



Australian Government
Australian Institute of
Health and Welfare



Committee Secretary
Senate Standing Committees on Community Affairs
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Sir/Madam

Submission to the Senate Community Affairs References Committee Inquiry into Excess Deaths

The Australian Institute of Health and Welfare (AIHW) welcomes the opportunity to provide a submission to the above inquiry. This submission highlights data and information from the AIHW that is of relevance to Terms of Reference (b) and (d) (Attachment 1). This includes:

- Information on burden of disease including trends in fatal burden (years of life lost due to premature mortality) and potential work that could be undertaken to estimate excess fatal burden for the pandemic years.
- Trends in leading causes of death using data up to 2022 which shows that in addition to the 13,287 deaths associated from COVID-19 in 2022, cardiovascular diseases (CVD) and diabetes were two causes that recorded an increase in mortality rates in 2021 and 2022 following a long period of decline (for CVD) and stabilising rates (for diabetes). These causes are common co-morbidities in deaths associated with COVID-19, including in people who die with COVID-19 rather than directly from the virus itself.
- Information on AIHW's COVID-19 Register which links COVID-19 case data with a range of other health data sets and could be used to examine some of the contributing factors to excess mortality.

The AIHW is the leading health and welfare statistics agency in Australia. The AIHW produces a number of mortality products including the annual report *Deaths in Australia* which contains national data on deaths, causes of death and trends over time. The deaths data used comes from the National Mortality Database (NMD) held by the AIHW. The NMD includes the official mortality statistics produced by the Australian Bureau of Statistics (ABS).

While the AIHW does not produce our own estimates of excess mortality, we have used estimates of excess deaths published by the ABS in reports such as *Measuring Australia's excess mortality during the COVID-19 pandemic until August 2023* in a number of AIHW reports including *Australia's Health 2022*, *Australia's Welfare 2023* and *Australia's Health 2024* (forthcoming).



Introduction

The AIHW is a national independent statutory agency established under the Australian Institute of Health and Welfare Act 1987 (AIHW Act).

The role of the AIHW is to:

- collect and produce, and coordinate and assist the collection and production of, health and welfare-related information and statistics
- conduct and promote research into Australians' health and their health services
- develop specialised standards and classifications for health, health services and welfare services
- publish reports on its work
- make recommendations to the Minister for Health on prevention and treatment of diseases and improvement and promotion of the health awareness of Australians
- provide researchers with access to health- and welfare-related information and statistics, subject to confidentiality provisions
- develop and improve performance indicators and targets for national agreements
- provide data linkage services that have been approved by the AIHW's Ethics Committee.

AIHW's role in mortality statistics and reporting

The AIHW performs the following roles:

- a. analysis and reporting of mortality data from the National Mortality Database (NMD) which includes records of all deaths registered in Australia (both doctor and coroner certified) from 1964. The cause of death data are sourced from the Registrars of Births, Deaths and Marriages in each state and territory, the National Coronial Information System and compiled and coded by the ABS. The latest year of mortality data currently included in the NMD is 2022.
- b. authoring and publishing the annual report Deaths in Australia which provides data on deaths, causes of death and life expectancy.
- c. analysis and publishing excel workbooks and interactive visualisations on historical trends in causes of death (General Record of Incidence of Mortality (GRIM) data) and leading causes of death for different geographic areas of Australia (Mortality Over Regions and Time (MORT) data) annually.
- d. authoring and publishing of bespoke reports, for example, How long can Australians live?
- e. reporting on mortality indicators included in the Australian Health Performance Framework.
- f. data custodian activities, including adherence to review and release protocols as described by the AIHW's privacy and security policies.
- g. responding to 'ad-hoc' data requests for information derived from the National Mortality Database, including aggregate data analyses.
- h. Linkage of deaths data from the National Death Index (NDI) to other health and welfare data collections for internal and external clients following approved ethics and governance processes.

Terms of reference (ToR) relevant to AIHW's submission

The material in this submission focuses primarily on the following committee terms of reference:

- b) factors contributing to excess mortality in 2021, 2022 and 2023;
- d) any other related matter.

Burden of disease information (ToR d)

In addition to excess mortality, it is also important to measure years of life lost due to premature mortality (fatal burden or YLL) as well as estimates of years of healthy life lost due to living with disease and injury (non-fatal burden or YLD). Latest estimates from the AIHW's [Australian Burden of Disease Study](#) (ABDS) suggest that age-standardised rates of fatal burden (years of life lost or YLL) have been steadily declining since 2011. They declined by 11% between 2011 and 2018 (from 94 YLL per 100,000 to 84 per 100,000) and showed a smaller decline (4%) between 2018 and 2023 (to 81 YLL per 100,000). COVID-19 accounted for an estimated 0.9% of total burden and 1.5% of fatal burden in 2023. The burden due to COVID-19 was predominately fatal (83%) (AIHW 2023d).

Work could be undertaken to calculate YLL estimates based on 'actual' deaths registered (rather than projected deaths) for each of the COVID years (2020–2023) to assess whether there has been excess fatal burden as a result of the pandemic and how this compares to excess deaths for Australia. This may provide additional insight into the impact of COVID-19 on mortality and the health of the population.

Trends in causes of death (ToR b)

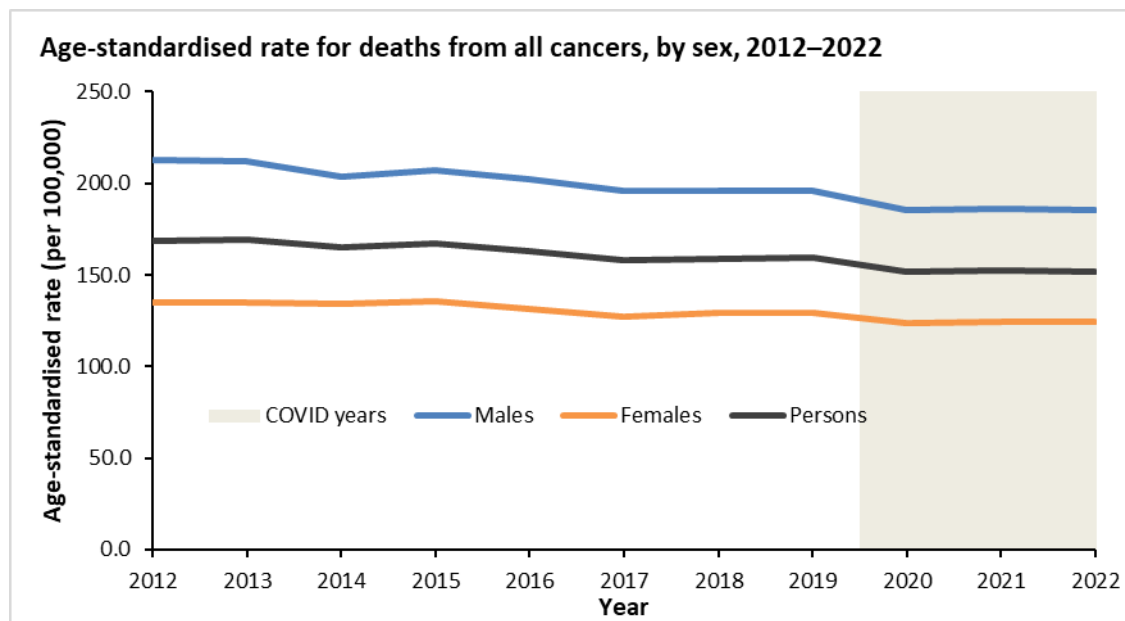
Mortality trends are used to help inform what the expected number of deaths would be if past trends continued. When analysing mortality trends over time it is important to take into account changes in population increase and ageing (such as using age-specific or age-standardised rates) as well as the historical underlying disease/mortality trends.

According to the ABS report: [Measuring Australia's excess mortality during the COVID-19 pandemic until the end of August 2023](#), the year 2022 saw a much higher number of deaths observed (190,856) than expected resulting in an estimated 19,945 (11.7%) excess deaths due to all causes. The ABS statistics show that the number of excess deaths is higher in periods of high mortality from COVID-19 and the excess in 2022 coincided with large numbers of deaths associated with COVID-19 during the Omicron waves. There were 13,287 deaths where people either died directly from the virus or with COVID-19 in 2022. COVID-19 was reported to account for two-thirds of excess mortality in 2022 (ABS 2023).

Looking at trends in other leading causes of death may provide some additional insights into any changes potentially associated with the COVID-19 pandemic. AIHW regularly reports on trends in major causes of death and recent analysis has included data up to 2022 which is presented below.

Cancer

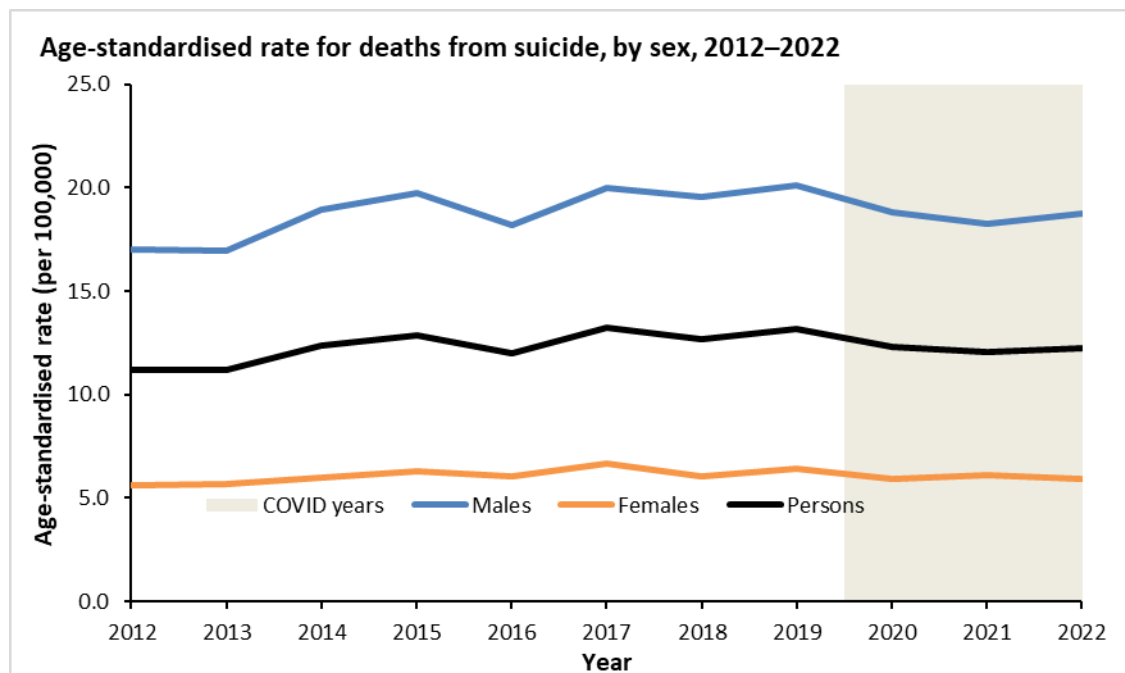
Cancer is the leading group of diseases causing death in Australia, accounting for 27% of deaths in 2022. In looking at trends over the past decade, the number of deaths and age-standardised mortality rates for cancer in 2021 and 2022 are in line with what would be expected based on past trends. While the number of cancer deaths has been steadily increasing, the age-standardised mortality rate (for all cancers combined) has been slowly declining from 169 per 100,000 in 2012 to 159 per 1,000 in 2019, and to around 152 per 100,000 in 2020, 2021 and 2022 (AIHW 2023a; AIHW 2024a).



Source: AIHW National Mortality Database

Suicide

Despite initial fears, the onset of COVID-19 has not been associated with a rise in the suicide rate in Australia. Modelling work commissioned by the AIHW has shown that nationally, suicide rates were fairly steady between 2007 and 2010, but rose between 2010 and 2015 (from 11.1 to 12.9 per 100,000 after adjusting for age) and have shown no clear trend since 2015 (see [Biddle et al. 2021](#); [Biddle et al. 2020](#)). This pattern of no clear trend has remained for the pandemic years with age-standardised rates reported for 2020, 2021 and 2022 ranging between 12.1 and 12.3 per 100,000 (AIHW 2024c).



Source: AIHW National Mortality Database

It is important to note that the data reported for 2021 and 2022 are based on preliminary cause of death information and as such, are subject to further revision by the ABS. Small

numbers can also result in large yearly variation in suicide rates and thus caution is advised when making year to year comparisons (AIHW 2024c).

The AIHW also publish data on suicide from various state and territory established suicide registers in Australia (see <https://www.aihw.gov.au/suicide-self-harm-monitoring/data/suspected-deaths-by-suicide>).

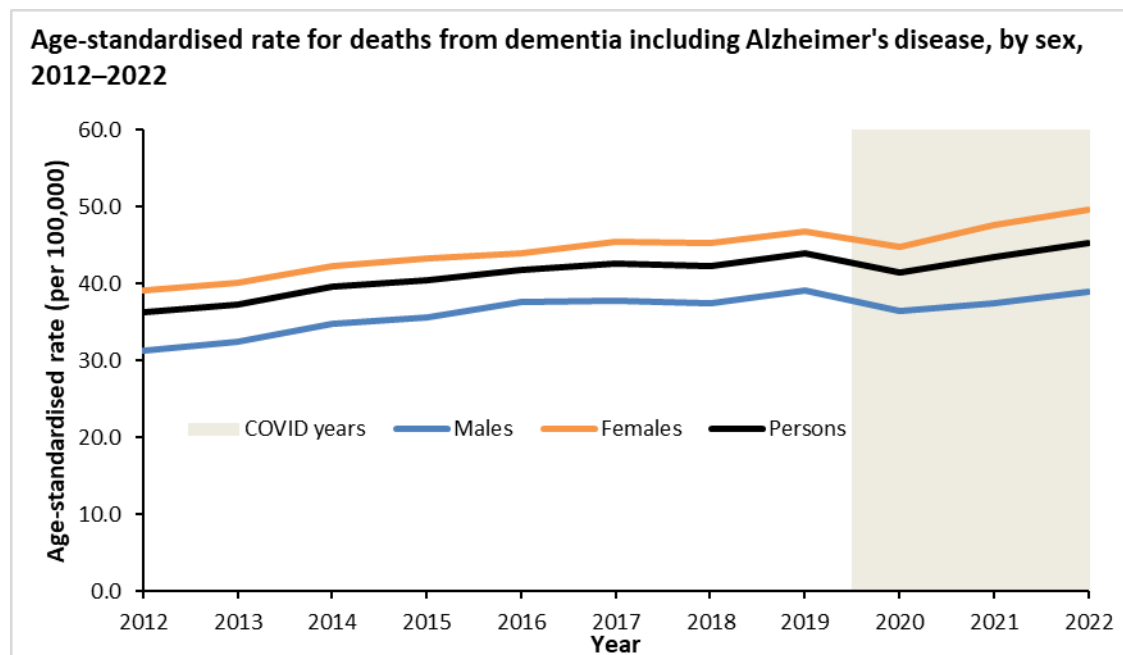
Refer to the AIHW's suicide and self-harm monitoring (SSHM) website for further information on suicide deaths in Australia: <https://www.aihw.gov.au/suicide-self-harm-monitoring/data/deaths-by-suicide-in-australia>

Dementia

Dementia including Alzheimer's disease was the leading cause of death in females and the second leading cause of death in males in 2022. Age-standardised mortality rates for dementia including Alzheimer's disease increased from 36 per 100,000 in 2012 to 44 per 100,000 in 2019. The rates recorded in 2020, 2021 and 2022 were 41.5, 43.5 and 45.3 per 100,000 respectively (AIHW 2024a; AIHW 2024b).

When interpreting these trends, it should be noted that people with dementia have a greater risk of developing severe illness from COVID-19 and higher risk of dying from acute respiratory infections including influenza and pneumonia. The level of activity of acute respiratory disease can affect the death rate of dementia. Fatal COVID-19 outbreaks have involved many people with dementia. ABS provisional mortality statistics also showed there were excess deaths recorded due to dementia in 2017 during the winter months which was likely related to the severe influenza season recorded in 2017 (ABS 2022).

Dementia is a common comorbidity with COVID-19. It was the second most common pre-existing chronic disease among those who died from COVID-19 in 2022. COVID-19 was an associated cause of death for a further 550 deaths due to dementia (including Alzheimer's disease) in 2022 (ABS 2024).

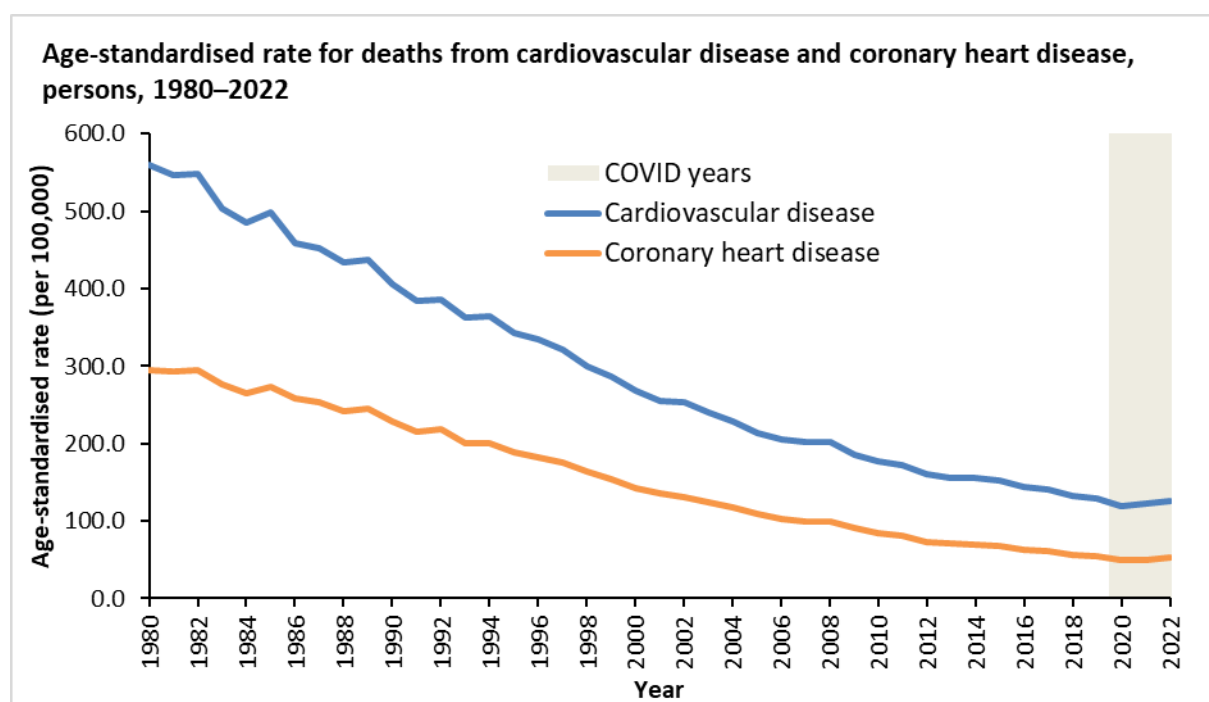


Source: AIHW National Mortality Database

Cardiovascular diseases

Cardiovascular disease (CVD) is the second biggest group of diseases causing death (24% of all deaths in 2022), behind cancers. Cardiovascular diseases (CVD) recorded both an increase in the number of deaths and age-standardised mortality rate in 2021 and 2022, following long periods of a declining trend (AIHW 2024a). The main driver of these trends is coronary heart disease (CHD) which is the most common CVD condition causing death and remains the leading specific cause of death, accounting for 10% of deaths as the underlying cause in 2022.

CHD continued its historical decline in 2020, the first year of the pandemic with 16,800 deaths, however this decline stalled in 2021 with 17,400 deaths and then increased to around 18,600 deaths in 2022. After adjusting for age, the CHD death rate (as the underlying cause) increased by 4.3% between 2021 and 2022 (from 50 to 52 per 100,000 population). This increase should be interpreted in the context of higher overall mortality in 2022, with two-thirds of excess deaths being associated with COVID-19 (ABS 2023). Chronic cardiac conditions (including coronary heart disease) were the most common pre-existing diseases among those who died from the virus present in around 40% of COVID-19 deaths that had a chronic condition listed on the death certificate (ABS 2024). COVID-19 was an associated cause of death for 729 deaths due to circulatory system diseases in 2022. CHD was the most common cause of circulatory system disease for those who died with COVID-19 (ABS 2024).



Source: AIHW National Mortality Database

People with pre-existing chronic conditions such as cardiovascular disease (CVD) are at higher risk of cardiac complications from COVID-19 (Pellicori et al. 2021). They have an increased risk of hospitalisation, intensive care admission and poorer health outcomes. AIHW analysis of national hospitalisations data shows that in 2021–22 and 2022–23, cardiovascular diseases were the most common diagnosed comorbid chronic conditions recorded in hospitalisations that involved a COVID-19 diagnosis (26% in 2022–23) (AIHW 2024d). People hospitalised for COVID-19 with a comorbid diagnosis of CVD were more likely to spend time in an intensive care unit, require continuous ventilatory support and have a separation mode indicating the patient died in hospital compared with all COVID-19

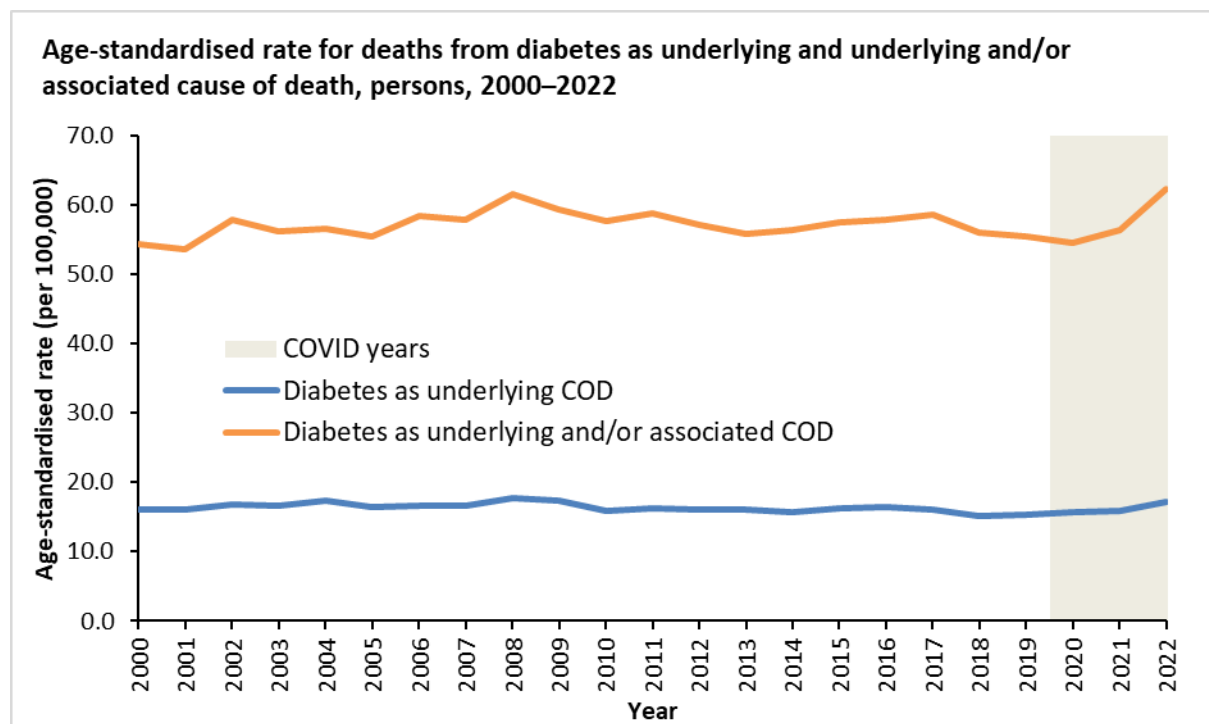
hospitalisations (AIHW 2024d; AIHW 2023b; AIHW 2023c). For example, in 2022–23, of all COVID-19 hospitalisations with a recorded comorbid diagnosis of cardiovascular disease, 7.3% died in hospital compared to 3.6% of all COVID-19 hospitalisations where the patient died in hospital (AIHW 2024d).

It should be noted that increasing age is the single most important factor for risk of severe COVID-19 disease (Liu et al. 2021), and people with CVD are more likely to be older and therefore more likely to have severe COVID-19. Continued monitoring will assess the evolving impact of COVID-19 on CVD and CHD mortality.

Diabetes

Diabetes remains one of the 10 leading causes of death in Australia contributing to around 22,000 deaths in 2022 (11% of all deaths). Diabetes was the underlying cause of death in 6,000 deaths (28% of diabetes deaths). It was an associated cause of death in a further 16,000 deaths (72% of diabetes deaths).

While diabetes death rates (underlying and/or associated cause) remained relatively stable between 2000 and 2020, increases were recorded in both 2021 and 2022. After adjusting for age, the diabetes death rate increased from 54 per 100,000 population in 2000 to 56 and then 62 deaths per 100,000 population in 2021 and 2022, respectively. Like CHD, diabetes is a commonly reported comorbidity in deaths associated with COVID-19 (24% in 2021, 15% in 2022 and 13% in 2023) (ABS 2024). COVID-19 was an associated cause of death for 121 deaths due to diabetes in 2022. Type 2 diabetes is also the second most commonly diagnosed comorbid chronic condition recorded in hospitalisations that involve a COVID-19 diagnosis behind chronic cardiac conditions (21% in 2022–23) (AIHW 2024d).



Source: AIHW National Mortality Database

These trends in diabetes mortality during the pandemic years are broadly consistent with trends seen in registration of diabetes incidence in Australia. Over the 12-month periods to

December 2021 and December 2022, the National Diabetes Services Scheme (NDSS) recorded 121,070 and 116,864 new registrants, respectively. Registrations were higher in both periods than any previous 12 months recorded and were 18% and 14% higher than the equivalent period prior to the pandemic in December 2019 (Diabetes Australia 2022).

However, these new registrations may be, at least in part, people who were previously diagnosed with diabetes and only registering with the NDSS during the pandemic. The increase in registrations also may be influenced by changes to the NDSS to simplify the usual processes to register (Andrikopoulos and Johnson 2020). Further monitoring is required to assess increases in diabetes diagnosis during the COVID-19 pandemic.

Continued monitoring will be important to determine the ongoing and evolving impact of COVID-19 on conditions such as cardiovascular diseases and diabetes and on the overall health of the population.

AIHW's COVID-19 register (ToR d)

The AIHW has developed the COVID-19 Register – a linked data asset – which can be used to develop a deeper understanding of the health outcomes and health service use of COVID-19 cases.

The COVID-19 Register was developed by the AIHW through a Medical Research Future Fund (MRFF) grant opportunity in April 2022. The AIHW, with states and territories and the Commonwealth and the Department of Health and Aged Care, has been using relevant data governance approvals to link COVID-19 case data with other data sources, to enhance monitoring, research, and analytics. The project responds to the emerging medium and longer-term data needs of the pandemic.

The COVID-19 Register links COVID-19 case data with a range of other data sets, including Medicare Benefits Schedule (MBS), Pharmaceutical Benefits Scheme (PBS), hospitals, intensive care, aged care, National Death Index (NDI), and Australian Immunisation Register (AIR) data. Data linkage is the process of identifying, matching, and merging records that correspond to the same person or entity from several data sets, to create a new combined data set. Linked data provides a valuable person-level source of information for health monitoring, beyond that available through routine disease surveillance and single data sources.

The AIHW has published initial findings using data from the first version of the COVID-19 Register. The report *Demonstrating the utility of the COVID-19 Register* explores potential analyses that could be conducted on the data using a subset of linked cases. The report explored deaths among people diagnosed with COVID-19, and health service use and prescriptions dispensed before and after a COVID-19 diagnosis. A program of work by the AIHW using linked data from the COVID-19 Register is underway to provide further information on the extent to which deaths are associated with a prior COVID-19 diagnosis.

Several approved COVID-19 Register research projects are already underway. They focus, respectively, on:

- health and mortality outcomes for people living with dementia during the pandemic (AIHW)
- health and mortality outcomes following a COVID-19 diagnosis and how these may differ by population groups (AIHW and the National Centre for Immunisation Research and Surveillance [NCIRS])
- estimating COVID-19 expenditure and service use related to health and aged care (AIHW).

- occurrence of post-acute outcomes (such as cardiovascular disease) following COVID-19 and how vaccination and antiviral treatments may alter the clinical course (NCIRS).

The AIHW continues to receive interest from other government and non-government researchers interested to gain access to the COVID-19 Register for their research questions.

The final milestone for the COVID-19 Register project under the MRFF agreement is for integration with enduring national health data assets to support ongoing research and analysis. The AIHW is consulting with states and territories to enable the addition of COVID-19 case data and other data such as data from the National Disability Insurance Scheme (NDIS), to the National Health Data Hub (NHDH). Inclusion of COVID-19 case and other data in the NHDH will enable the use of a consistent linkage spine which will facilitate linkage with other key data sources including the ABS' Person-Level Integrated Data Asset (PLIDA), previously referred to as the Multi-Agency Data Integration Project (MADIP).

These enduring data assets will enable deeper investigation of some of the contributing factors to excess mortality (e.g. socioeconomic, geographic, and comorbidities). These richer linked data will contribute to improved understanding of the needs of priority population groups such as culturally and linguistically diverse (CALD) communities and First Nations people.

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