the DSD. Compared to the National Suicide and Self-harm Monitoring System information on serving and ex-serving ADF members, the report provides a more detailed overview of suicide in ADF member populations including by ADF service status, sex, year (2001–19), age, service type (Navy, Army, Air Force), reason for separation (voluntary, voluntary medical separation, involuntary medical separation), length of service, and service rank. These variables are not reported under ADF member populations in the National Suicide and Self-harm Monitoring System. Nonetheless, an important distinction between the National Suicide and Self-harm Monitoring System exists in that it appears to provide temporally updated data for suicide and self-harm statistics in the general population. Whereas data reported on ADF member populations is reported from single-point cross sectional data.

The DSD was identified as a potential source for monitoring suicide in ADF member populations. Depending on the frequency of data collection in the DSD, it may have close-to-real time monitoring capabilities. However, we were unable to find a publicly available description of the variables recorded in the DSD, nor ascertain its timeliness.

Statistics on self-harm and suicidal behaviours are obtained in the National Suicide and Self-harm Monitoring System from ambulance attendances for self-injury, suicidal ideation, suicide attempt and suicide. These data are sourced from the NASS on a one-month per quarter basis for NSW, VIC, TAS, ACT (2018–21) and QLD (2018–21), with monthly snapshots available from 2021. Data from SA are excluded. Self-harm and suicidal behaviours statistics are available by age, sex, state and territory, and by type of self-harm and suicidal behaviour. Information on ADF member status is not reported among ambulance attendances data in the National Suicide and Self-harm Monitoring system. Whilst NASS collects information on current and past ADF service (see Table 20), the state-based ambulance data registries from which the data is collated do not routinely collect these data. As such variations in coding conventions, and the availability of free text information on ADF member status may be inconsistently reported, with downstream consequences of making the reporting of ADF member status in NASS unreliable for research or postvention purposes.

Statistics on intentional self-harm hospitalisations reported in the National Suicide and Self-harm Monitoring System are obtained from the National Hospital Morbidity Database and are limited to people admitted to hospital for intentional self-harm (includes poisoning, irrespective of suicide intent) from 2008 to 2020. Variables included in the National Hospital Morbidity Database are reported from hospital admission records from each state and territory based on the national minimum data set requirements. The national minimum data set is a minimum set of data elements that is required for reporting purposes from each Australian state and territory. Statistics are reported for each state and territory by age, sex, and method. As with ambulance attendances, information on ADF member status is not reported in the hospital admissions data reported by the National Suicide and Self-harm Monitoring system. Information on ADF member status can potentially be inferred from included DVA Insurance Cover Codes and hospitals operated by the ADF from state-based hospital admissions data collections. However, these data are not included in the National Minimum Data Set and are therefore not recorded in the resulting NHMD that is used by the National Suicide and Self-harm Monitoring System, nor are all ex-serving ADF members clients of DVA.

Additional information on behaviours and risk factors for suicide and self-harm can be obtained from existing linked data (e.g., the Multi-Agency Data Integration Project) that contain a range of risk factor variables from ABS and AIHW datasets that are already linked to cause of death data. These data are presented for the general population and do not collect information on ADF member status. Based on publicly available information, the Multi-Agency Data Integration Project does not have established links with datasets containing ADF member identifiers. However, since it has established linkage with unit record data from a number of Australia-wide data sources, there is a high probability that it can be linked with ADF administrative data sources such as Department of Defence personnel system data.

4.1.3. State-based suicide registers

State-based suicide registers were identified in Victoria, NSW, Tasmania, and Queensland. Information from the National Suicide and Self-harm Monitoring System revealed suicide registers from SA and the ACT are under development, however we were unable to find sufficient documentation in the public domain to assess these registers (e.g., we could only find information in media release documents). Additionally, information on the WA Coronial Suicide Information System was identified from media release sources. However, after consulting with the lead investigator and the WA Mental Health Commission it was determined that the WA Coronial Suicide Information System is not currently active in WA.

The active state-based registers in VIC, NSW, TAS, and QLD all have access to timely sudden death notifications of suspected suicide from police reports to the coroner, providing close-to real time monitoring capabilities. With the exception of NSW (which provides demographic information for the purpose of close-to-real time monitoring of suspected and confirmed suicides only) all active state-based suicide registers record information on ADF member status. Although ADF member status is routinely collected in state-based suicide registers (based on key indicators recorded in the registers data dictionary or variable list), the quality and completeness of this information requires that ADF member status is collected by police or the coroner as part of the investigation into the suspected suicide. For this reason, ADF member status may be under-counted in state-based registries, if current or prior ADF member status is not queried during the police or coroner investigation. Unless ADF member status is collected consistently, significant undercounts would make this information unsuitable for research or postvention purposes. Further information on the limitations of the identified data sources is described in Section 4.2 Strengths and deficiencies of current suicide and self-harm monitoring and surveillance efforts.

The information on ADF member status recorded by state-based suicide registers is shown in Table 22. Of the state-based registers that we identified, only the WA Coronial Suicide Information System recorded information on the type ADF service. Additional information on factors such as length of service, time since separation, rank, and reason for separation are not routinely recorded (as determined by the publicly available reports, variable lists, and data dictionaries).

Table 22. Recording of ADF member status and other ADF-related variables in state-based suicide registers.

State-based suicide register	ADF-related variables
NSW Suicide Monitoring System	Not reported.
Victoria Suicide Register	Current ADF service. Ex-serving ADF.
Queensland Suicide Register	Current ADF service. Ex-serving ADF.
Tasmania Suicide Register	Current military service. Past military service.
WA Coronial Suicide Information System	Current ADF service. Ex-serving ADF. Army, Navy, Airforce, Special forces.

4.2. Strengths and deficiencies of current suicide and self-harm monitoring and surveillance efforts

4.2.1. Australian general population

Information on suicide in Australia is available via the National Suicide and Self-harm Monitoring System. However, data are presented in aggregate form and are not readily amendable to bespoke analyses (e.g., investigations into the association between certain risk factors and suicide outcomes in the general or ADF member populations). Unit record data on suicide is available from the NCIS and state-based register systems. The NCIS and state-based suicide registers in Victoria, Queensland, Tasmania are currently available for research purposes and are used to inform national death statistics produced by the ABS and by the AIHW for the National Suicide and Self-harm Monitoring System.

Both the NCIS and the state-based suicide registers use information from the coroners' courts including police reports, information from informants, toxicology findings, and coroner findings. Since reportable deaths are required to be reported to the coroner within the first 48-hours of an incident, data on suspected deaths by suicide (based on suspected intent at the time of notification) are captured in the NCIS in addition to the final coronial finding of intent. There are established, coordinated, and standardised systems coordinated by the ABS and AIHW for recording national suicide data that incorporate coroner certified cause of death from the NCIS, data from births deaths and marriages registers, and the NDI. These processes are informed by detailed coronial investigations. However, because these investigations can be lengthy, dependence on the coronial investigation means that timely information on suicide deaths can be delayed by up to two years.

Limitations in the coronial and coding processes, particularly with regards to the determination and coding of suicide intent, mean that in some instances, suicides may be misclassified using specific ICD-10 codes recorded in registries such as the NCIS, as an event of 'ill-defined or unknown cause of death', 'event of undetermined intent' or 'accidental death'. Misclassification of intent during the initial reporting of a sudden death and following the coronial investigation may result in the undercounting of suicides reported in national and state-based monitoring and surveillance systems (55). Very sensitive cases can also be blocked by a coronial court therefore delaying reporting and the flow of information into the NCIS and subsequently into Australian national suicide monitoring conducted by the ABS and AIHW.

Information on characteristics of those who died by suicide, and antecedents to suicide are available through attached coronial, police, toxicology, and autopsy reports in the NCIS, in addition to the NCIS core dataset. However, some of the factors likely to be associated with suicide and useful for determining patterns and potential risk and protective factors (e.g., prior contact with primary care) are not routinely collected in the NCIS core dataset. Instead, they must be deduced from the attached text reports, which vary in quality and completeness across state and territory jurisdictions. For example, in SA and NSW, the final coroner report is not routinely uploaded; these states only provide medical dispensation notices rather than detailed coronial findings at the end of the coronial investigation. Medical dispensation outlines the direct medical cause of death but

does not provide more detailed information including that which would help to confirm intent; that information needs to be deduced from other text reports. Additionally, in Queensland, reports uploaded to the NCIS can be less timely than from other states. Thus, national suicide statistics reported by the National Suicide and Self-harm Monitoring system are reliant on the quality and completeness of what is uploaded and the timeliness of uploads into the NCIS.

State-based suicide registers include standardised procedures for coding a wide range of demographic, social, health, mental health, and relationship variables that are drawn from the same multiple data sources (i.e., coronial findings, police reports, toxicology findings, autopsy reports, and medical records). However, variables outlining the antecedents to suicide are not always available or extracted by the persons responsible for data entry when a suspected suicide is first reported. Moreover, the type of information that can be extracted from these reports depends on the quality of information that is sought as part of the death investigation. For example, information collected by police may be contradicted at a later date by the coronial investigation, which can take up to two years. As such, both the availability, validity and reliability of information that are available at the time of a sudden death notification can limit the types of variables that are utilised by state-based registers and the availability of information.

Information on self-harm is reported in the National Suicide and Self-harm Monitoring System using hospital admissions data collected in the NHMD and ambulance attendances captured in the NASS. The data from the NHMD has some limitations due to the fact that hospital admissions for self-harm with and without suicidal intent cannot be disaggregated. As a single data source, it is likely to significantly undercount self-harm in the general population. For example, most hospitals have limited psychiatric beds, which means admissions data for self-harm may be prone to ceiling effects. Also, many acts of self-harm, whether with suicide intent or not, may not lead to hospitalisation but may result in interaction with other health and community services (i.e., emergency department presentations, ambulance attendances, presentations to general practitioners, calls to crisis lines, and police attendances). The NASS data provide an additional and timelier source of data on self-harm and suicidal behaviours in the community than data from the NHMD which has a 12-month reporting time-lag. However, it may also undercount self-harm and suicidal behaviours in the community as it will only capture those instances of self-harm that have involved an ambulance presentation.

There is currently no national standardised collection of emergency department data. These data are likely to provide key information on presentations for self-harm and suicidal ideation that do not result in a hospital admission. Although there is some collection of suicide-related presentations at the state and territory level, to access these would require separate access permissions from the relevant data custodians from each jurisdiction. There is also significant variation between states and territories in the types of administrative systems used across hospitals to collect this information, and the coding conventions used by hospital personnel to record the nature of presentation. This means that sometimes self-harm and suicide ideation may not be recorded. Furthermore, most emergency department data collection systems rely on ICD-10 codes assigned to the primary reason for presentation. In cases where there are comorbid physical illness or injury, or when the intent is uncertain, ICD-10 codes may not be sensitive to all presentations involving suicidal thoughts and behaviours (56).

Approaches to identifying suicide-related behaviours through technology (e.g., machine learning applied to free text admission notes) are currently being piloted but they have not yet been implemented at scale (57).

4.2.2. ADF member populations

Information on ADF member suicide is reported by the National Suicide and Self-harm Monitoring System as a by-product of annual ADF suicide monitoring reporting, which in turn is facilitated by linking cause of death information with Department of Defence personnel system data, the DSD, and the DVA client database. As outlined above, the timeliness of data stemming from the coronial investigation makes it unsuitable for real-time surveillance in ADF member populations. Although the National Suicide and Self-harm Monitoring System does utilise suspected suicide data from state-based suicide registers, the routine recording of ADF member status is likely to occur later during the coronial investigation. Whilst state-based registers routinely record ADF member status, this information is contingent on police and coroner findings. Thus, if first responders and those involved in the coronial investigation do not enquire about past or present ADF service, it is unlikely to be recorded in the state-based system. Currently, state-based suicide registers do not include ADF member status in close-to-real time monitoring of suspected suicides which is typically restricted to broad demographic

characteristics. The administrative burden of registering additional variables into existing state-based suicide registries at the point of a sudden death notification may reduce the timeliness of the system and its capacity to provide close-to-real time data on suspected suicide in each state and territory jurisdiction.

Currently, there is no national or state-based surveillance system for self-harm or suicidal ideation in ADF member populations. Hospital admissions data for self-harm from each state and territory has some potential for identifying a subset of ADF members via DVA insurance information, however these variables would require separate access for each state and territory since insurance variables are not captured in the National Minimum Data Set that informs the NHMD.

Although information on ADF member populations is available in state-based hospital admissions databases via ADF insurance cover codes, this information is not recorded in the national minimal data. For this reason, information on hospital admissions for ADF member populations must be obtained from the relevant data custodians for each state and territory and are not available in nationally reported self-harm statistics. Similarly, emergency department data can be used to identify ADF member populations through insurance code fields, but these data are not reported nationally and require separate access for each state and territory. Moreover, reliance on insurance codes to determine ADF member status is prone to significant biases that is only sensitive to a subset of the ADF member population who have ADF and DVA insurance.

Information on self-harm in ADF member populations is a core variable recorded through NASS, but it is not currently reported in the NASS reports in the National Suicide and Self-harm Monitoring System. Furthermore, although the NASS has the capacity to record information on ADF member populations, the availability of this information is dependent on it being present in the ambulance and first responder reports. As such, the absence of information on ADF member populations in the NASS may be the result of false negative biases arising from missing information. Nonetheless, since the NASS reports data on a quarterly basis there is some potential for real-time surveillance of self-harm in ADF member populations, provided ADF member status is routinely collected by first responders.

In terms of identifying the ADF member population, Department of Defence personnel system data was assessed to be a critical data-source for linkage to suicide data and has been used in other reports produced by the AIHW (e.g., medications dispensed to contemporary ex-serving ADF members). Department of Defence personnel system data provides information on a number of demographic and service-related characteristics of ADF personnel including rank, service, operational service status, employment status, and service banding. These variables can be used to derive information on length of service and time since separation which may be a more sensitive approach to capturing data on ex-serving ADF members. This is important given some ex-serving ADF members may not be engaged with the DVA, nor have access to DVA related health insurance codes that are otherwise captured by state and national emergency department and hospital admissions records. However, Department of Defence personnel system data covers ADF members who have served since 1 January 1985, so caution should be exercised when interpreting length of service for personnel who were potentially employed outside of this period. Another limitation is that information stored in Department of Defence personnel system data overrides previous recorded information. This means that characteristics such as service rank cannot be inferred from historical data (e.g., prior deployments) recorded in the Department of Defence personnel system data.

Overall, a number of national datasets that identify ADF member populations were identified. However, there were some differences in the specific variables containing ADF member populations. The most recent ABS Census records information on current, ex-serving, and ex-serving reservists, thereby distinguishing between ADF member populations that have been shown in previous studies to have different rates of suicide related behaviours. According to the national datasets identified, the introduction of ADF identifiers have occurred within the last five years. As such, access to historical data that could be used to examine potential risk and protective factors in ADF member populations is limited. Importantly, although there is a growing number of national datasets collecting ADF member indicators. These datasets are designed to report statistics for the general population. As such, subgroup analysis of these data should be conducted with caution as the numbers are likely to be small, limiting the types of analyses that can be conducted. They are also not likely to be representative of, and therefore generalisable to, the general ADF member population.

5. Identification of data gaps and opportunities for improvement

5.1. Introduction

Before considering data gaps and opportunities for improvement, it is worthwhile to consider what services currently exist for both serving and ex-serving ADF members. These include programs for mental health screening and mental health care in the ADF. Understanding the current program and service landscape may provide insights into relevant initiatives and potential sources of data not identified in our scan of publicly available data.

There have been substantial changes in both mental health screening and the mental health care system to suicide in the ADF in recent years. Self-evidently, both could be recorded and captured in a suicide and self-harm data recording system.

Mental health screening in the ADF: At the end of a deployment, before return to Australia, ADF personnel have a health check and psychological screen. The psychological screen is known as the Return to Australia Psychological Screen. About three months after return to Australia, ADF personnel have a further health examination and another formal psychological screen. This psychological screen is known as the Post Operational Psychological Screen. If at any time an issue is picked up, members are referred for follow up assessment.

Defence has recently introduced regular Periodic Mental Health Screens (58). These are aimed at detecting psychological distress including anxiety, depression, and alcohol-related problems. Members can also initiate these outside of formal health assessments or deployment related psychological screens.

Prior to separation from the ADF, members also undergo a comprehensive health examination which incorporates formal psychological screening. Critical incident mental health screening is part of this mental health screening continuum (59).

ADF mental health care system: An ADF Mental Health Strategy was first developed in 2002. It has subsequently been revised and further developed at regular intervals, culminating in the Defence Mental Health and Well-being Strategy 2018–23 (60). As part of this, the ADF Mental Health and Wellbeing survey and the Transition and Wellbeing study were conducted in 2010 and in 2015 respectively.

Mental health and psychology services now provide both mental health assessment and treatment and/or occupational psychology assessments within Garrison Health Services. Medical officers and mental health and psychology personnel work together and are supported where necessary by ‘off base’ contracted service providers and mental health specialists. Specialist regional mental health teams across Australian States and Territories also provide support.

There is a substantial Suicide Prevention Program (61); a Critical Incidents Management Scheme (59). All-hours Support Line; and a Transitioning-out program – see Section 6.1.3 below (62).

The ADF also has a number of telephone support services available to all personnel and veterans and their families. These are the ADF 24 hour support line (63), which is available to all ADF members and their families; Open Arms 24 hour Crisis Support (64); 24-hour Australia-wide counselling and support available to all veterans and their families; The Defence Family Helpline 24-hour support, information and help in connecting with your local community (65); as well as Lifeline 24-hour Australia-wide crisis support and suicide prevention services.

In May 2009, Defence instigated a contemporary health records management system for ADF personnel. The proposed system was originally called the Joint eHealth Data and Information System but later known as the Defence eHealth System (66). This e-health system facilitates monitoring of KPIs to assess if important stages of the mental health-related treatment journey for ADF members are reached.

For ex-serving ADF members, there is also a Veteran Mental Health and Wellbeing Strategy and National Action Plan 2020–2023 (67). Veteran cards provide benefits for ex-serving members who have mental health related disabilities. For example, the Veteran Gold Card can be issued to a veteran (e.g., aged 70 years or over and has qualifying service); has a Disability Pension: has a Service Pension or with a permanent impairment (specified criteria apply for all categories) as well as some other groups.

The Veteran Gold Card covers the ex-serving member for clinically required medical treatment in Australia for all medical conditions. Treatment may include treatment at a hospital or day procedure facility, treatment provided by an allied health professional, treatment provided by a GP or specialist, treatment provided by a dental or optical professional, medications at the cheaper concession rate, community nursing, and pathology and medical imaging. Medical treatment is usually free. Prescription item cost $6.60 for each item until Safety Net Threshold for the calendar year is reached. Some other services and support are available.

Open Arms – Veterans & Families Counselling (formerly VVCS) provides mental health assessment and clinical counselling services for Australian veterans and their families based on proven clinical practices and new and emerging evidence-based approaches. It operates nationwide and provides the following services: counselling, treatment programs and workshops, community and peer program, Operation Life (suicide intervention, crisis accommodation self-help tools (68).

Crisis support for mental health is available from Open Arms and the ADF Mental Health All-hours Support Line (as well as Lifeline Australia and other non-veteran crisis support lines).

Veteran Support Officers are involved in the Transitioning-out program. They are advisers who provide information on benefits, and eligibility of benefits that transitioning members can get. They also offer support and guidance, and assist with the submission of claims. Stepping Out is a free, two-day program for all ADF members and their partners, who are discharging from the ADF, or have discharged in the last 12 months. The program focuses on transition skills including planning; motivation and adaption techniques; expectation and attitude management; maintaining relationships; and learning where to seek professional support. We have been informed that a complete copy of the serving member's e-health record is transferred to both DVA and the member.

A (one-off) ADF post-discharge GP Health Assessment is designed to assist GPs in identifying and diagnosing the early onset of physical and/or mental health problems among former serving members of the ADF (69). The assessment is based on well-validated screening measures which target levels of physical activity, chronic pain, sleep, alcohol and substance use, post-traumatic stress disorder, risk of harm to self or others, and psychological and sexual health. All former serving ADF members who transitioned from 1 July 2019 can gain access to a fully funded comprehensive Annual Veteran Health Check every year for the first five years after-transition (70).

5.2. Summary of data gaps related to identification, monitoring and reporting of suicide, self-harm and risk and protective factors in the ADF member population

The epidemiological evidence presented in Section 3 and the environmental scan of the suicide and self-harm monitoring landscape presented in Section 4, point to some specific data needs to inform tailored suicide prevention programs and policies for ADF members. They also point to some data gaps that hinder knowledge and understanding and are therefore, worthy of consideration for further data development and/or research.

We begin by reporting insights from consultation with people with a lived experience perspective of ADF member suicide and self-harm, to highlight their perspectives of data gaps and opportunities. We then provide a summary of the main identified data gaps noted from our review and present data development opportunities for improving suicide and self-harm monitoring (with a focus on real-time monitoring) and, for furthering our understanding of suicide risk and protective factors in the ADF member population. These findings will inform Part 2 of this project – the development of a roadmap to real-time monitoring of suicide and self-harm in ADF member populations.

5.2.1. Insights from consultation with people with a lived experience perspective of ADF member suicide and self-harm

We consulted with six people with a lived experience perspective of ADF member suicide and self-harm to learn what they believed was important for suicide prevention in ADF member groups, perceived gaps in data and information about suicide and self-harm in the ADF members, how improving data may play a role and, any priorities or concerns they might have about the collection of suicide and self-harm data for ADF member groups. Below is a brief summary of the key findings that arose from these consultations. See Appendix 3 for the more detailed description of aims, methods and findings, and Appendix 4 for the interview guide.

Summary of findings

Priority areas of focus for ADF member suicide prevention raised by consultants included the need to focus more closely on ex-serving ADF member groups, and sub-groups of both the ex-serving and serving populations who might be at higher risk (e.g., those who separated involuntarily or due to medical reasons, younger males who enter and leave the ADF relatively quickly, and those who have recently returned from service). Consultants noted that suicide is an Australian-wide public health issue, not just an issue within the ADF community, and that prevention and crisis response strategies for the general population also apply to those in the ADF community. They noted that the major risk factors for suicide for ADF member groups and the wider population appear to be very similar, though some specific risk and protective factors are present for ADF members.

Consultants drew attention to the importance of accurate data recording and analysis to provide evidence for useful, fast, and responsive action to prevent suicide and self-harm. They noted data could be used to better describe ADF members, identify trends and resourcing gaps, better focus resources, and hopefully to tell some positive stories about the strengths of ADF members. They commented on gaps in the collection and use of data pertaining to ADF populations, with the main issue raised repeatedly being the deficiencies in determining who was in the ex-serving community in Australia. Consultants reported that each organisation or group for ex-serving members only represented a sub-group of the population, and there was no one group that included the whole ex-serving population. Consultants felt that the heterogeneity of the ex-serving population, as well as the fragmentation of and lack of trust in ex-service organisations contributed to the lack of a one-stop-shop for data about ex-serving ADF members.

Consultants also commented on a lack of data collected and published for some sub-groups of the serving ADF population (e.g., Special Forces, Navy personnel) and the barriers to self-reporting within the Defence Force due to attitudes towards suicidality and mental ill-health. Consultants reported that ADF personnel hide these issues, as well as alcohol and drug dependencies, to remain in service and prevent impacts on their jobs. It was noted that discussing these issues was frowned upon while serving, particularly for young males and those in the Army where there was a fear of being seen as the weak link. Consultants acknowledged the complexity of balancing promotion of hard skills such as training to kill, with soft skills required to talk about feelings and mental health while also balancing the promotion of disclosing mental health concerns with duty of care not to deploy people who are not best able to serve.

To allow identification of ex-serving ADF members, consultants reported the need to build trust and confidence in the community, as they felt this was an ongoing issue with RSL and governments. Suggestions by consultants included the need to capture data from a large range of ex-serving organisations to identify as much of the population as possible, and specifically, to identify those in need of support. Consultants suggested using DVA client lists and people's social media posts and comments to identify and support ex-serving personnel who may be at risk of suicide or self-harm. They also suggested social media be used more proactively to tackle stigma and misinformation. Reducing stigma was identified as an important step to improving self-reporting so that people felt safe to work through difficulties without unwanted career consequences. Consultants also suggested in-depth statistical analysis of Census information to create heatmaps of the ex-serving population which could be compared with socio-demographic factors and service locations.

There was overwhelming agreement from consultants that improved sharing and reporting of data pertaining to suicide and suicidality for ADF members could help increase awareness and improve suicide prevention efforts. They reported difficulties finding data about suicide and suicidality for ADF members and felt that Defence should be more open and transparent by either reporting the data themselves or, sharing this with others who can report these data. Consultants were aware that there was a need for care when sharing and reporting on sensitive information and that there was a need for individual ADF members to consent to data sharing. They commented that privacy concerns for data collection and sharing would be drastically reduced with transparency around how data would be used, who would have access to it, and how and where it would be stored. They noted that anyone collecting these data needed to ensure it was linked to a service or prevention effort that helped people.

Consultants reported that information provided by serving individuals that was indicative of suicide risk or poor mental health wasn't always used to trigger support, and that this was at least partially caused by a lack of data sharing within Defence (e.g., between the individual's unit, Commanding Officer, psychologist, medical staff).

Difficulties with having this information transferred from Defence to the DVA were also reported, including ADF members needing to arrange this themselves and having to sort through their own psychological records.

Consultants raised other issues about suicide and self-harm in ADF member populations that, while not specifically related to data, were important perspectives for prevention efforts. There was a strong theme of the need for more action in place of talk and promises, with consultants reporting a sense of being over-reviewed and over-analysed, and recommendations being developed with no follow up action. Problems relating to access and provision of support both during and after service were consistently raised by consultants. Consultants specifically commented on the difficulty of finding support after separation, and the importance of having information and supports in place during transition to avoid ex-serving members going many years without finding appropriate supports.

5.2.2. The identification of the ex-serving ADF member population

The high rates of suicide in ex-serving ADF members warrant immediate attention. There is a need to ensure that high quality and representative data on suicide numbers and rates are available for this cohort, and that there is a greater understanding of the factors (including those related to prior service and transition) that may increase the risk of suicide for this cohort. Before considering specific gaps in the collection and reporting of suicide and self-harm monitoring data for ADF member groups, it is worthwhile reflecting on those datasets that can identify ADF member populations as it may be possible to link these to existing suicide and self-harm data sets (and other health and social data sets) to create ADF member-specific datasets.

That said, there is a challenge in capturing information about the ex-serving population, given that there is no known complete list of ex-serving ADF members in the Australian population. Although Department of Defence personnel system data is a critical data source for identifying all current ADF serving members, it only captures ADF members who have served since 1 January 1985 and therefore, does not identify those who separated from the ADF prior to this period. The data is believed to account for approximately 50% of the living ex-serving ADF member population (L. Gates, personal communication, 26 April 2022). However, we are not certain whether it is possible to identify and extract additional information from Defence and DVA records or systems to identify further ex-serving members prior to 1985.

There are additional data sources that may help to identify the ex-serving ADF member population, including the DVA client database, nominal rolls, and population-wide data collections such as the 2021 Census. However, none of these collections are likely to reflect the total ex-serving population. For example, DVA clients make up approximately 36% of ex-serving ADF members only, so, DVA records will not present a complete count. The purpose of population surveys with ADF identifiers (e.g., the Census and the National Study of Mental Health and Wellbeing), is to provide a snapshot in a representative sample of the general population. For this reason, these surveys are unlikely to be a valid source for data linkage studies where ADF members are the denominator of interest. Despite these limitations, these population datasets could potentially still be utilised to identify further ex-serving members to enhance an ADF ex-serving population list (i.e., such as that currently compiled by the AIHW) prior to further linkage to suicide and self-harm data sets. However, privacy and confidentiality requirements would have to be considered for this and any other data linkage. See Section 5.3.1 for further discussion of this point.

5.2.3. Gaps in monitoring and reporting of suicide in the ADF member population

There are a number of gaps in the current monitoring and reporting of suicide in ADF member populations. At present, ADF member status is not routinely captured by systems informing the National Suicide and Self-harm Monitoring System and requires data linkage to report these statistics among ADF member populations.

Although there may be information in specific reports held in the NCIS that help to identify ADF members, this information is not collected and recorded as part of the NCIS core dataset. Consequently, information on ADF member status must be inferred from occupational codes that may not be sensitive to ex-serving ADF members or reservists. It is possible that information on ADF member status can be obtained by manually extracting data from attached police and coronial reports. However, this method may be prone to biases in reporting that result in under counting. Despite the known deficiencies in coronial data and systems for suicide reporting noted in

Section 4 (e.g., time lags of up to two years, the potential for misclassification), these make up the definitive collection used for analysis and reporting of Australian general population suicide numbers and rates.

To address this data gap, as noted previously, the AIHW has linked cause of death information with Department of Defence personnel system data, the DSD, and the DVA client database. The AIHW has analysed and publicly reported some of this information on the National Suicide and Self-harm Monitoring System and in ADF member-specific reports. In early 2021, the AIHW presented rates of coroner-confirmed suicide over time, broken down by serving (permanent and reservists) and ex-serving status, and by sex. The AIHW has already updated this analysis once since this first publication and it appears that there will be additional updates. For example, the AIHW is currently working on updating the data on the National Suicide and Self-harm Monitoring System website to include 2020 data, but data are presented as 'preliminary' from 2015 onwards. Therefore, it appears there is an additional time lag beyond that for general population suicide statistics. Another limitation is that the AIHW analysis utilises linkage with the Department of Defence personnel system data which, as previously stated, will be representative of the current full time serving population but not the ex-serving population prior to 1985.

Timelier sources of data on suspected suicide for the general population exist through the state and territory suicide registers. These registers have been set up within and outside of coroners' courts in specific jurisdictions to code probable suicides within 24–48 hours and prior to coroner case closure. There are currently six state/territory suicide registers and these data have increased the provision of timely reporting to government departments to inform suicide prevention efforts. The Victorian Suicide Register, the Queensland Suicide Register and the New South Wales Suicide Register also provide data and information to the AIHW to publish on the National Suicide and Self-harm Monitoring System, thereby providing more timely updates of jurisdictional numbers over time than those reported on annually as part of official ABS cause of death statistics.

At present, all active state-based suicide registers (with the exception of the NSW register) include ADF member indicators, however, as noted previously, the coding of these variables is contingent on their collection as part of the police and coronial investigation. Thus, if ADF member status is not queried as part of the investigation, it will not be recorded within the state register. Moreover, the inclusion of ADF member status is not present in close-to-real time monitoring statistics. This may be due to the absence of available information (the investigation is not yet complete when a sudden death is reported to the coroner), and when such information does exist, it is not often recorded at the initial stage of the investigation due to potential administrative burden and the subsequent impact additional coding may have on reducing the timeliness of the system. A consequence is that there is currently no known or publicly available analysis and reporting of close to real-time suicide data from any of these registers specifically for ADF member populations.

Although the data scan revealed that the NCIS captures timely data on suspected suicides (through the intent at notification variable), recorded within 24–48 hours of sudden death notification, and is uploaded via nightly or weekly automatic uploads from the local case management systems of all Australian and New Zealand coronial courts (71), there is no routine capture of ADF member status within this system.

The DSD which was developed in 2014 and is administered by Defence, is reported to capture both suspected and confirmed deaths due to suicide of personnel serving full time (i.e., active ADF service) since 1 January 2000. The DSD captures these data by using information from the ADF investigative service and the Department of Defence personnel system. Suspected cases are confirmed by receipt of a coronial finding of suicide. The fact that data are collected on suspected suicides suggests that the DSD has potential as a timelier source of suicide data for the ADF cohort, although the quality of these data and their ultimate correspondence to confirmed cases is not known. We are also not certain how the DSD data are currently used by Defence. For further discussion about the DSD refer to Section 5.2.

As a point of comparison, in the USA, the monitoring and reporting of annual suicide rates includes both confirmed and suspected suicides to ensure that timely and accurate suicide data are collected for the population (32). In Australia, at present, only coroner confirmed cases are reported in the AIHW ADF member publications.

5.2.4. Gaps in monitoring and reporting of suicidality in the ADF member population

The data on the rates of suicidal ideation and instances of self-harm in the ADF member population were sourced from survey data from the 2010 ADF Mental Health and Wellbeing Prevalence Study, and the Mental

Health and Wellbeing Transition Study in 2015. The latter survey is considered the most comprehensive study undertaken in Australia to date, examining the impact of military service on the mental, physical, and social health of ADF members and their families. These surveys provide estimates of the prevalence of suicidality in ADF members with a comprehensive breakdown of numbers by various demographic and service-related categories allowing for in-depth analysis of associations between specific factors. However, the data are no longer current. Estimates of the prevalence of suicidality in the Australian general population are also outdated having been sourced from the 2007 National Survey of Mental Health and Wellbeing. The latter estimates will be updated in July 2022; in 2020–21, the ABS conducted a new National Study of Mental Health and Wellbeing approximately 14 years after the previous survey.

Other than the above-mentioned survey data, we were unable to locate publicly available, timelier reporting of suicidal ideation and instances of self-harm in the ADF population. This is in contrast to the general population. The National Suicide and Self-harm Monitoring System website presents annual data on admissions for intentional self-harm from the NHMD and monthly snapshots of data on suicidal ideation, suicide attempts and self-injury from the NASS. At present, there is no public reporting of data from the NHMD or NASS specifically for serving or ex-serving ADF members. Although data from the NHMD and NASS individually undercount rates of self-harm in the general population (because many people who self-harm do not present to hospital or ambulance services), these datasets are still national sources of routinely collected data on self-harm which can provide trend data over time. The NASS is a relatively timely source, collected, collated, and publicly reported a number of times per year on the National Suicide and Self-harm Monitoring System website. A way of potentially identifying some ADF members within the NHMD is through ADF and DVA insurance codes recorded as part of hospital admissions data, however, as noted in Section 4 (see Table 20), these codes are not recorded in the National Minimal Dataset of the NHMD.

The environmental scan did not reveal any ADF specific surveillance systems capturing routine and ongoing information on suicidality within Defence or DVA, though information of this nature may exist within e-health records. For more discussion around other possible sources of data see Section 5.2.

5.2.5. Knowledge gaps related to risk and protective factors for suicide in ADF member populations

As part of the National Suicide and Self-harm Monitoring System, the AIHW has published a number of relevant studies and analyses conducted to provide information on risk and protective factors associated with suicide in the Australian general population. The risk factors identified in these analyses are consistent with many of those identified in Table 18, based on the systematic review of risk factors for suicidality by Cramer and Kapusta (45).

The recent analysis by the AIHW that specifically focused on ADF member populations also explored the influence of many of the same risk and protective factors (e.g., demographic, socio economic, mental health, heath service use, and psychosocial factors), but also extended this to include some defence-specific factors (e.g., service career history, phases of active service, and separation from the ADF). This has been a welcome and timely addition to understanding risk factors in the ADF population and has involved data linkage and complex analyses of numerous datasets. However, it does not purport to be a definitive analysis of all relevant risk and protective factors. It also does not include analysis of risk factors associated with those ADF members who may be already experiencing suicidality, or changes in risk factor profiles over the ADF journey (i.e., from commencing, to serving, to transitioning, to ex-serving). Furthermore, the AIHW is limited by the availability and quality of relevant data. At present, based on information available in the public domain, there is likely to be some collection of risk factor information alongside identification of deaths by suicide within the DSD. However, we were unable to identify what data are collected and what the quality of these data is.

5.3. Availability and accessibility of other sources of data held by government departments and non-government organisations

The above-mentioned data gaps have been identified based on information we could find in the public domain (e.g., data dictionaries).

As noted previously, we were not able to locate information on the DSD beyond what is briefly described by the AIHW in sections of web pages and reports. As a result, we are not certain exactly what data are held in the DSD, and how this information is utilised by Defence.

There may also be other sources of information relevant to suicide and self-harm that are collected by Defence, including information from e-health systems capturing data from routine psychological testing for current serving members (e.g., those returning from deployment), or other personal and health-related data. There may also be service use data for ex-serving ADF members held by DVA. We are also not certain about what data are transferred from Defence to DVA when an ADF member transitions and separates from the ADF.

Additionally, both Defence and DVA appear to have specific teams concerned with mental health and wellbeing, or data more generally, but we were not able to ascertain whether these teams might have a role in maintaining or analysing suicide-related data. For example, the DVA have a data insights branch, but we are not sure whether this team has a particular focus on suicide prevention, and if they do, what data they collect, analyse and report on.

Other service organisations such as the Open Arms Counselling Service are likely to capture service use related data, and information on those serving and ex-serving ADF members (and potentially their family members) who utilise their services. However, we were unable to ascertain what data are being collected and whether this information has been utilised for monitoring, evaluation, or research purposes to inform suicide prevention policy or practice within the organisation or beyond.

5.4. Opportunities to improve suicide and self-harm monitoring in the ADF member population

5.4.1. Immediate opportunities with currently available data

There are a number of opportunities to use currently available data to improve suicide and self-harm monitoring in the ADF member population in the short term (i.e., that could be implemented within two years). The feasibility of these opportunities as well as the identification of other medium- to longer-term opportunities will be explored in Part 2 of this project.

Continue annual AIHW suicide monitoring within the ADF member population and consider options to enhance reporting over time

It appears that the AIHW will continue to update its analysis of suicide rates in the ADF member populations, and publicly report these data as part of the National Suicide and Self-harm Monitoring System, as well as through more comprehensive ADF member-specific reports. Ideally, this reporting would be annual. Annual reporting aligns with the frequency of reporting of official suicide statistics for the Australian general population by the ABS and the AIHW. As the AIHW analysis relies on data linkage and access to various sources of data (e.g., Department of Defence personnel system data, DSD, and DVA client data), it is understandable that there is a bigger time delay in the publication of the ADF member-specific rates compared to rates for the general population. However, there may be opportunities to simplify and automate processes, and streamline data transfer to reduce this delay somewhat.

There may also be learnings from how other countries report on suicide and self-harm in Defence populations. Including: who leads the reporting (i.e., government health departments and agencies and/or departments of Defence/Veteran Affairs); what they report (i.e., suicide statistics, self-harm statistics, information on risk factors); the frequency of reporting (i.e., annual versus every few years); and what is accessible to the public and by stakeholders involved in suicide prevention policy and practice. For example, in the US, both the Department of Defense and the Department of Veteran Affairs release to the public annual reports of suicide rates in their serving and ex-serving populations. The US Department of Defense reporting includes suspected suicides as well as confirmed suicides, in order to avoid underreporting; this might be something that could be done within the Australian context if high quality data on suspected suicides in the ADF member population were able to be captured (see the immediate opportunity below for more information). Additionally, the US Department of Defense, utilising its extensive Defense-wide surveillance system reports on suicide attempts alongside suicide deaths. Similarly, the US Department of Veteran Affairs' most recent publication included information from closer to real-time monitoring systems of health service use for suicide attempts and ideation in US veterans. Expanding annual suicide reporting in ADF member populations to also include information on suicidal ideation and suicide attempts merits further investigation (see the immediate opportunity below for more information).

The US Department of Defense also tracks and reports on the presence of an extensive list of known suicide risk factors, as well as many service-related factors for each suicide or suicide attempt in their serving population. The recent Canadian report on Defence suicide rates over time also noted the presence of certain risk factors in those who died by suicide. This included the identification of work and life stressors prior to suicide, providing further insights into modifiable risk factors that might be targeted in suicide prevention efforts. These types of analyses may warrant inclusion alongside reporting of ADF member suicide rates from time to time, and as the AIHW has recently conducted analysis of risk factors in ADF members who died by suicide, some of this information could be presented alongside the suicide statistics on the ADF member specific webpage of the National Suicide and Self-harm Monitoring System.

Furthermore, consideration of how Defence and DVA flag and link to the AIHW statistics and web reports via their own websites might also improve the accessibility of these data for members of the ADF and the wider Australian community who are not aware of the National Suicide and Self-harm Monitoring System or the AIHW.

A final observation about the US publications is that they also report on the various activities being conducted nationally to prevent suicide in serving and ex-serving Defence populations. This information helps to inform the Defence population and the wider public of what is being done, by whom and where. This might also be considered as part of future reporting within the Australian context.

Increasing identification of the ex-serving ADF member population through linkage to other population surveys with ADF identifiers

As noted in Section 5.1.1, identifying further ex-serving members and expanding the population list such as the one the AIHW has currently compiled and uses, will improve the accuracy of the population denominator used in calculation of rates for suicide and self-harm. As a number of population survey sources include ADF member identifiers (see Table 19), there could be benefit in the AIHW accessing some of these surveys from their own collections and/or the ABS (i.e., Census 2021, the National Study of Mental Health and Wellbeing) and linking to these prior to linkage to other datasets, to expand the ADF ex-serving population list that they currently compile and use. As previously mentioned, there are privacy and confidentiality considerations that would need to be understood and accounted for when thinking about this or any other types of data linkage recommended. This includes consideration of how personal information such as names, addresses and dates of birth (i.e., direct identifiers) are stored and who has access to these data. Part 2 of this project will include an exploration of these considerations as well as legal and ethical considerations for all data development opportunities included within the roadmap.

Improving routine monitoring of suicide and self-harm in ADF member populations through data linkage

- **Linking The Department of Defence personnel system data to close to real time suicide data systems**. This could include linkage to the state-based suicide registers or exploring the use of the NCIS as a close to real time suicide data system for linkage to The Department of Defence personnel system data**.**

  The state-based suicide registers offer close to real-time data on suspected suicides. Data from these systems have been used to inform service and policy responses, including most recently during the COVID-19 pandemic. It is worthwhile exploring the potential for data linkage of the Department of Defence personnel system data with these systems through a test case to be led by the AIHW. The test case might be one of the longstanding, mature registers such as the Victorian Suicide Register or the interim Queensland Suicide Register. The custodians of these registers are important partners in this process and would need to agree with the linkage process, and the uses proposed for the resulting data.

  As previously noted, the NCIS captures timely data on suspected suicides through the 'intent at notification' variable recorded within 24–48 hours of sudden death notification and is uploaded within days from the local systems of all Australian and New Zealand coronial courts. As the AIHW hold a dataset from the Department of Defence personnel system data, if the NCIS was able to send the AIHW a dataset that contained all deaths reported to the coroner on a daily or weekly basis (including identifying information needed to enable data linkage), then the AIHW would be able to develop a

closer to real-time national system that alerts them of current or ex-serving members who have died in a manner that is reportable to the coroner. While in theory this sounds plausible, we are aware of a number of important considerations that warrant further investigation. These considerations include understanding how this would fit within current rules related to different levels of access to the NCIS, understanding legal and ethical aspects to the access and use of NCIS data, privacy and confidentiality considerations, assessing the inconsistencies across jurisdictions in terms of information held in the NCIS, and assessing how information is added as a death investigation occurs, including coding of additional information on risk factors associated with deaths by suicide.

- **Linking The Department of Defence personnel system data to the NHMD**. To improve understanding of self-harm in ADF member populations and enable further comparison with the Australian general population, The Department of Defence personnel system data could potentially be linked to the NHMD. It is understood that the AIHW has already commenced work to this effect with the NHMD and intends to publish these data as part of the ADF-specific population focus on the National Suicide and Self-harm Monitoring System. This will provide ADF member rates of hospitalised intentional self-harm and would then align with what is presented on the National Suicide and Self-harm Monitoring System website for other identified population groups (e.g., young people and Indigenous Australians).
- **Linking The Department of Defence personnel system data to the NASS**. The NASS may provide a timelier source of data on suicidal ideation, suicide attempts and self-injury which may be useful for enhancing understanding of self-harm in the ADF community and for informing suicide prevention responses. Further investigation of the NASS would need to occur to determine the feasibility of this data linkage given that the AIHW is not the data custodian of the NASS. It is also worthwhile noting that the NASS collects information on 'History of Military Service' and understanding the quality and completeness of this data field could also be determined when exploring data linkage between NASS and The Department of Defence personnel system.

5.4.2. Exploration of other data sources and opportunities for new data collections and further research

There are a number of data sources that could be further explored to understand how they may be utilised for monitoring suicide and self-harm in ADF member populations. Further opportunities include:

- **Conducting a review of the DSD.** This would be done to understand what data it collects, how the system is implemented and functions, its governance, who has access to it, and how the system is currently used within Defence for suicide prevention. This review may also identify opportunities for further improvement and utilisation of the system, including using the system for research purposes (e.g., conducting bespoke projects to better understand specific service-related risk and protective factors) and for informing policy, services and supports including postvention supports. It may also be worthwhile reflecting on whether there is potential for data from this source to be integrated into the secure Portal of the AIHW National Suicide and Self-harm Monitoring system which is currently in development and is being designed to provide vetted users within and across government departments to access additional information beyond what is presented on the public published Site.
- **Exploring other sources of data on suicidality and other risk factors available within Defence and DVA**. As previously noted, there are likely to be other sources of data that may be useful for understanding suicide and self-harm in the ADF member population, especially health service use data held by Defence and DVA. These data may provide insights into service use of instances of suicidal ideation and self-harm alongside other mental and physical health-related information. These data may also highlight insights and trends in service use over time, including rates of non-attendance and discontinuation of service use, which may be helpful for informing service redesign and evaluation. These data may be useful for the AIHW when it is conducting more complex analyses of risk factors. There may also be ways this information can be utilised to inform preventive activities, and responsive services and supports, especially when serving members are transitioning out of the ADF and there is evidence that they may be at heightened risk for suicide (e.g., if they have a history of self-harm or mental health diagnoses, or they have separated for medical reasons). It would also be helpful to understand what information is transferred routinely between Defence and the DVA as part of the transition process, and how this

information is then utilised by the DVA. An important caveat to the access and use of health and related data will be an assessment of ethical, privacy and legal considerations, especially in relation to medical confidentiality and respect for patients' privacy and autonomy to consent to the collection, access to, and use of patient-level data.

- **Working with other service organisations supporting serving and ex-serving ADF members to identify opportunities for data sharing and/or research.** Organisations such as Open Arms Counselling Service are likely to hold relevant data and there may be opportunities for further collaborative learning and research between organisations and government departments to inform suicide prevention efforts both within and outside of these organisations. It is understood that there have been collaborative efforts between Defence, DVA and Open Arms in the past that focused on ADF member health and wellbeing, and that these entities have also created partnerships with specialised research centres at universities and research foundations. These existing relationships and partnerships could be leveraged to support further research and evaluation into suicide and self-harm in the ADF members.
- **Gather comparable data on suicidality in ADF member populations using the National Study on Mental Health and Wellbeing (2021) survey instrument.** As previously noted, the results of the National Study on Mental Health and Wellbeing will be released in July 2022. The study takes the form of a survey, and – amongst other things – will provide up to date estimates of suicidality in the Australian general population. Even though the survey does include an ADF identifier, there are unlikely to be sufficient numbers of ADF members within the total population sample to enable meaningful within-group analyses for the ADF population, especially if the aim is to understand risk factors for suicidality. It may, however, be possible to obtain point estimates (with tolerable confidence intervals) of suicidal behaviour such as suicide attempts etc. and to make comparisons of these between the ADF member group as a whole and the rest of the population. Our assessment of this is based on some crude calculations based on what is known about the number of survey respondents (i.e., 5554 respondents (72)), the size of the ADF member population in Australia in 2019 (i.e.,358,000 ADF members who are alive and served at least one day in the Australian Defence Force (ADF) since 1985 according to AIHW estimates (73)), the size of the Australian population in 2019 (~25 million of which 81.3% were adults equating to 20.325 million adults (74)). Using these figures, we estimate the proportion of ADF members within the Australian general population in 2019 to be ~1.7% (i.e., 358,000/20.325 million). Based on these numbers, 1.7% of the 5,554 of the total sample of respondents is ~ 94 respondents. This also assumes that ADF members are as likely as the rest of the population to do the survey, which may or may not be true. These numbers are probably too small to do many meaningful analyses.

  A way to gather comparable data for the ADF member population as for the general population would be to administer the survey, or relevant questions from it, to serving and ex-serving members, sampled to ensure that results can be generalised to their member populations.

5.5. Assessing the suitability and feasibility of opportunities and development of the Roadmap for Part 2

As previously noted, further assessment of the identified opportunities (as well as identification of other possible opportunities over the medium- to long-term) will be conducted in Part 2 of this project. This includes considering the perspectives of stakeholders, including people with a lived experience of ADF member suicide or self-harm, the AIHW and the National Suicide Prevention Office of the National Mental Health Commission. Consultation with these stakeholders will occur over May and June and will inform the Roadmap that is developed in Part 2 of this project.

6. Concluding remarks

This project has been designed to inform current inquiries into suicide and self-harm data monitoring in the ADF member population being conducted as part of the Royal Commission into Defence and Veteran Suicide. Part 1 of this project has focused on providing an overview of the nature and extent of suicide and suicidality in the ADF member population and other selected countries, assessing the suicide and self-harm data landscape in Australia, and identifying opportunities to improve suicide and self-harm monitoring for the serving and ex-serving ADF member populations.

Our scoping review gathered and reported the most contemporary estimates we could find (at this point in time in the public domain) on the rates of suicide and suicidality in the general and defence populations in Australia and selected countries. We found that there is a higher risk of suicide and suicidality in the ex-serving ADF member population compared with both the Australian general population and the serving ADF population. The serving population have lower rates of suicide than the general population, higher rates of suicidal thoughts and making plans, and no difference in rates of suicide attempts when compared to the Australian general population. These findings were not remarkably different from what has been reported for defence populations in other countries such as the USA and Canada. We also identified and commented on the state of the evidence for risk and protective factors for suicide in general populations and Defence populations. We noted that these populations share many of the same risk and protective factors for suicide. Some service specific risk and protective factors have been identified, but with varying levels of supportive evidence. The epidemiological evidence overall helps to support understanding of where data is most needed to inform suicide prevention policy and service responses alongside the ADF journey.

In the interim advice report of the interim National Commissioner(3), Dr Boss identified a number of issues in relation to the collection and reporting of suicide and self-harm data for ADF member populations including the likely underreporting of deaths by suicide in the ex-serving ADF member population due to problems with identifying the total ex-serving population and the lack of routine collection, and timely sharing of data on suicide, suicide attempts and self-harm in ADF member populations. The results of our environmental scan of the Australian data landscape largely confirm the presence of these issues including: the lack of an authoritative count of the ex-serving population in Australia, which impacts the accuracy of current suicide rate calculations in this population; the lack of formal and timely reporting of suspected ADF member suicides from identified data sources; the lack of routine monitoring of suicidality in the ADF member populations with prevalence estimates of suicidality in these populations coming from point in time survey data from 2010 and 2015. We also identified data sources that may hold some of these data, and/or be linked with ADF member population data sets, but that do not appear to be currently being used to report data specific to ADF member populations (i.e., the state and territory suicide registers, the NHMD, and the NASS). Furthermore, we identified the DSD as a system within Defence that is currently collecting information on suspected and confirmed suicides of ADF serving members since 2000, but of which we were uncertain about the detail of this system and its use within Defence. We also identified the likelihood that other sources of relevant data exist within Defence, DVA, and other service organisations, but we are also uncertain here of the finer detail with regards to these data.

As a result of the environmental scan and the identification of gaps in data and reporting, we were able to identify some opportunities that we think are implementable over the short term to address these gaps, including ways to enhance current reporting efforts, possible ways to improve close to real time monitoring of suicide and self-harm in ADF member populations using data linkage, and exploration of other data sources and opportunities for new data collections and further research.

When identifying these opportunities, we also modelled some of these on the way the US Department of Defense Suicide Event Report System and reporting operates, noting this to be a standout system for suicide and self-harm monitoring of a defence population (though acknowledging that it is also a mature system that has developed and improved over many years). The identified opportunities also align with recommendations made by Dr Boss in the interim advice report(3). The feasibility and acceptability of these identified opportunities and the identification of other possible opportunities over the medium- to long-term will be conducted as part of the development of the roadmap to real-time monitoring for suicide and self-harm in ADF member populations in Part 2 of this project.

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8. Appendices

8.1. Appendix 1. Key research questions provided by the Royal Commission

Table 23. Key research questions provided by the Royal Commission to inform this project.

Part 1. The report will begin with a study of data on suicide generally, and how it is collected, including information about existing suicide and self-harm monitoring data and systems for the general population and the defence member and veteran sub-group, by answering the following research questions:
a. What is the statistical description of the size and nature of suicide and self-harm in the general population and the defence member and veteran sub-group?
b. What is known about predictive, risk and protective factors for suicide in the general population and the defence member and veteran sub-group?
c. What are the current data holdings relevant to suicide and self-harm monitoring in the general population and the defence member and veteran sub-group?
d. How does Australia compare to other countries in terms of data collection, monitoring and reporting as well as in the rates of suicide and self-harm for the general population and the defence member and veteran sub-group?
e. Are there issues or uncertainties with the numbers of deaths by suicide and self-harm being underreported, particularly amongst veterans (e.g. relying on coronial findings of 'suicide')?
f. Are there deficiencies in information about suspected suicides and risk factors in the general population and the defence member and veteran sub-group (refer to Dr Boss's Report in Chapter 10, the absence of a suicide death register and a robust system for capturing information about suicides and risk factors).
g. Are existing suicide and self-harm monitoring data made readily accessible to academic and researchers for the general population and the defence member and veteran sub-group?
h. How could suicide and self-harm monitoring in the defence member and veteran sub-group be improved immediately with currently available data?
i. How could suicide and self-harm monitoring in the defence member and veteran sub-group be improved in the short-term (e.g. through use of coding existing data sets, strategies for improving the quality and consistency of current jurisdiction datasets, cross-matching datasets, new data collections and/or the incorporating of at-risk population sub-groups in the state and territory suicide registers)?
j. How could the disparate data sources currently reported in the National Suicide and Self-harm Monitoring System be integrated to allow reporting and research into the progression between intentional self-harm, suicide behaviour and deaths by suicide, informing public health practice and allowing the evaluation of intervention programs and policy changes.?
Part 2. The report will then draft a long-term road map to move to real time suicide and self-harm monitoring and identify opportunities (in real-time) for intervention and postvention in defence member and veteran populations:
a. How could this be designed?
b. What are the privacy considerations and/or other challenges such as legislative, policy and operational?
c. How could real-time self-harm monitoring be used to identify opportunities (in real-time) at a stage when further harm may be prevented?
d. How could real-time suicide monitoring be used to identify opportunities to prevent further suicide?

8.2. Appendix 2. Regular monitoring of suicide and self-harm of Defence populations internationally

Table 24. Regular monitoring of suicide or self-harm in serving Defence populations in the US, Canada and the UK.

Country	Name of report/study/system and organisations involved	Data type/population group	Data sources and details of matching/linkage	Coverage	Monitoring and reporting
US	US Department of Defense (DoD) Annual Suicide Report Calendar Year 2020, September 2021 using information from the Department of Defense Suicide Event Report System (DoDSER). Organisations: DoD, Psychological Health Center of Excellence (a division of the DoD), Health Agency Research and Development.	Confirmed and pending (or suspected)[1] deaths by suicide for Active Component, Reserve and National Guard service members and their families. Presents counts, rates, trends over time in current serving members and their families (where available).	Armed Forces Medical Examiner System (AFMES). Civilian medical and legal authorities and reported to AFMES via the Military Services. Suicides among military family members data sources: Defence Enrolment Eligibility Reporting System; Military Services; and linkage to the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics National Death Index (NDI). General population comparison data is sourced from the CDC's Web-based Injury Statistics Query and Reporting System which uses data from the National Violent Death Reporting System and the NDI. Analysis and reporting are conducted by the DoD.	National[2].	Annual reporting of deaths by suicide (previously presented in the Defense Suicide Event Report). Also reports on DoD suicide prevention activity, outputs, and progress against indicators over time. Report is released in September of the following year (approximately nine-month time lag). Report is available online to the public.
US	US Department of Defense Suicide Event Report System and Report.	A web-based surveillance system for collecting, organising and securing a standard set of case-level data for every service member who dies by suicide or makes a suicide attempt, regardless of military service, component, or duty status. Also captures a variety of suicide-related risk factors and other contextual factors for suicides and suicide attempts.	Data sources: AFMES, the Military Health System Data Repository (MDR), and the Defense Manpower Data Center (DMDC).	National.	The DoDSER Annual Report is the US Department of Defense official source for detailed risk and contextual factors associated with suicide and suicide-related behaviour in DoD. The DoDSER 2020 Annual Report is pending (not publicly available online as of May 2022).
US	Army Behavioural Health Integrated Data Environment (ABHIDE)	Surveillance of suicides (confirmed and pending), suicide attempts, and suicide ideations in Army active-duty soldiers.	The ABHIDE includes data from multiple data sources: AFMES, DMDC, MDR, DoDSER, Defense Casualty Information Processing System, Drug and Alcohol Management Information System, and Periodic Health Assessment.	National for US Army	Annual reporting of surveillance of Suicidal Behaviour published by the Division of Behavioral and Social

Country	Name of report/study/system and organisations involved	Data type/population group	Data sources and details of matching/linkage	Coverage	Monitoring and reporting
	Surveillance System, US Army. Report by Brookes et al, 2018 based on this system.	Includes demographic and military characteristics and major life events of suicidal behaviour cases in army active-duty soldiers.		active-duty soldiers.	Health Outcomes Practice, US Army Public Health Center.
Canada	2020 Report on Suicide Mortality in the Canadian Armed Forces (1995 to 2019) Surgeon General Report, January 2021.	Deaths by suicide and select demographics of Regular Force males (1995–2019) and the prevalence of suicide risk factors for suicide deaths that occurred in 2019 (e.g., mental health factors, work and life stressors, deployment history, etc.).	Medical Professional Technical Suicide Review[3] Reports (for the presence of mental health factors, work and life stressors). Suicide data from the Directorate of Casualty Support Management (until 2012), then after Sept 2012: Directorate of Mental health with cross-reference to the Administrative Investigation Support Centre, part of the Directorate Special Examinations and Injuries. Details of deployment history and Canadian Armed Forces population data from the Directorate of Human Resources Information Management. Counts by age and sex from Statistics Canada. Analysis and reporting are conducted by the Surgeon General, Directorate of Mental Health.	National (males only).	Periodical reporting of data but the frequency of future updates is unclear.
UK	Ministry of Defence, 2020. Suicides in the UK Regular Armed Forces: Annual Summary and Trends Over Time 1 January 1984 to 31 December 2019.	Annual report of suicide deaths among serving UK regular armed forces (Naval Service (Royal Navy and Royal Marines), Army (including the Gurkhas) and Royal Air Force) personnel for the latest 20 years (2020 version has 2000–19). With comparisons to UK general population. Restricted to males aged 16–59.	Defense Statistics collate weekly notifications from UK regular armed forces deaths from Joint Casualty and Compassionate Centre. Defence Statistics also receives cause of death information from military medical sources and the Defence Inquest Unit. Defence Statistics cross-reference death notifications with publicly available death certificate information from National Health Service Digital and the General Registrar's Office. Defence Statistics audit Ministry of Defence data with Office for National Statistics, General Registrar Office Scotland, Northern Ireland Statistics Research Agency, and the coroner.	Whole of the UK.	Annual reporting.

Notes: [1]DoD considers both confirmed and pending (or suspected) suicide deaths as suicides to reduce the potential for underestimating the extent of suicide mortality in DoD. Pending (also known as suspected) suicide is a designation by the Armed Forces Medical Examiner as the manner of death when the circumstances are consistent with suicide, but the determination is not yet final. [2]NDI data: All death records (1979 onwards) in 50 states, the District of Columbia, New York City, Puerto Rico, and the US Virgin Islands. Records from select years: Guam, American Samoa, and the

Northern Marianas. Recent data from out-of-country deaths of US military personnel. [3]Medical Professional Technical Suicide Review is a quality assurance tool for Canadian Forces Health Services that is requested by the Deputy Surgeon General immediately following the confirmation of all Regular Force and Primary Reserve Force suicides. Each Medical Professional Technical Suicide Review is typically conducted by a team consisting of a mental health professional and a General Duty Medical Officer.

Abbreviations: DoD: US Department of Defense; DoDSER: Department of Defense Suicide Event Report System; AFMES: Armed Forces Medical Examiner System; CDC: Centers for Disease Control and Prevention; NDI: National Death Index; MDR: Military Health System Data Repository; DMDC: Defense Manpower Data Center; ABHIDE: Army Behavioural Health Integrated Data Environment.

Table 25. Regular monitoring of suicide or self-harm in ex-serving Defence populations in the US, Canada, and the UK.

Country	Name of Study/ System and organisations involved	Data type/population group	Data sources and details of matching/linkage	Coverage	Monitoring and reporting
US	US Department of Veterans Affairs' 2021 National Veteran Suicide Prevention Annual Report. US Department of Veteran Affairs (DVA) (publishers), US Department of Defense (DoD), and the Centers for Disease Control and Prevention (CDC).	Deaths by suicide in veterans (i.e., evidence of federal active duty but not currently serving at the time of death). Presents the number and rates of veteran suicide deaths, 2001–19, and makes comparisons to the non-veteran population. Presents the lethal means involved in veteran suicides in 2019 and presents the proportion change in types of means from 2001 suicides. Weekly data of veteran patient encounters from Veteran Health Association (VHA) Site reports on suicidal behaviours of veterans during COVID-19 (March 2019-2021). VHA site reports include information regarding veteran suicide deaths and nonfatal suicide attempts.	Veteran status lists are compiled by DVA analysts with staff from the DoD. The following sources are combined: VHA clinical, administrative, and enrolment records compiled by the Serious Mental Illness Treatment Resource and Evaluation Center; the US Veterans Eligibility Trends and Statistics database maintained by the DVA Office of Enterprise Integration; and service era rosters and registry files maintained by the DVA Health Outcomes Military Exposure Program. Death by suicide data is obtained from the CDC National Death Index (NDI). Data matching of veteran status lists to the NDI is conducted by NDI staff. In March 2020, DVA began monitoring trends in VHA patient encounters and site-reported nonfatal suicide attempts based on VHA facility reports and diagnosis indications and VHA site reported veteran suicides.	National[1].	Yearly data capture and reporting. Report also provides an annual review of suicide prevention activities being conducted. Report is available online to the public and includes access to summary data in an excel workbook.
Canada	2019 Veteran Suicide Mortality Study. Veterans Affairs Canada, Department of National Defence, Statistics Canada.	Presents age-adjusted deaths by suicide rates and trends over time of a cohort of Canadian Armed Forces between 1976 and 2014 with service in the Regular Force and Reserve Class C (but missing Reserve Class A and B personnel). Standardised Mortality Ratios were calculated to compare the magnitude of	The 2019 Veteran Suicide Mortality Study uses work history data from the Human Resources Management System and pay data for >230,000 former Canadian Armed Forces personnel (released from the Forces 1976 to 2014) linked to Canadian death records at Statistics Canada. Suicides were identified by cause of death classification from provincial and territorial coroners' reports. Statistics Canada undertook the data linkage.	National.	Yearly data is captured and reported and trends over time (here 39 years). The 2019 report is an update of the 2017 report.

Country	Name of Study/ System and organisations involved	Data type/population group	Data sources and details of matching/linkage	Coverage	Monitoring and reporting
		suicide risk in veterans to that of the Canadian general population.			
UK	Scottish Veterans Health Study (unclear if this also includes serving).	A retrospective 30-year cohort study of veterans born 1945–85 and matched non-veterans. Compares the risk of suicide and fatal self-harm overall, by sex, birth cohort, length of service, and year of recruitment.	National Health Service Scotland. Scottish linked health records (routine acute hospital and mental health care data (Scottish Morbidity Record SMR01 and SMR04)) and death certificates.	Whole of Scotland	Research publications at irregular intervals.

Notes: [1]NDI data: All death records (1979 onwards) in 50 states, the District of Columbia, New York City, Puerto Rico, and the US Virgin Islands. Records from select years: Guam, American Samoa, and the Northern Marianas. Recent data from out-of-country deaths of US military personnel.

Abbreviations: DVA: US Department of Veteran Affairs; DoD: US Department of Defense; CDC: Centers for Disease Control and Prevention; VHA: Veteran Health Association; NDI: National Death Index.

8.3. Appendix 3. Detailed description of insights from consultation with people with a lived experience perspective of ADF member suicide and self-harm

8.3.1. Aim and method

To inform the development of the roadmap, between April and early June, we consulted with people with a lived experience perspective of ADF member suicide and self-harm. The aim of this consultation was to learn about what they believed was important for suicide prevention in ADF member groups, perceived gaps in data and information about suicide and self-harm in the ADF members, how improving data may play a role and, any priorities or concerns they might have about the collection of suicide and self-harm data for ADF member groups.

Professor Andrea Phelps, through her work at Phoenix Australia, regularly engages with ADF member representatives for research and service development. With the help of Professor Phelps, we created a list of six suitable contacts and all six contacts agreed to participate in an interview over zoom with two members of our project team. The consultants recruited were mostly male (i.e., five males and one female), and appeared to range in age but were mostly in their middle years. There was an even split of ADF members who were currently serving and active reservists, and those who were ex-serving ADF members. Nearly all consultants had served in the Army (i.e., five in the Australian Army and one in the Royal Australian Navy). All members had had an experience of active service with at least one deployment overseas as part of their ADF experience. Most ADF members served for more than five consecutive years but were from a range of ranks. There was a combination of personal lived experience of suicidality or being connected to those ADF members who had died by suicide or who had, or who were currently experiencing suicidality. More than half of the consultants had also been involved in the planning or implementation of services and supports for ADF member groups or advocacy efforts (particularly ex-serving members) in either a professional or voluntary capacity.

The interviews were approximately one hour in duration, and we took notes of the consultant's responses to our questions (See appendix 4 for the interview guide). On completion of all the interviews, we combined and summarised the information provided by the consultants and the key messages that resulted from the interviews are recorded below.

8.3.2. Main findings

Priority areas of focus for ADF member suicide prevention

Consultants raised concerns about higher rates of suicide of ex-serving members compared with serving ADF members, suggesting a need to focus in more closely on ex-serving ADF member groups within the ADF community. However, they also reflected that the ex-serving population is far from a homogenous group and is in fact very diverse, with many groups within this population having diverse problems and needs. Consultants identified some groups within the ex-serving community that they perceived to have a higher risk for suicide that they thought needed to be prioritised including: those ADF members who involuntarily separated, those who separated due to medical reasons and especially those given a classification of total and permanent injury, and younger males who enter and leave the ADF relatively quickly as there is often a story behind that in terms of their personal service experience or if they were medically discharged.

Consultants also identified sub-groups within serving ADF members with higher risk, such as those who have recently returned from deployment and those who have experienced bullying within the ADF. They also highlighted the protective elements of service that seem to reduce the risk of suicide in current serving ADF members including a sense of self-identity and purpose, mateship and social connections, financial stability, housing stability, access to mental and physical healthcare, and access to specific psychosocial supports such as when serving ADF members experience relationship breakdown and divorce.

Consultants noted that it was important to caveat that suicide is an Australian-wide public health issue, not just an issue within the ADF community, and that prevention and crisis response strategies for the general population also apply to those in the ADF community. They noted that the major risk factors for suicide for ADF member groups and the wider population appear to be very similar, though some specific risk factors are present for ex-serving ADF members.

Importance of suicide and self-harm data for ADF members and current gaps in knowledge

Consultants drew attention to the importance of accurate data recording and analysis to provide evidence for useful, fast, and responsive action to prevent suicide and self-harm. They also noted that data could be used to better describe ADF members, identify trends, identify resourcing gaps, and better focus resources. Consultants specifically noted the importance of examining trends about when suicide is occurring (e.g., possibly higher rates around significant days such as ANZAC day or Christmas day), and the involvement of medications, alcohol, and drugs. Consultants talked of hopes that data could tell some positive stories about the strengths of people within the ADF community, and that these data, alongside lived experience stories could influence both the public perspective of the ADF community and provide hope to those struggling in the future.

They commented on gaps in the collection and use of data pertaining to ADF populations, with the main issue raised repeatedly being the deficiencies in determining who was in the ex-serving community in Australia. Consultants reported that each organisation or group for ex-serving members only represented a sub-group of the population, and there was no one group that included the whole ex-serving population. Another gap identified by consultants was for data pertaining to specific, vulnerable sub-groups of serving ADF members such as the Special Forces, and Navy personnel who experience constant deployment. One consultant noted that the collection of ADF data appeared to be reactive rather than proactive and that there was no real assessment of risk in real-time.

Areas impacting the collection and reporting of suicide and self-harm data for ADF members

An issue frequently raised by consultants was the fragmentation of ex-service organisations and groups and the impact this had on both the accessibility of support and the collection of data about suicide and suicidality for ex-serving ADF members. Consultants reported that many ex-serving ADF members avoided the DVA due to a lack of trust, the link to government, and a history of letting people down. They felt it was an old system which was responsible for too much and unable to function as needed.

Consultants noted that many ex-service personnel have difficulties connecting with the general community groups so ex-service groups are important, however there was also a lack of trust and confidence reported for these organisations. Additionally, consultants reported that there are many different groups, each with their own challenges. Consultants commented on a history of difficulties with different ex-service groups joining the RSL and conflicts between and within RSL sub-branches. Consultants felt that these issues, in combination with the diversity of the ex-serving population, a lack of strong and representative leadership, and the geographical dispersion of the community have contributed to the rise in additional, smaller organisations being created. Consultants reported that those organisations are focussed on staying afloat rather than on data collection or suicide prevention efforts. Additionally, they reported that many ex-service organisations and groups are run by volunteers who don't know how to handle confidential data appropriately and securely.

A concern about the accuracy of self-identification of ex-serving ADF members in Census data was raised. Consultants felt that some people won't identify as ex-serving personnel due to discomfort, or distrust, or because they don't feel they fit the criteria due to lack of overseas deployment. Consultants also noted that some people who identify as ex-serving ADF members in Census data may have served in Defence Forces of different countries instead.

Concerns were raised about stigma within the Defence Force impacting on self-reporting of suicidality and mental ill-health. Consultants reported that ADF personnel hide these issues to remain in service and prevent impacts on their jobs. They commented that it was frowned upon to discuss these issues while serving and that they felt that units didn't want to deal with it, so it was best to deal with it on the outside. They also noted that changes over time to living arrangements and socialisation have made it more difficult for others to notice when someone is at risk or having problems. They reported that negative perceptions of mental health problems were greatest for young males and those in the Army, that there was a fear of being seen as the weak link and a need within the ADF to fit the mainstream view of manhood. They also noted that dependency on alcohol and drugs may be linked to mental health problems but were often hidden by the affected individuals due to concerns

about termination. Consultants reported that ADF members separated for involuntary or medical reasons could feel a strong sense of shame which has ongoing negative impacts.

Consultants acknowledged the complexity of balancing promotion of hard skills such as training to kill with soft skills required to talk about feelings and mental health, as well as balancing the promotion of disclosing mental health concerns with duty of care not to deploy people who are not best able to serve. They also commented that while these are ongoing challenges, there have been improvements to reduce stigma, and increase the peer and other support following disclosure of mental health problems. While consultants noted the importance placed on suicide prevention within Defence, they also acknowledged that there was still a resistance to talk about it.

Improving the collection and use of suicide and self-harm data for ADF members

To allow identification of ex-serving ADF members, consultants reported the need to build trust and confidence in the community, as they felt this was an ongoing issue with RSL and governments. There was voiced a need to include data from a large range of ex-serving organisations (including DVA, Legacy, Carry On, Soldier On and MATES) to identify as much of the population as possible, and specifically to identify those in need of support. The Funeral Directors' Association was identified as a group who would have information on whether deceased individuals were ADF members, and there was a suggestion for ADF member status to be collected on death records. Consultants commented on the differences in coding of deaths as suicide between different data collectors, including the strict requirements needing to be met for deaths to be coded as suicide within coronial systems compared with the more inclusive coding within some other systems. They felt that these coding practices could be improved and that a best-practice system which used a classification system partway between the current options should be developed.

Consultants commented that in-depth statistical analysis of Census information should be conducted. Suggestions were made to use Census data to create heatmaps of the ex-serving population which could be compared with service locations to ensure new services are located where they are most needed. Consultants also suggested these population maps could be compared with general population data to look at potential correlations with socio-demographic factors (e.g., areas with high or low rates unemployment). Another suggestion was for collaboration with DVA to collect information via surveys mailed to their members.

Consultants suggested using DVA client lists to identify and support ex-serving personnel who may be at risk of suicide or self-harm. Social media was also flagged by consultants as a tool that Defence could use to identify people who are struggling based on their posts and comments. Consultants suggested that social media be used more proactively to tackle stigma and misinformation about suicide, suicidality, and mental health more broadly, while also improving public perceptions of Defence personnel. Reducing stigma was identified as an important step to improving self-reporting so that people felt safe to work through difficulties without unwanted career consequences. Consultants suggested that this must be initiated from the highest levels of leadership.

Needs and concerns about sharing and reporting of suicide and self-harm data for ADF members

There was overwhelming agreement from consultants that improved sharing and reporting of data pertaining to suicide and suicidality for ADF members could help increase awareness and improve suicide prevention efforts. They noted that anyone collecting these data needed to ensure it was linked to a service or prevention effort that helped people. They reported difficulties finding data about suicide and suicidality for ADF members and felt that Defence should be more open and transparent by either reporting the data themselves or sharing with others who can report these data.

Consultants were aware that there was a need for care when sharing and reporting on sensitive information about Defence members and that the Privacy Act was a barrier. They noted challenges in sharing data within Defence and with external organisations such as DVA, including the need for individual ADF members to consent to data sharing. Consultants also raised concerns about personal information being shared with and between other ex-service organisations that are not as well equipped or trained to manage the information securely.

Consultants felt there needed to be fewer barriers to sharing information, and that privacy concerns for data collection and sharing would be drastically reduced with transparency around how data would be used, who would have access to it, and how and where it would be stored. Another suggestion for managing privacy concerns was to anonymise data where possible, including where it was being analysed to identify trends, study risk and protective factors, and to initiate services and supports broadly in response to trends. However, the transfer of personal information designed to promote an individual's well-being was clearly the priority.

Consultants noted that some ADF personnel did not want to provide information which was a barrier to the ADF being able to provide support. They also reported that information provided by serving individuals that was indicative of suicide risk or poor mental health wasn't always used to trigger support. Consultants felt this was at least partially caused by a lack of data sharing within Defence (e.g., between the individual's unit, Commanding Officer, psychologist, medical staff). Difficulties with having this information transferred from Defence to the DVA were also reported, including ADF members needing to arrange this themselves and having to sort through their own psychological records. Consultants felt that information transfer between Defence to DVA was important to allow the DVA to follow up on members during and after transition, but that this sharing of information should be done carefully and with the permission of individuals. Some consultants reported that information sharing between the two organisations had improved recently and that ADF members had increasing amounts of trust. Concerns were still raised about the sharing of information between Defence and DVA creating problems to the future careers of those identified to be at-risk, as well as the pre-emptive sharing of information causing members to feel decisions about their careers had been made before they actually had.

Other issues raised about suicide and self-harm prevention for ADF member populations

Consultants raised other issues about suicide and self-harm in ADF member populations that, while not specifically related to data, were important perspectives for prevention efforts. There was a strong theme of the need for more action in place of talk and promises, with consultants reporting a sense of being over-reviewed and over-analysed, and recommendations being developed with no follow up action. They noted the importance of peer work and differences in how this is implemented in different service branches (e.g., implemented better within RAAF compared with Army and Navy). They expressed the need for ongoing, proactive suicide prevention programs and training to be embedded culturally in the ADF and other workplaces, instead of short-term or one-off fixes that are in place to tick a box.

Consultants raised the need for more education and support to access help for suicidality and mental health needs for ADF serving and ex-serving members, their families, and the general community. They noted that those at higher levels within Defence were receiving training on these issues but not those at lower ranks. They commented on military values about looking after your mates contrasting with the lack of education and tools provided to many ADF members to do so. Another concern raised about gatekeeping for ADF member suicide prevention was the lack of investigation into possible welfare concerns when a member requested to leave Defence, including cross-checks with past psychological reports.

Problems relating to access and provision of support were consistently raised by consultants. One such problem was the lack of any or appropriate support while serving, with consultants reporting that serving members tend to first get allocated to a counsellor at Open Arms rather than a psychologist, and so often a proper diagnosis is not made. Additionally, they reported that due to a lot of movement of counsellors in Open Arms, members often end up having to tell their story to various counsellors which can cause them to relive the trauma and be detrimental to their mental health. The need for preventative support in place of reactive care was raised with the suggestion that high-quality psychological support should be embedded as part of routine practice for specific situations rather than waiting for ADF members to self-identify and seek help. Consultants also raised the potential need for providing access to counselling for families of ADF members.

Consultants commented on the difficulty of finding support after separation, and the importance of having information and supports in place during transition to avoid ex-serving members going many years without finding appropriate supports. Consultants felt that it was important to improve education and communication with members prior to discharge about what to expect outside of Defence and supports available (including how and when to access them). Other issues raised by consultants for ex-serving members related to difficulties, inequalities, and negative impacts of accessing support through the DVA. Consultants reported that the process

of submitting claims and accessing funding was often very complex making it inaccessible to the most vulnerable people, and too lengthy to be of help during crisis situations. They reported that advocacy and support programs are needed to help people navigate the system, and other supports are needed for immediate responses. They commented that the requirement to prove history of service was an unnecessary burden to ex-serving ADF members that should be able to be automated. Similarly, they felt that compensation should be provided by default to those who have been put in high-risk situations without individuals being forced to present that case. Consultants also raised concerns that there was a lack of military knowledge and expertise within DVA staff that meant incorrect information was sometimes provided to clients.

Consultants reported that rules and restrictions surrounding pensions such as restrictions on work and volunteering, classification as disabled, and difficulties with applications can lead to compounded mental health problems and increase suicidality. They felt that these issues reduced self-esteem, took away people's reasons to get up each day, and made some avoid seeking help to avoid these limitations. Consultants commented that these services are presenting ex-serving ADF members with barriers and hindering their access to re-integration and psychological support. An additional barrier raised about accessing support was the rules requiring that psychiatrists make assessments for many issues, when clinical psychologists could be more helpful, cheaper, and available in a timelier manner.

8.4. Appendix 4. Interview guide for consultations with people with a lived experience perspective of ADF member suicide and self-harm

Thank you for offering to speak with us to inform a research project focused on developing a roadmap to real-time monitoring of suicide and self-harm in the ADF member population.

During the discussion, we would like to take notes on your responses. The information you provide us will be combined and summarised with information from other lived experience consultants and will inform the planning of the roadmap. We understand that you may not have experience or expertise in all relevant areas for this work but appreciate any insights you can provide. You and your information will not be identifiable in any reporting related to this project, but you may choose to have your contribution acknowledged if you wish.

Before we begin, please note that sometimes discussing suicide and self-harm data and support services can be distressing. If you feel distressed at any time during the consultation, please let us know so we can take a break or stop the meeting and discuss options to support you.

Q1. Can you please tell us a little bit about yourself including your connection or experiences with the Australian Defence Force and your interest in suicide prevention for ADF members?

Q2. What do you believe is important for suicide prevention in ADF member groups broadly and how may improving data play a role?

Q3. In your opinion, do you think there are gaps in knowledge and data on suicide and self-harm and risk factors for suicide (including factors related to service or specific ADF member groups) in the ADF member population?

Q4. What do you think are priorities for the collection of suicide and self-harm data (or data on risk factors) for ADF member groups?

Q5. Who do you think should have access to these data and how do you think it should be utilized to inform services and supports for ADF members and broader knowledge in the Australian community about suicide in ADF members?

Q6. Do you have any concerns about the collection or reporting of suicide and self-harm data for ADF member groups?

Q7. Do you have any other thoughts or comments to offer related to suicide prevention and data monitoring for ADF members?

Thank you for your input. Would you prefer to have no formal association with the report or to be included in the acknowledgment section?

9. Endnotes

[1] A veteran is a person for which there is data indicating they served full-time in the military (excluding the Reserve and National Guard) and were not currently serving at their time of death.

[2] No consistent definition of a veteran has been used in the UK work described in section 3.1.6 'Suicide in the ex-serving Defence population in other countries'. The inclusion of the item in the 2021 UK Census, 'Have you previously served in the UK Armed Forces?', will be used for analysis of the UK veteran population in the future.