Burden of avoidable deaths among Aboriginal and Torres Strait Islander people 2018

Web report | Last updated: **13 Sep 2023** | Topic: Burden of disease

About

Avoidable fatal burden is the burden due to deaths that are considered potentially avoidable given timely and effective health care. In 2018, almost two-thirds (64%) of the fatal burden among Aboriginal and Torres Strait Islander (First Nations) people was classified as avoidable.

This report presents estimates of avoidable fatal burden among First Nations people at the national and Indigenous Region level.

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Findings from this report:

- Almost two-thirds (64%) of the fatal burden among First Nations people was classified as avoidable

- Across all Indigenous Regions, First Nations males experienced more of the avoidable fatal burden than females

- Among First Nations people aged 15–34, 4 of the top 5 causes of avoidable fatal burden were injuries

- Coronary heart disease was among the top 3 causes of avoidable fatal burden in 36 of 37 Indigenous Regions

Summary

Every year in Australia, over a million years of life are lost because of premature deaths in the population. This loss is called the 'fatal burden of disease'. Avoidable fatal burden is the fatal burden due to deaths among those aged under 75 that are considered avoidable given timely and effective health care.

In 2018, over half (55%) of the fatal burden in Australia was classified as avoidable. The proportion of avoidable fatal burden was higher for Aboriginal and Torres Strait Islander (First Nations) people than for non-Indigenous Australians (64% and 54%, respectively).

Note that the reference year for this report is 2018 as this is the latest year for which Australian burden of disease estimates are available for First Nations people.

Avoidable fatal burden among First Nations people

Five causes accounted for over half (52%) of the total avoidable fatal burden (AYLL) among First Nations people:

- coronary heart disease
- suicide & self-inflicted injuries
- poisoning
- chronic obstructive pulmonary disease (COPD)
- chronic kidney disease.

Leading causes of avoidable fatal burden differed across the life course:

- Most of the avoidable fatal burden among First Nations children aged 0–14 was from infant & congenital conditions.
- Among First Nations people aged 15–34, 4 of the top 5 causes were from injuries.
- From age 35, chronic diseases began to feature as important causes of avoidable fatal burden, with coronary heart disease being the leading cause.
- Chronic diseases dominated the leading causes from age 55 onwards.

Avoidable fatal burden in Indigenous Regions

Indigenous Regions (IREGs) are large geographical units that are part of the Australian Statistical Geography Standard (ASGS) (ABS 2016). IREGs do not cross state or territory borders and are defined to cover the whole of geographic Australia. Avoidable fatal burden data were analysed for the 37 IREGs for which mortality and population data were available.

- The rate of avoidable fatal burden ranged from 32 AYLL per 1,000 people in Tasmania to 236 AYLL per 1,000 in Kununurra (in Western Australia).
- Coronary heart disease was among the 3 leading causes of avoidable fatal burden in 36 of the 37 IREGs.
- Suicide & self-inflicted injuries was among the 3 leading causes of avoidable fatal burden in 31 of the 37 IREGs.
- Across IREGs, injuries were more prevalent among the top 5 causes of avoidable fatal burden for First Nations males, whereas chronic conditions were more dominant among the top 5 for First Nations females.

References

ABS (Australian Bureau of Statistics) (2016) Australian Statistical Geography Standard (ASGS): Volume 2 - Indigenous Structure, July 2016, accessed 12 January 2023.

Introduction

This report presents estimates of avoidable fatal burden (AYLL) among Aboriginal and Torres Strait Islander (First Nations) people in 2018. It is part of the Australian Burden of Disease Study (ABDS). Although burden of disease estimates for total Australia have been updated as part of the ABDS 2022 study, 2018 is the latest year for which estimates are available for First Nations people.

An analysis of avoidable non-fatal burden was also planned, however, due to various methodological issues it was only possible to complete the analyses of avoidable fatal burden – see box (below) for further information.

Fatal burden is a measure of the years of life lost (YLL) due to dying prematurely (that is, before the expected life span); 1 YLL is 1 year of life lost. Fatal burden is based on 2 factors: the age at which a death occurs and the number of remaining years that a person would, on average, expect to live from that age.

In the ABDS, the remaining life expectancy varies at each age but starts as a life expectancy at birth of 86.0 years. This ideal life span is based on the lowest observed death rates at each age group from multiple countries (Murray, Ezzati et al. 2012).

Avoidable fatal burden is the fatal burden due to potentially avoidable deaths among people aged under 75.

Note that the AIHW uses 'First Nations people' to refer to Aboriginal and Torres Strait Islander people in this report.

Potentially avoidable deaths

Potentially avoidable deaths are deaths from conditions that are potentially preventable through individualised care and/or treatable through existing primary, specialist or hospital care. For example, potentially avoidable deaths include deaths from:

- some cancers, such as breast and colon cancers, which can be reduced through earlier detection and treatment
- some invasive infections, such as cellulitis, which can be reduced through early detection and appropriate antibiotic treatment
- diseases such as rheumatic heart disease and asthma, which can be reduced through appropriate treatment
- deaths from car accidents, which can be reduced through improved trauma care and emergency transport.

Potentially avoidable deaths are classified using a nationally agreed definition (and ICD-10 codes) (AIHW 2022; see Table A1 in Technical notes).

This definition of avoidable deaths includes only those deaths where direct intervention is delivered by a clinician or health worker. Such interventions may involve screening, diagnosis or rehabilitation, as well as treatment. Causes of death potentially avoidable within other elements of the health system (or other non-health sectors) are not in scope of this definition, for example, population health-initiatives, such as anti-smoking or pro-seatbelt campaigns; this is so the definition reflects access to and effectiveness of health care, rather than wider social systems.

The definition also excludes conditions whose associated mortality has fallen to very low levels in Australia – such causes of death are 'avoided' rather than 'avoidable'. Examples of these conditions include measles, rubella and diphtheria, which are now rare in Australia as a result of Australia's high immunisation rates.

The under 75 age threshold for avoidable deaths is the general criteria that is used in avoidable mortality analyses. Note that this only reflects a current definition of premature mortality and may need to be reviewed in response to any changes in life expectancy (OECD 2022). An implication of using this threshold is the likely under-estimation of the number of deaths that could potentially be avoided through better prevention or better health care for people aged 75 and over.

Mapping avoidable deaths to the Australian Burden of Disease Study (ABDS) causes

Of the 219 diseases and injuries defined by ICD-10 codes for fatal burden analysis in the 2018 ABDS, 65 included codes that are defined as potentially avoidable (Table 1) (also see Tables A2 and A3 in Technical notes):

- 45 included only avoidable death codes
- 18 included both avoidable and non-avoidable death codes (part-avoidable causes type 1)
- 2 contained only avoidable death codes with additional limitations (part-avoidable causes type 2).

Table 1: Number of causes in the 2018 ABDS containing avoidable deaths ICD-10 codes

Avoidable deaths ICD-10 codes	Number of ABDS causes	Notes
No avoidable deaths codes	154	
Avoidable deaths codes only	45	

Part-avoidable causes type 1: Avoidable and non-avoidable deaths codes	18	Two of these causes were combined for ABDS reporting purposes.
Part-avoidable causes type 2: Avoidable deaths codes only with additional limitations	2	Breast cancer, classified as avoidable for females only. Acute lymphoblastic leukaemia, classified as avoidable for those aged 0-44 only.
Total ABDS causes	**219**	

For reporting purposes in the 2018 ABDS, 2 of the 20 part-avoidable causes were combined, resulting in 19 part-avoidable causes used in the avoidable mortality analysis (see Table A3 in Technical notes). Data from the National Mortality Database (NMD) were used to derive the avoidable fatal burden component for each of these 19 part-avoidable causes (see Technical notes section for more details).

What about avoidable non-fatal burden?

Non-fatal burden (also called YLD or 'years lived with disability') is a weighted estimate of the number of years of life that are not spent in full health, because of the effects of illness or injury. For a particular disease, the number of YLD is influenced by the number of people living with the disease and the duration and severity of their symptoms.

For some conditions, the likelihood of a person developing them can be reduced through reducing or eliminating exposure to certain modifiable risk factors, for example, not smoking, moderating alcohol consumption, or maintaining blood pressure below a certain level. The burden associated with these risk factors is detailed in the main ABDS 2018 report.

For other conditions, links to specific modifiable risk factors are either difficult to quantify or have not been determined. This makes it impossible to say how much of their burden could potentially be avoided. However, one nationally agreed indicator relating to avoidable non-fatal burden is the concept of potentially preventable hospitalisations (PPH). These are conditions where it is considered that hospitalisation should be able to be avoided through timely and effective primary health care.

Although First Nations people experience higher rates of PPH than non-Indigenous Australians, the duration of these hospital stays is on average quite short, generally only a few days. This means that the non-fatal burden associated with each individual event is very small, and it is not possible to break the results up by age or location, meaning that the usefulness of these data are limited. Also, because the definitions of the types of hospitalisations that are considered to be potentially preventable do not correspond very closely to the cause definitions used in the ABDS, it is not possible to use methods like those outlined above to estimate the avoidable component for non-fatal burden. This exploration of avoidable burden therefore is limited to fatal burden only.

References

AIHW (Australian Institute of Health and Welfare) (2022) National Healthcare Agreement: PI 16-Potentially avoidable deaths, 2022, AIHW, accessed 9 February 2023.

OECD (Organisation for Economic Co-operation and Development) (2022) Avoidable mortality: OECD/Eurostat lists of preventable and treatable cause of death (January 2022 version) [PDF 694KB], OECD, accessed 17 February 2023.

Murray CJ, Ezzati M, Flaxman AD, Lim S, Lozano R, Michaud C et al. 2012. GBD 2010: design, definitions, and metrics. The Lancet 380:2063–6.

Avoidable fatal burden in Australia

In 2018, over half (55%) of the total fatal burden in Australia was classified as avoidable (Table 2). Nearly two-thirds (64%) of fatal burden among First Nations people was avoidable compared with just over half (54%) among non-Indigenous Australians (Table 2, Figure 1).

Table 2: Avoidable deaths and fatal burden (YLL), by Indigenous status, 2018

	First Nations deaths	First Nations YLL	Non-Indigenous deaths	Non-Indigenous YLL	Total deaths	Total YLL
ABDS 19 part-avoidable causes	245	7,838	3,445	94,977	3,691	102,815
ABDS 45 all avoidable causes	1,453	59,776	22,753	717,159	24,205	776,935
ABDS all 64 Avoidable deaths causes	1,698	67,614	26,198	812,136	27,896	879,751
ABDS total – all causes (<75 only)	2,827	106,241	51,764	1,497,278	54,591	1,603,519
% Avoidable (<75 only)	60.1	63.6	50.6	54.2	51.1	54.9

Note: Numbers may not add to totals due to rounding.

Figure 1: Proportion of deaths and fatal burden classified as avoidable, by Indigenous status, 2018
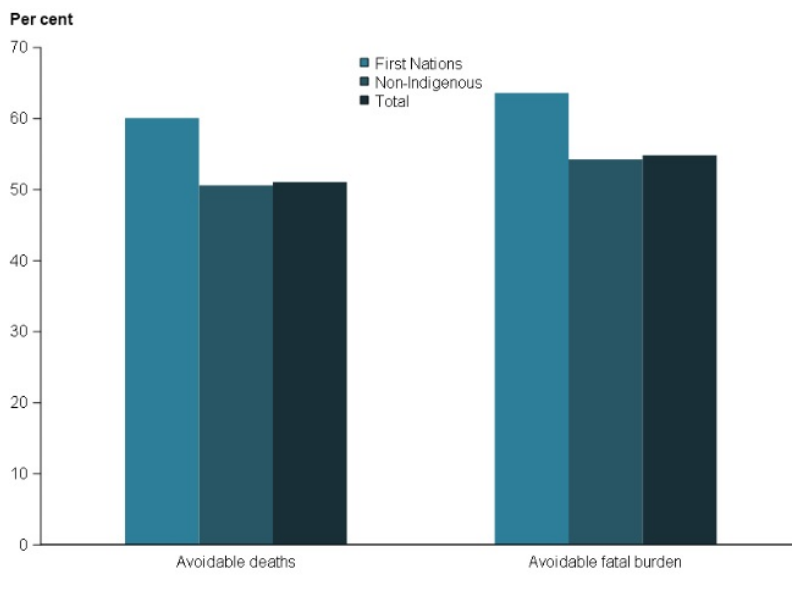

Chart: AIHW. Source: AIHW analysis of Australian Burden of Disease database.

Which diseases and injuries caused the most avoidable fatal burden?

Coronary heart disease, suicide & self-inflicted injuries, and poisoning were the top 3 causes of avoidable fatal burden for both First Nations people and non-Indigenous Australians in 2018. Together these 3 causes accounted for 41% of avoidable fatal burden among First Nations people and 39% among non-Indigenous Australians (Table 3).

Among First Nations people, chronic obstructive pulmonary disease (COPD) and chronic kidney disease were also among the top 5 causes, whereas, for non-Indigenous Australians, bowel cancer and breast cancer rounded out the top 5. For both First Nations people and non-Indigenous Australians, the top 5 causes accounted for over half (52%) of the total avoidable fatal burden.

Table 3: Top 20 causes of avoidable fatal burden (AYLL) among Australians aged under 75, by Indigenous status, 2018

Rank	First Nations people	AYLL	% of total	Non-Indigenous Australians	AYLL	% of total
1	Coronary heart disease	11,573	17.1	Coronary heart disease	126,647	15.6

2	Suicide & self-inflicted injuries	10,864	16.1	Suicide & self-inflicted injuries	124,065	15.3
3	Poisoning	5,073	7.5	Poisoning	63,022	7.8
4	COPD	3,983	5.9	Bowel cancer	62,162	7.7
5	Chronic kidney disease(a)	3,880	5.7	Breast cancer(a)	49,079	6.0
6	RTI-motor vehicle occupants	3,390	5.0	COPD	46,933	5.8
7	Pre-term birth & LBW complications	2,938	4.3	Stroke	45,946	5.7
8	Type 2 diabetes	2,658	3.9	RTI-motor vehicle occupants	30,641	3.8
9	Stroke	2,258	3.3	Type 2 diabetes	20,863	2.6
10	Homicide & violence	2,081	3.1	Melanoma of the skin	18,388	2.3
11	Other disorders of infancy	1,814	2.7	Prostate cancer	17,585	2.2
12	Other unintentional injuries	1,512	2.2	Pre-term birth & LBW complications	16,242	2.0
13	Birth trauma & asphyxia	1,505	2.2	Chronic kidney disease	13,826	1.7
14	Bowel cancer	1,484	2.2	Other unintentional injuries	13,449	1.7
15	LRI including influenza & pneumonia(a)	1,478	2.2	Falls	13,326	1.6
16	Breast cancer(a)	1,136	1.7	Birth trauma & asphyxia	12,336	1.5
17	RTI-pedestrians	1,088	1.6	LRI including influenza & pneumonia(a)	11,515	1.4
18	Rheumatic heart disease	1,023	1.5	Kidney cancer	11,406	1.4
19	Asthma	789	1.2	Other disorders of infancy	11,063	1.4
20	Falls	665	1.0	Homicide & violence	10,404	1.3
	Leading 20 diseases	**61,192**	**90.5**	**Leading 20 diseases**	**718,897**	**88.5**
	Remaining 44 causes	**6,422**	**9.5**	**Remaining 44 causes**	**93,239**	**11.5**
	Total	**67,614**	**100.0**	**Total**	**812,136**	**100.0**

COPD chronic obstructive pulmonary disease; LBW low birthweight; LRI lower respiratory infections; RTI road traffic injuries.

(a) These causes are not directly equivalent to ABDS causes of the same name as only some of the ICD-10 codes included in the ABDS definitions are classified as avoidable deaths. See Table A3 for more detail.

How did avoidable fatal burden compare for First Nations males and females?

First Nations males experienced more avoidable fatal burden than First Nations females overall and for each age group (Figure 2). First Nations males accounted for 61% of the total AYLL compared with 39% for females (40,970 and 26,644 AYLL, respectively).

Compared with First Nations females, First Nations males experienced higher rates of avoidable fatal burden across the life course. Both sexes experienced similarly high rates of avoidable fatal burden in children under 5 and low rates in children aged 5–14. From age 15, as age increased the rate of avoidable fatal burden also rose for both First Nations males and females.

Figure 2: Number and rates of avoidable fatal burden (AYLL and AYLL per 1,000 people) for First Nations people, by age group and sex, 2018
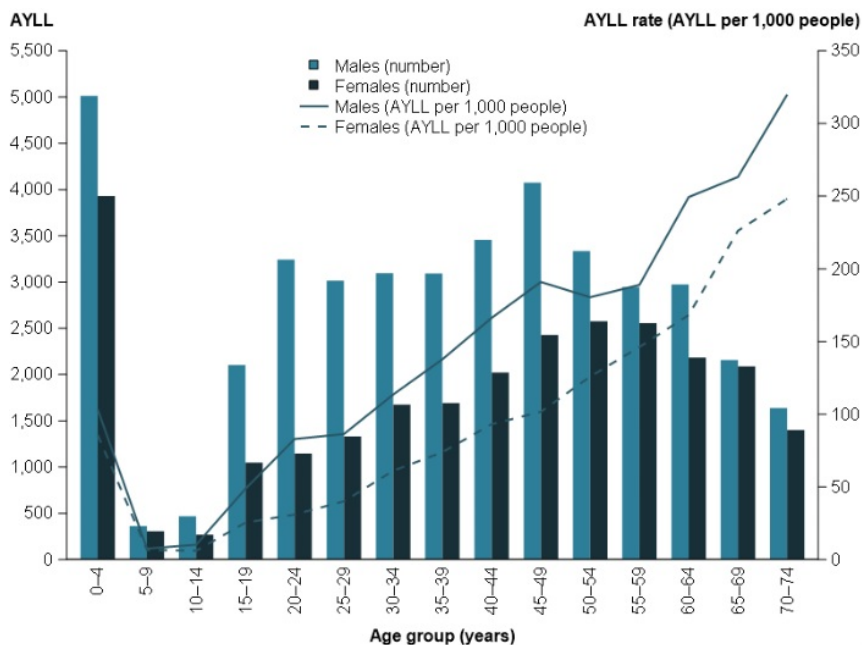
Chart: AIHW. Source: AIHW analysis of Australian Burden of Disease database.

The total avoidable fatal burden, and the specific causes of avoidable fatal burden, that First Nations people experienced in 2018 differed by age and sex. The avoidable fatal burden in 5 broad age groups is described in this section, drawing on results shown in figures 3 and 4. In all 5 age groups, First Nations males experienced more of the burden than First Nations females, with the largest difference among those aged 15–34 where First Nations males accounted for 69% of the avoidable fatal burden (Figure 3).

Figure 3: Proportion of avoidable fatal burden by broad age group and sex, First Nations people, 2018
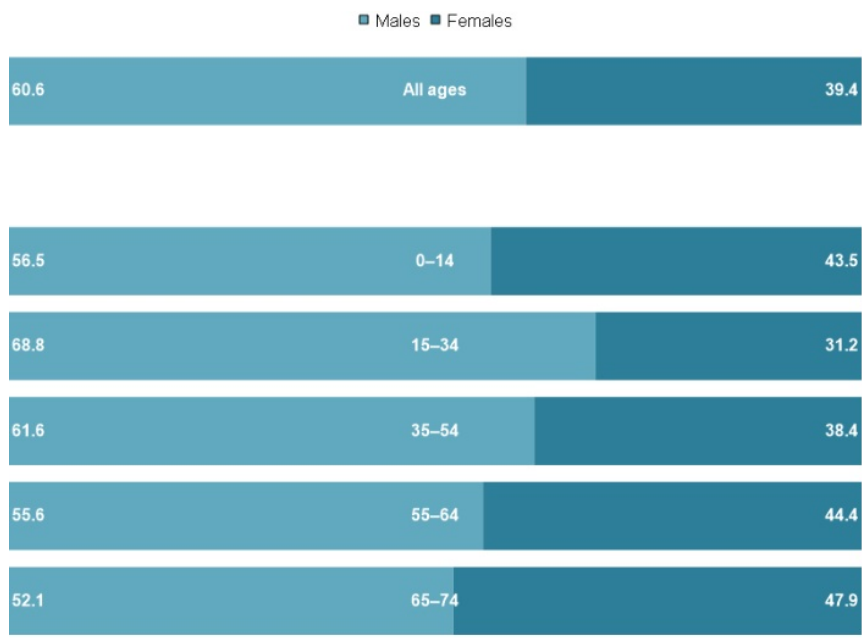

Chart: AIHW. Source: AIHW analysis of Australian Burden of Disease database.

Leading causes of avoidable fatal burden differed across the life course for First Nations males and females (Figure 4). Note that for some diseases, the number of First Nations deaths is small; an asterisk (*) indicates AYLL values where fewer than 5 deaths contributed to the calculation.

Most of the avoidable fatal burden among First Nations children aged 0–14 was from 3 infant & congenital conditions: pre-term birth & low birth weight complications; birth trauma & asphyxia; and other disorders of infancy. These 3 causes accounted for 58% of the avoidable fatal burden for First Nations males and 63% for females in this age group.

Among First Nations males and females aged 15–34, 4 of the top 5 causes of avoidable fatal burden were injuries: suicide & self-inflicted injuries; road traffic injuries (motor vehicle occupants); poisoning; and homicide & violence. Although the same 4 causes were among the top 5 for both sexes, First Nations males accounted for the majority of the AYLL for each cause (between 62% and 74%).

Chronic diseases began to feature as important causes of avoidable fatal burden for First Nations people aged 35–54, with coronary heart disease the leading cause for both First Nations males and females. Suicide & self-inflicted injuries and poisoning were the second and third leading causes for First Nations males, whereas poisoning and chronic kidney disease rounded out the top 3 for First Nations females.

Injuries no longer appeared among the top 5 contributors to avoidable fatal burden from age 55 onwards, with chronic diseases now dominating. Coronary heart disease and COPD were the top 2 causes of avoidable fatal burden for both First Nations males and females, with chronic kidney disease and type 2 diabetes rounding out the top 4 for both sexes.

Figure 4: Top 5 causes of avoidable fatal burden (AYLL) among First Nations people by sex and broad age group, 2018

First Nations females by age group (years)

Rank	0–14	15–34	35–54	55–64	65–74	All ages (<75)
1st	Pre-term/lbw complications 26%	Suicide/self-inflicted injuries 41%	Coronary heart disease 20%	Coronary heart disease 22%	Coronary heart disease 22%	Coronary heart disease 14%
2nd	Birth trauma/asphyxia 19%	Poisoning 13%	Poisoning 12%	COPD 18%	COPD 20%	Suicide/self-inflicted injuries 10%
3rd	Other disorders of infancy 19%	RTI/motor vehicle occupant 9.1%	Chronic kidney disease 8.7%	Chronic kidney disease 15%	Chronic kidney disease 15%	Chronic kidney disease 8.0%
4th	Other unintentional injuries* 5.9%	Homicide/violence 5.6%	Breast cancer 6.1%	Type 2 diabetes 9.7%	Type 2 diabetes 7.3%	COPD 7.4%
5th	RTI/motor vehicle occupant* 5.0%	Rheumatic heart disease* 4.1%	Type 2 diabetes 6.1%	Breast cancer 7.3%	Stroke 6.5%	Poisoning 7.2%
	Top 5 75% (3,374 AYLL)	Top 5 73% (3,803 AYLL)	Top 5 52% (4,569 AYLL)	Top 5 72% (3,389 AYLL)	Top 5 71% (2,484 AYLL)	Top 5 47% (12,563 AYLL)

First Nations males by age group (years)

Rank	0–14	15–34	35–54	55–64	65–74	All ages (<75)
1st	Pre-term/lbw complications 30%	Suicide/self-inflicted injuries 50%	Coronary heart disease 28%	Coronary heart disease 38%	Coronary heart disease 31%	Suicide/self-inflicted injuries 20%
2nd	Other disorders of infancy 17%	RTI/motor vehicle occupant 12%	Suicide/self-inflicted injuries 14%	COPD 13%	COPD 16%	Coronary heart disease 19%
3rd	Birth trauma/asphyxia 11%	Poisoning 10%	Poisoning 13%	Type 2 diabetes 7.4%	Chronic kidney disease 12%	Poisoning 7.7%
4th	Other unintentional injuries* 7.2%	Coronary heart disease 4.8%	Chronic kidney disease 5.6%	Chronic kidney disease 5.9%	Type 2 diabetes 9.5%	RTI/motor vehicle occupant 5.8%
5th	RTI/motor vehicle occupant* 6.0%	Homicide/violence 4.1%	COPD 4.5%	Bowel cancer 5.7%	Stroke 7.1%	COPD 4.9%
	Top 5 71% (4,148 AYLL)	Top 5 82% (9,365 AYLL)	Top 5 64% (8,968 AYLL)	Top 5 70% (4,129 AYLL)	Top 5 75% (2,831 AYLL)	Top 5 57% (23,461 AYLL)

Legend: ■ Cardiovascular ■ Injuries ■ Respiratory ■ Kidney/urinary ■ Endocrine □ Infant/congenital ■ Cancer

* Number of First Nations deaths used in AYLL calculations is fewer than 5. Small numbers of deaths can affect the reliability of estimates, these results should be used with caution.

lbw low birthweight; RTI road traffic injuries, COPD chronic obstructive pulmonary disease.
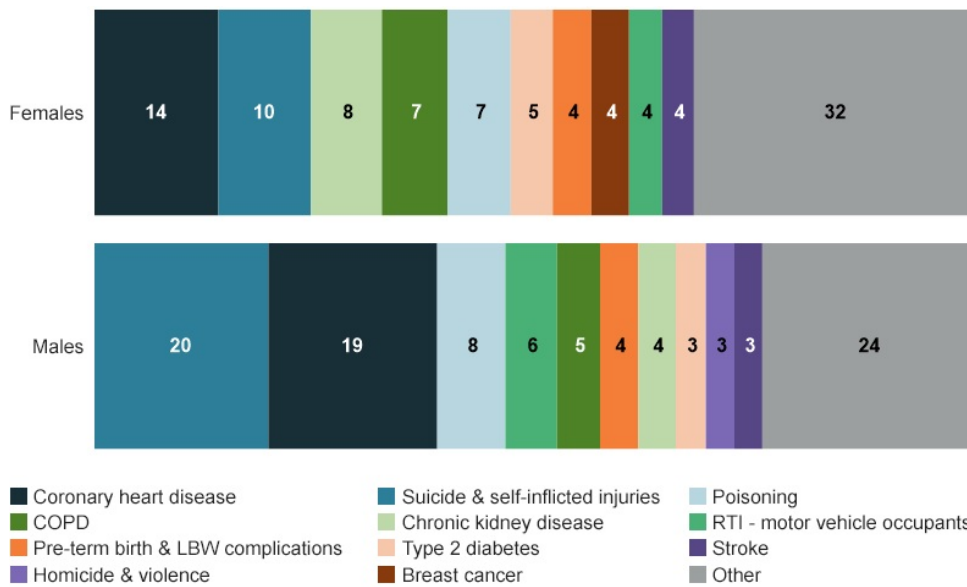
Note on colours: As done for other ABDS reporting, conditions that have a similar aetiology, outcomes or treatment are grouped together – into 17 disease groups, 7 of which appear in Figure 4. For ease of recognition in ABDS published results, each disease group was allocated a colour – these are used consistently and allow for quick insight into the disease groups that dominate avoidable fatal burden.

Chart: AIHW. Source: AIHW analysis of Australian Burden of Disease database.

The top 10 causes were responsible for over three quarters (76%) of avoidable fatal burden for First Nations males and around two-thirds (68%) for First Nations females (Figure 5).

Coronary heart disease, suicide & self-inflicted injuries, poisoning and COPD were in the top 5 for both sexes; however, the proportion of avoidable fatal burden that each contributed was different. For First Nations males, road traffic injuries (motor vehicle occupants) also ranked in the top 5 (fourth for males, ninth for females), while for First Nations females, chronic kidney disease ranked in the top 5 (third for females, seventh for males).

Figure 5: Percentage contribution (%) of the top 10 causes of avoidable fatal burden (AYLL) in First Nations females and males, 2018

| Females | 14 | 10 | 8 | 7 | 7 | 5 | 4 | 4 | 4 | 4 | 32 |

| Males | 20 | 19 | 8 | 6 | 5 | 4 | 4 | 3 | 3 | 3 | 24 |

- ■ Coronary heart disease
- ■ Suicide & self-inflicted injuries
- ■ Poisoning
- ■ COPD
- ■ Chronic kidney disease
- ■ RTI - motor vehicle occupants
- ■ Pre-term birth & LBW complications
- ■ Type 2 diabetes
- ■ Stroke
- ■ Homicide & violence
- ■ Breast cancer
- ■ Other

Note: Homicide & violence ranked 13th for First Nations females (2.8% of AYLL), breast cancer did not contribute any AYLL for First Nations males.

Chart: AIHW. Source: AIHW analysis of Australian Burden of Disease database.

Interactive data on avoidable fatal burden among First Nations people

The interactive data visualisations (Figure 6) present estimates of avoidable fatal burden (AYLL) among First Nations people in 2018. Use the interactive graphs to explore the avoidable fatal burden for the top 20 causes by sex and broad age group.

Figure 6: Leading causes of avoidable fatal burden, by age group and sex, First Nations people, 2018

2 interactive visualisations show avoidable fatal burden by selectable age group.

Problem creating image.

Avoidable fatal burden in Indigenous Regions

Indigenous Regions (IREGs) are large geographical units that are part of the Australian Statistical Geography Standard (ASGS) (ABS 2016). IREGs do not cross state or territory borders and are defined to cover the whole of geographic Australia. In this report, avoidable fatal burden data were analysed for the 37 IREGs for which mortality and population data were available.

Crude rather than age-standardised rates have been used in this section due to the small First Nations populations in some regions. These small numbers often result in zero counts for a particular cause (by age or sex) and therefore are not suitable for age-standardisation. Because the population structures (by age and sex) of the IREGs are generally similar, crude rates are appropriate to use when comparing avoidable fatal burden between regions.

> Identification of Aboriginal and Torres Strait Islander people in death records varies geographically and tends to be more accurate in remote and very remote areas. This will affect the rates and rankings shown in this section.

The rate of avoidable fatal burden ranged from 32 AYLL per 1,000 people in Tasmania to 236 AYLL per 1,000 in Kununurra (in Western Australia).

Of the regions with the 10 highest rates of avoidable fatal burden:

- 6 were in the Northern Territory (all the Northern Territory IREGs except Darwin)
- 2 were in Western Australia (Kununurra, Kalgoorlie)
- 1 was in Queensland (Mount Isa)
- 1 was in South Australia (Port Augusta).

Of the regions with the 10 lowest rates of avoidable fatal burden:

- 1 was the Tasmania IREG (the only IREG in Tasmania)
- 2 were in Queensland (Torres Strait and Brisbane)
- 2 were in Victoria (the only 2 IREGs in Victoria)
- 4 were in New South Wales (Sydney – Wollongong, NSW Central and North Coast, South-Eastern NSW, Riverina – Orange)
- 1 was the ACT IREG (the only IREG in the ACT).

Across all IREGs, First Nations males experienced more of the avoidable fatal burden than First Nations females. The proportion of avoidable fatal burden experienced by First Nations males ranged from 51% in Nhulunbuy (in the Northern Territory) to 69% in Tasmania.

For First Nations males, injuries were more prevalent among the top 5 causes of avoidable fatal burden, whereas, for females, chronic conditions were more prevalent among the top 5.

- Around half (46%) of IREGs had 3 or more injuries among the top 5 for First Nations males, compared with 14% of regions for females (17 regions for males, 5 regions for females).
- Over half (54%) of IREGs had 3 or more chronic conditions in the top 5 for First Nations females, compared with a quarter (24%) of regions for males (20 regions for females, 9 regions for males).

Leading causes of avoidable fatal burden in Indigenous Regions

In every IREG, the top 5 causes together accounted for at least half of the total avoidable fatal burden among First Nations people; ranging from 50% in Katherine (in the Northern Territory), Port Augusta (in South Australia) and North-Eastern NSW to 68% in South-Eastern NSW.

- Coronary heart disease was among the 3 leading causes of avoidable fatal burden in 36 of the 37 IREGs (the exception was West Kimberley (in Western Australia), where coronary heart disease ranked 5th).
- Suicide & self-inflicted injuries was among the 3 leading causes of avoidable fatal burden in 31 of the 37 IREGs.
- Looking at the top 5 causes of avoidable fatal burden among First Nations people, in IREGs the AYLL per 1,000 people ranged from:
  - 4.7 to 53.4 for coronary heart disease (lowest in the ACT; highest in Tennant Creek (in the Northern Territory))
  - 1.4 to 42.5 for suicide & self-inflicted injuries (lowest in Tasmania; highest in Kununurra (in Western Australia))
  - less than 0.5 to 12.6 for poisoning (lowest in Port Lincoln – Ceduna (in South Australia) and Torres Strait (in Queensland); highest in the ACT)
  - less than 0.5 to 19.9 for COPD (lowest in West Kimberley (in Western Australia) and Tennant Creek (in the Northern Territory); highest in Jabiru – Tiwi (in the Northern Territory))
  - less than 0.5 to 20.7 for chronic kidney disease (lowest in Tasmania; highest in Kununurra (in Western Australia).

Tile maps showing the top 5 causes of avoidable fatal burden for each IREG are available under Related materials.

Interactive data on avoidable fatal burden by Indigenous Regions

The interactive data visualisations (Figure 7) present estimates of avoidable fatal burden (AYLL) for Indigenous Regions in 2018. Use the interactive map and table to explore the number or rate of avoidable fatal burden (AYLL) for the top 10 causes by sex.

Figure 7: Leading causes of avoidable fatal burden, by Indigenous Region and sex, First Nations people, 2018

2 interactive visualisations show avoidable fatal burden by selected Indigenous Region.

Problem creating image.

References

ABS (Australian Bureau of Statistics) (2016) Australian Statistical Geography Standard (ASGS): Volume 2 - Indigenous Structure, July 2016, accessed 12 January 2023.

Technical notes

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About the Australian Burden of Disease Study

The Australian Burden of Disease Study (ABDS) includes estimates of disease burden of more than 200 diseases and injuries in Australia. Burden of disease analysis is a way of measuring the impact of diseases and injuries on a population. It is the difference between a population's actual health and its ideal health, where ideal health is living to old age in good health (without disease or disability).

Information and reports about burden of disease in Australia, including for Aboriginal and Torres Strait Islander (First Nations) people, are available on Burden of disease.

Avoidable fatal burden

Fatal burden is a measure of the years of life lost (YLL) due to dying prematurely (that is, before the expected life span), 1 YLL is 1 year of life lost. Fatal burden is based on 2 factors: the age at which a death occurs and the number of remaining years that a person would, on average, expect to live from that age. In the ABDS, the remaining life expectancy varies at each age but starts as a life expectancy at birth of 86.02 years. This ideal life span is based on the lowest observed death rates at each age group from multiple countries (Murray, Ezzati et al. 2012).

At a population level, the total fatal burden for a disease is the sum of the number of deaths from the disease at each age multiplied by the ideal remaining life expectancy for each person who died. For example, if for a certain cause:

- 2 people died at age 0
- 1 person died at age 15
- 3 people died at age 32
- 5 people died at age 70.

The total fatal burden for that cause would be the sum of:

- 2 deaths x 86.02 (ideal remaining life expectancy at age 0) = 172.04 YLL
- 1 death x 71.29 (ideal remaining life expectancy at age 15) = 71.29 YLL
- 3 deaths x 54.49 (ideal remaining life expectancy at age 32) = 163.47 YLL
- 5 deaths x 18.93 (ideal remaining life expectancy at age 70) = 94.65 YLL.

For a total population fatal burden of 501.45 YLL for this cause.

Diseases that usually cause deaths at younger ages (for example, birth trauma & asphyxia and cardiovascular defects) have a much higher average YLL per death than diseases that tend to cause deaths at older ages (for example, stroke and chronic kidney disease). Therefore, a similar amount of fatal burden can result from a small number of deaths occurring at young ages or a large number of deaths occurring at older ages.

Avoidable fatal burden is the fatal burden (YLL) due to potentially avoidable deaths among people aged under 75. Potentially avoidable deaths are deaths from conditions that are potentially preventable through individualised care and/or treatable through existing primary or hospital care. The under 75 age threshold for avoidable deaths is the general criteria that is used in avoidable mortality analyses.

Potentially avoidable deaths are classified using a nationally agreed definition (and ICD-10 codes) (AIHW 2022) (Table A1).

Table A1

Table A1: International Classification of Disease (ICD-10) codes for potentially avoidable deaths

Cause of death	ICD-10 Codes	Limits (age, sex)

Selected invasive infections[a]	A38-A41, A46, A48.1, G00, G03, J02.0, J13-J16, J18, L03	
Viral pneumonia and influenza	J10-J12	
HIV/AIDS	B20-B24	
Colorectal cancer	C18-C21, C26.0	
Skin cancer	C43, C44	
Breast cancer	C50	Female
Cervical cancer	C53	
Prostate cancer	C61	
Kidney cancer	C64	
Thyroid cancer	C73	
Hodgkin's disease	C81	
Acute lymphoid leukaemia/ Acute lymphoblastic leukaemia	C91.0	0-44 years
Diabetes[a]	E10-E14	
Rheumatic and other valvular heart disease	I00-I09, I33-I37	
Hypertensive heart and renal disease[a]	I10-I13	
Ischaemic heart disease	I20-I25	
Cerebrovascular diseases	I60-I69	
Heart failure[a]	I50, I51.1, I51.2, I51.4, I51.5	
Pulmonary embolism	I26	
Renal failure[a]	N17-N19	
Chronic obstructive pulmonary disease (COPD)	J40-J44	
Asthma	J45, J46	
Peptic ulcer disease	K25-K27	
Complications of the perinatal period	P00-P96	
Complications of pregnancy, labour or the puerperium[a]	O00-O99	
Falls	W00-W19	
Fires, burns	X00-X09	
Suicide and self-inflicted injuries	X60-X84, Y87.0	
Misadventures to patients during surgical and medical care	Y60-Y69	
Medical devices associated with adverse incidents in diagnostic and therapeutic use	Y70-Y82	
Surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure	Y83, Y84	
Transport accidents	V01-V99	
Exposure to inanimate mechanical forces	W20-W49	
Exposure to animate mechanical forces	W50-W64	
Accidental drowning and submersion	W65-W74	
Other accidental threats to breathing	W75-W84	

Exposure to electric current, radiation and extreme ambient air temperature and pressure	W85-W99
Contact with heat and hot substances	X10-X19
Contact with venomous animals and plants	X20-X29
Exposure to forces of nature	X30-X39
Accidental poisoning by and exposure to noxious substances	X40-X49
Overexertion, travel and privation	X50-X57
Accidental exposure to other and unspecified factors[a]	X58, X59
Assault	X85-Y09
Event of undetermined intent[a]	Y10-Y34
Legal interventions and operations of war	Y35, Y36
Drugs, medicaments, and biological substances causing adverse effects in therapeutic use	Y40-Y59
Sequelae of external causes of morbidity and mortality[a]	Y85, Y86, Y87.1-Y89

(a) Some of the ICD-10 codes in this cause were assigned for redistribution in the ABDS2018, see the Australian Burden of Disease Study 2018: methods and supplementary material (AIHW 2021) for more information on redistribution.

Source: AIHW 2022

Mapping avoidable deaths to the ABDS

Of the 219 diseases and injuries defined for fatal burden analysis in the 2018 ABDS:

- 45 included only avoidable death ICD-10 codes
- 18 included both avoidable and non-avoidable death codes with no additional limitations (part-avoidable causes type 1)
- 2 contained only avoidable death codes with additional limitations (part-avoidable causes type 2)
  - acute lymphoblastic leukaemia deaths were only classified as avoidable for ages 0–44
  - breast cancer deaths were only classified as avoidable for females.

For reporting purposes in the 2018 ABDS, 2 of the 20 part-avoidable causes were combined, resulting in 19 part-avoidable causes used in the avoidable mortality analysis. Table A2 and Table A3 show the ABDS causes which included potentially avoidable ICD-10 codes, including notes about any limitations.

Table A2

Table A2: Causes from the 2018 ABDS containing only avoidable deaths (45 causes)

ABDS cause code	ABDS cause name(s)	ICD-10 codes in ABDS cause
A01	HIV/AIDS	B20-B24, O98.7
A21	Haemophilus influenzae type-b	G00.0
A22	Pneumococcal disease	G00.1, A40.3, J13
A23	Meningococcal disease	A39
B01	Pre-term birth and low birthweight complications	P01.0, P01.1, P05, P07, P22, P25-P28, P52, P61.2, P77
B03	Birth trauma and asphyxia	P01.7, P01.8, P01.9, P02, P03, P08, P10-P15, P20, P21, P24, P90, P91
B05	Neonatal infections	P23, P35.1-P35.9, P36, P37.1, P37.2, P37.5, P37.8, P37.9, P38, P39
B07	Other disorders of infancy	P00, P01.2-P01.6, P04, P29, P50, P51, P53-P60, P61.0-P61.1, P61.3-P61.9, P70-P72, P74-P76, P78-P81, P83, P92-P96
C05	Bowel cancer	C18-C20, C26.0
C11	Melanoma of the skin	C43

C12	Non-melanoma skin cancers	C44
C14	Cervical cancer	C53
C17	Prostate cancer	C61
C20	Kidney cancer	C64
C22	Thyroid cancer	C73
C24	Hodgkin Lymphoma	C81
D01	Coronary heart disease	I20-I25
D02	Stroke	I60-I69
D03	Rheumatic heart disease	I00-I02, I05-I06, I08.0-I08.1, I08.3, I09
D05	Hypertensive heart disease	I11
E01	Asthma	J45, J46
E02	Chronic obstructive pulmonary disease (COPD)	J40-J44
I02[a]	Type 1 Diabetes	E10 (excluding E10.2), O240
I03[a]	Type 2 Diabetes	E11 (excluding E11.2), O241
I04[a]	Other Diabetes	E12-E13 (excluding E12.2 and E13.2), O242
K01	Maternal haemorrhage	O44.1, O45-O46, O67, O72
K02	Maternal infections	O41.1, O85-O86
K03	Hypertensive disorders of pregnancy	O10-O16
K04	Obstructed labour	O64-O66
K05	Early pregnancy loss	O00-O08
K06	Gestational diabetes	O24.4
K98	Other maternal conditions	O20-O23, O24.9, O25-O26, O28-O36, O40, O410, O41.8, O41.9, O42-O43, O44.0, O47-O48, O60-O63, O68-O71, O73-O75, O80-O84, O87-O92, O95-O97, O99
Q01	Road traffic injuries - motorcyclists	V20.3-V20.9, V21.3-V21.9, V22.3-V22.9, V23.3-V23.9, V24.3-V24.9, V25.3-V25.9, V26.3-V26.9, V27.3-V27.9, V28.3-V28.9, V29.4-V29.9
Q02	Road traffic injuries- motor vehicle occupants	V30.4-V30.9, V31.4-V31.9, V32.4-V32.9, V33.4-V33.9, V34.4-V34.9, V35.4-V35.9, V36.4-V36.9, V37.4-V37.9, V38.4-V38.9, V39.4-V39.9, V40.4-V40.9, V41.4-V41.9, V42.4-V42.9, V43.4-V43.9, V44.4-V44.9, V45.4-V45.9, V46.4-V46.9, V47.4-V47.9, V48.4-V48.9, V49.4-V49.9, V50.4-V50.9, V51.4-V51.9, V52.4-V52.9, V53.4-V53.9, V54.4-V54.9, V55.4-V55.9, V56.4-V56.9, V57.4-V57.9, V58.4-V58.9, V59.4-V59.9, V60.4-V60.9, V61.4-V61.9, V62.4-V62.9, V63.4-V63.9, V64.4-V64.9, V65.4-V65.9, V66.4-V66.9, V67.4-V67.9, V68.4-V68.9, V69.4-V69.9, V70.4-V70.9, V71.4-V71.9, V72.4-V72.9, V73.4-V73.9, V74.4-V74.9, V75.4-V75.9, V76.4-V76.9, V77.4-V77.9, V78.4-V78.9, V79.4-V79.9, V89.2, Y85.0

Q04	Other land transport injuries	V01.0, V02.0, V03.0, V04.0, V05.0, V06.0, V09.0, V09.1, V10.0-V10.2, V11.0-V11.2, V12.0-V12.2, V13.0-V13.2, V14.0- 14.2, V15.0-V15.2, V16.0-V16.2, V17.0-V17.2, V18.0-V18.2, V19.0-V19.3, V20.0-V20.2, V21.0-V21.2, V22.0-V22.2, V23.0-V23.2, V24.0-V24.2, V25.0-V25.2, V26.0-V26.2, V27.0-V27.2, V28.0-V28.2, V29.0-V29.3, V30.0-V30.3, V31.0-V31.3, V32.0-V32.3, V33.0-V33.3, V34.0-V34.3, V35.0-V35.3, V36.0-V36.3, V37.0-V37.3, V38.0-V38.3, V39.0-V39.3, V40.0-V40.3, V41.0-V41.3, V42.0-V42.3, V43.0-V43.3, V44.0-V44.3, V45.0-V45.3, V46.0-V46.3, V47.0-V47.3, V48.0-V48.3, V49.0-V49.3, V50.0-V50.3, V51.0-V51.3, V52.0-V52.3, V53.0-V53.3, V54.0-V54.3, V55.0-V55.3, V56.0-V56.3, V57.0-V57.3, V58.0-V58.3, V59.0-V59.3, V60.0-V60.3, V61.0-V61.3, V62.0-V62.3, V63.0-V63.3, V64.0-V64.3, V65.0-V65.3, V66.0-V66.3, V67.0-V67.3, V68.0-V68.3, V69.0-V69.3, V70.0-V70.3, V71.0-V71.3, V72.0-V72.3, V73.0-V73.3, V74.0-V74.3, V75.0-V75.3, V76.0-V76.3, V77.0-V77.3, V78.0-V78.3, V79.0-V79.3, V80-V88, V89.0, V89.1, V89.3, V89.9, Y85.9
Q05	Poisoning	X40-X49
Q06	Falls	W00-W19
Q07	Fire, burns and scalds	X00-X06, X08-X19
Q08	Drowning	V90, V92, W65-W70, W73-W74
Q09	Other unintentional injuries	V91, V93-V99, W20-W46, W49-W60, W64, W75-W81, W83-W94, W99, X20-X39, X50-X54, X57-X58, Y35-Y36, Y86, Y89.0, Y89.1
Q10	Suicide and self-inflicted injuries	X60-X84, Y87.0
Q11	Homicide and violence	X85-X99, Y00-Y09, Y87.1
Q21	Road traffic injuries – pedal cyclists	V10.3-V10.9, V11.3-V11.9. V12.3-V12.9, V13.3-V13.9, V14.3-V14.9, V15.3-V15.9, V16.3-V16.9, V17.3-V17.9, V18.3-V18.9, V19.4-V19.9,
Q22	Road traffic injuries – pedestrians	V01.1, V01.9, V02.1, V02.9, V03.1, V03.9, V04.1, V04.9, V05.1, V05.9, V06.1, V06.9, V09.2, V09.3, V09.9,
Q99	All other external causes of injury	Y40-Y66, Y69-Y84, Y88

(a) In the 2018 ABDS, deaths coded to ICD-10 code E14 (unspecified diabetes), excluding E14.2, were redistributed to either Type 1, Type 2 or Other diabetes (ABDS cause codes I02, I03 or I04).

Table A3

Table A3: Causes from the 2018 ABDS containing avoidable and non-avoidable deaths (19 causes)

ABDS cause code	ABDS cause name(s)	ICD-10 codes in ABDS cause	Notes
A02	Tuberculosis	A15–A19, B90, N33.0, N74.0, N74.1, O98.0, P37.0	Only O98.0 and P37.0 classed as avoidable deaths
A03	Syphilis	A50–A53, N29.0, N74.2, O98.1	Only O98.1 classed as avoidable deaths
A05	Gonorrhoea	A54, N74.3, O98.2	Only O98.2 classed as avoidable deaths
A06	Other sexually transmitted infections	A57–A60, A63–A64, O98.3	Only O98.3 classed as avoidable deaths
A11	Upper respiratory tract infections	J00–J06	Only J02.0 classed as avoidable deaths

A19	Rubella	B06, P35.0	Only P35.0 classed as avoidable deaths
A24	Other meningitis and encephalitis	A83–A87, B94.1, G00.2-G00.9, G01-G02, G03-G05	Only G00.2-G00.9 and G03 classed as avoidable deaths
A28	Malaria	B50-B54, P37.3-P37.4	Only P37.3-P37.4 classed as avoidable deaths
A98[a]	Lower respiratory infections (including influenza and pneumonia)	J09-J12, J14-J18, J20-J22, J85, J86	Only J10-J12, J14-J16 and J18 classed as avoidable deaths
A99	Other infections	A20-A32, A38, A42-A44, A48.1, A48.2, A48.4-A49, A65-A70, A74-A80, A81.0, A81.2-A81.9, A82, A88-A89, A92.0- A92.7, A92.9, A93-A99, B00, B03-B04, B07, B08.0, B08.2-B08.3, B08.5-B08.8, B09, B17.2, B25, B27-B30, B33.0, B33.2-B33.8, B34-B49, B55-B85, B87-B89, B91-B92, B94.8-B94.9, B95-B99, G06, G07, O98.4-O98.6, O98.8-O98.9	Only A38, A48.1 and O98.4-O98.6, O98.8-O98.9 classed as avoidable deaths.
C13[b]	Breast cancer	C50	Only females classed as avoidable deaths
C46[b]	Acute lymphoblastic leukaemia	C91.0	Only deaths among 0–44 year-olds classed as avoidable
C98	Other malignant neoplasms (cancers)	C17, C21, C30-C31, C37-C38, C40-C41, C46-C49, C51-C52, C57-C58, C60, C63, C65-C66, C68-C69, C74-C75	Only C21 classed as avoidable deaths.
D04	Non-rheumatic valvular disease	I07, I08.2, I08.8-I08.9, I34-I39	Only I34-I37 classed as avoidable deaths.
D07	Inflammatory heart disease	I30-I33, I40-I41	Only I33 classed as avoidable deaths.
D99	Other cardiovascular diseases	G45, I26-I28, I44-I45, I47, I49.1-I49.9, I51-I52, I77-I84, I86-I89, I95, I97-I99	Only I26, I51.1, I51.2, I51.4 and I51.5 classed as avoidable deaths.
F01	Gastroduodenal disorders	K22.1, K25-K27, K29	Only K25-K27 classed as avoidable deaths.
J01	Chronic kidney disease	E10.2, E11.2, E12.2, E13.2, E14.2, I12, N02-N08, N13-N16, N18, N39.1-N39.2, Q61	Only E10.2, E11.2, E12.2, E13.2, E14.2, I12 and N18 classed as avoidable deaths.
N05	Skin infections (including Cellulitis)	A46, B08.1, B08.4, H00.0, H60.0, H60.1, J34.0, L00-L03, L08	Only A46 and L03 classed as avoidable deaths.

(a) Two ABDS causes (A13 and A14) were combined into A98 for reporting purposes.

(b) All ICD-10 codes in ABDS causes Breast cancer (cause code C13) and Acute lymphoblastic leukaemia (C46) are considered avoidable under restricted conditions. Breast cancer is considered avoidable only for females, and Acute lymphoblastic leukaemia is considered avoidable only for those aged 0–44 years.

Data from the National Mortality Database (NMD) were used to derive the avoidable fatal burden component for each of the 19 part-avoidable causes. Deaths were grouped into the 19 causes based on ICD-10 codes and 'avoidable percentages' were calculated. For each cause, avoidable percentages were based on the number of deaths occurring before age 75 which were classified as avoidable, divided by the total number of deaths before age 75 for that cause (see Table A4 for selected examples). Separate avoidable percentages were calculated for First Nations people and total Australians.

Avoidable percentages were applied to the fatal burden before age 75 from the 2018 ABDS to determine the avoidable fatal burden (AYLL) for each of the 19 part-avoidable causes.

Table A4: Avoidable deaths for selected part-avoidable causes, First Nations people and all Australians, aged under 75, 2018

Cause	First Nations deaths	First Nations avoidable deaths	First Nations avoidable percent (%)	All deaths	Avoidable deaths	Avoidable percent (%)
LRI including influenza & pneumonia	53	39	73.6	645	448	69.5
Non-rheumatic valvular disease	14	9	64.3	281	197	70.1
Other cardiovascular diseases	32	8	25.0	791	182	23.0
Chronic kidney disease	136	132	97.1	793	713	89.9

LRI lower respiratory infections

Notes:

1. These causes are not directly equivalent to ABDS causes of the same name as only some of the ICD-10 codes included in the ABDS definitions are classified as avoidable deaths.
2. The number of deaths in the ABDS database for each cause are slightly different from the number of deaths in the NMD (for the same causes) due to redistribution modelling in the ABDS.

Can I compare results with other ABDS studies?

Results from this study should not be compared with results for fatal burden (YLL) from other Australian Burden of Disease Studies (ABDS). Generally, overarching methods for estimating fatal burden remain unchanged from previous ABDS studies, however, some minor changes to methodology were required to facilitate the analysis by the smaller geographical areas of Indigenous Regions (IREGs). These changes may result in different results to those presented in other ABDS studies.

Indigenous Regions

Indigenous Regions (IREGs) are large geographic areas that are part of the Australian Statistical Geography Standard (ASGS) (ABS 2016). They were originally designed based on the former Aboriginal and Torres Strait Islander Commission boundaries which are no longer maintained. IREGs are created by combining one or more Indigenous Areas and do not cross state or territory borders (Figure A1). For the 2016 ASGS 58 Indigenous Regions are defined to cover the whole of geographic Australia, including several non-spatial special purpose codes (ABS 2016).

Figure A1: First Nations population (aged under 75) by Indigenous Region, 2018
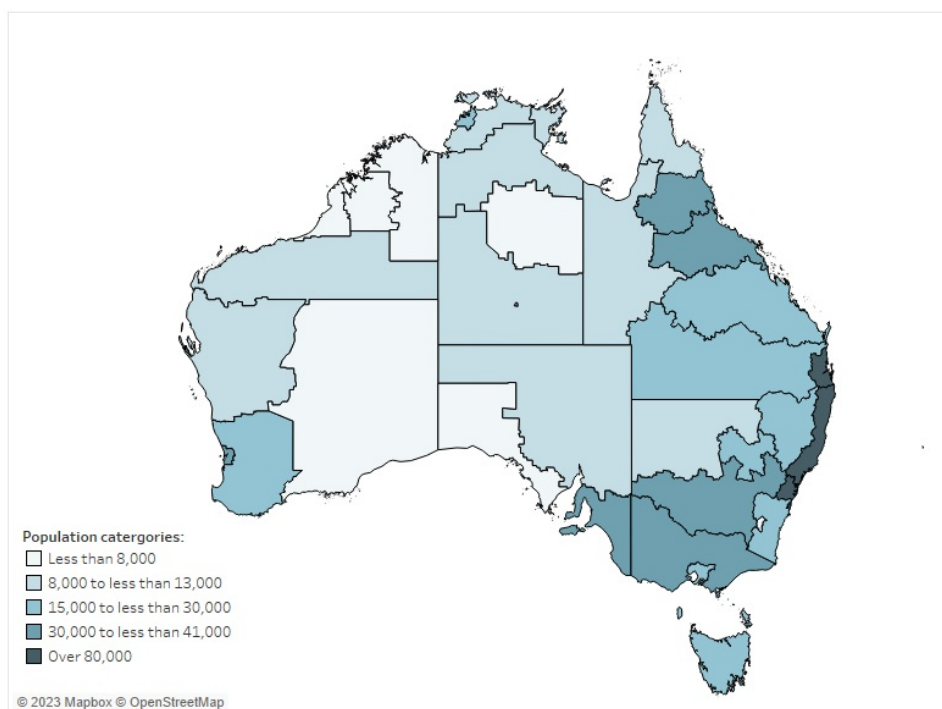
Chart: AIHW. Source: ABS 2016.

For the analyses in this report, 37 Indigenous Regions were able to be mapped to mortality and population data (Table A5).

Table A5: Indigenous Regions by state/ territory

State/ territory	Indigenous Region
New South Wales	- Dubbo - North-Eastern NSW - North-Western NSW - NSW Central and North Coast - Riverina – Orange - South-Eastern NSW - Sydney – Wollongong
Victoria	- Melbourne - Victoria excluding Melbourne
Queensland	- Brisbane - Cairns – Atherton - Cape York - Mount Isa - Rockhampton - Toowoomba – Roma - Torres Strait - Townsville – Mackay
Western Australia	- Broome - Geraldton - Kalgoorlie - Kununurra - Perth - South Hedland - South-Western WA - West Kimberley
South Australia	- Adelaide - Port Augusta - Port Lincoln – Ceduna
Tasmania	Tasmania
Australian Capital Territory	ACT

Northern Territory	- Alice Springs - Apatula - Darwin - Jabiru – Tiwi - Katherine - Nhulunbuy - Tennant Creek

Source: ABS 2016.

Mortality data

The total number of deaths come from the AIHW's National Mortality Database (NMD) which holds records for deaths in Australia from 1964 to 2021. The database comprises information about causes of death and other characteristics of the person, such as sex, age at death, area of usual residence and Indigenous status.

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 Australian Bureau of Statistics (ABS).

The AIHW website About our data – Deaths Data provides detailed information on the registration of deaths and coding of causes of death in Australia. The completeness, accuracy and coding of these data are described elsewhere (ABS 2022). The data quality statements underpinning the AIHW NMD can be found in the ABS's quality declaration summary for Deaths, Australia and Causes of death, Australia.

Adjusting for under-identification of First Nations people in mortality data

Every year, a number of deaths of First Nations people are not identified as such when they are registered (ABS 2018). This might arise from the non-reporting of a deceased person's Indigenous status on the death registration form (for example, the question is never asked, or the answer is not known), or from incorrect identification of a deceased person's Indigenous status (recording an Aboriginal and Torres Strait Islander person as non-Indigenous, and vice versa). The net effect is an under-identification of First Nations people in the deaths data.

Adjustment factors to account for under-identification of First Nations people in death registration records have been produced from national and state/ territory data linkage studies. In the 2018 ABDS, mortality adjustment factors from the ABS's Census Data Enhancement Indigenous Mortality Study (2015–17) (ABS 2018) were used to adjust First Nations deaths for under-identification in mortality data for the 2018 reference year. To maintain consistency, these factors were also used to adjust First Nations deaths for the calculation of avoidable percentages.

Dealing with small numbers

The number of deaths due to any cause varies from year to year. These fluctuations are more noticeable for causes that are less common and in First Nations deaths that are often small in number. To reduce the impact of random fluctuations, First Nations avoidable percentages were based on the annual average of 3 years of deaths data. For the 2018 reference year, First Nations deaths were averaged from deaths occurring in 2016, 2017 and 2018.

Redistribution issues

Some ICD-10 codes are not appropriate or valid causes of death for burden of disease analysis, either because they are implausible underlying causes (for example, hypertension), they are intermediate causes that have a precipitating cause (for example, septicaemia) or occur in the final stages of dying (for example, cardiac arrest), or they are recoded as 'ill-defined'. Deaths assigned to these codes must be reallocated to one or more of the conditions defined on the ABDS cause list – this process is referred to as redistribution. Redistribution removes deaths from some causes, and increases the number of deaths for other causes, however the overall number of deaths is kept constant. Further details regarding methods for redistribution can be found in Australian Burden of Disease Study: Methods and supplementary material 2018 (AIHW 2021).

Some of the ICD10 codes used in the definition of avoidable deaths were allocated for redistribution in the ABDS (Table A1). Due to this aspect of burden of disease methodology there may be differences in the number of deaths reported here and in other mortality data studies.

Population data

Aboriginal and Torres Strait Islander backcast and projected population estimates as at 30 June 2018 (based on the 2016 Census) (ABS 2019) were used to calculate the rates for First Nations people presented in this report.

Non-Indigenous population estimates were calculated by subtracting the Aboriginal and Torres Strait Islander population estimates from the total Australian population estimates for the same years.

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Technical notes

Table: Abbreviations and meanings

Abbreviation	Meaning
ABDS	Australian Burden of Disease Study
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ASGS	Australian Statistical Geography Standard
AYLL	Avoidable fatal burden
COPD	chronic obstructive pulmonary disease
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
IREGs	Indigenous Regions
LBW	Low birthweight
LRI	Lower respiratory infections
NMD	National Mortality Database
NSW	New South Wales
OECD	Organisation for Economic Co-operation and Development
PPH	Potentially preventable hospitalisations
RTI	road traffic injuries
WA	Western Australia
YLD	years lived with disability
YLL	years of life lost

Glossary

Aboriginal or Torres Strait Islander: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also First Nations people.

age-standardised rate (ASR): A rate that takes into account the age structure of the population using age-standardisation techniques.

Australian Statistical Geography Standard (ASGS): Common framework defined by the Australian Bureau of Statistics (ABS) for collecting and disseminating geographically classified statistics.

avoidable deaths: Deaths from conditions that are potentially preventable through individualised care and/or treatable through existing primary or hospital care.

avoidable fatal burden: The burden due to deaths among those aged under 75 that are considered avoidable given timely and effective health care. Expressed as AYLL in this report.

cause (ABDS): A disease or injury included on the ABDS disease list that forms the analytical framework of the 2018 ABDS, and underpins all estimates of deaths, YLL, YLD, DALY and risk-attributable burden.

cause of death: All diseases, morbid conditions, or injuries that either resulted in or contributed to death – and the circumstances of the accident or violence that produced any such injuries – that are entered on the Medical Certificate of Cause of Death. Causes of death are commonly reported by the underlying cause of death.

chronic condition: A health condition that is persistent and long lasting.

crude rate: A rate is one number (the numerator) divided by another number (the denominator). The numerator is commonly the number of years of healthy life lost in a specified time. The denominator is the population at risk of the event are generally multiplied by a number such as 1,000 to create whole numbers.

disease: A broad term that can be applied to any health problem, including symptoms, diseases, injuries and certain risk factors, such as high blood cholesterol and obesity. Often used synonymously with condition, disorder or problem.

fatal burden: The burden from dying prematurely as measured by years of life lost. Often used synonymously with years of life lost, and also referred to as 'life lost'.

First Nations people: People who have identified themselves, or have been identified by a representative (for example, their parent or guardian), as being of Aboriginal and/or Torres Strait Islander origin. See also Aboriginal or Torres Strait Islander.

Indigenous Regions (IREGs): Large geographic areas which were originally designed based on the former Aboriginal and Torres Strait Islander Commission boundaries. Part of the Australian Statistical Geography Standard (ASGS).

Indigenous status: Whether a person has identified themselves, or has been identified by a representative (for example, their parent or guardian), as being of Aboriginal and/or Torres Strait Islander origin.

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

life expectancy: The number of years a person of a particular age can expect to live.

mortality: Death.

non-fatal burden: The burden from living with ill-health as measured by years lived with disability. Often used synonymously with years lived with disability.

potentially preventable hospitalisation (PPH): Admission to hospital for conditions where hospitalisation could have potentially been prevented through the provision of appropriate individualised preventative health interventions and early disease management usually delivered in primary care and community-based care settings (including by general practitioners, medical specialists, dentists, nurses and allied health professionals).

premature mortality: Deaths that occur at a younger age than a selected cut-off.

rate: A rate is one number (the numerator) divided by another number (the denominator). The numerator is commonly the number of years of healthy life lost in a specified time. The denominator is the population at risk of the event are generally multiplied by a number such as 1,000 to create whole numbers.

risk factor: Any factor that represents a greater risk of a health condition or health event.

years lived with disability (YLD): The number of years of what could have been a healthy life that were instead spent in states of less than full health. YLD represent non-fatal burden.

years of life lost (YLL): The number of years of life lost due to premature death, defined as dying before the ideal life span. YLL represent fatal burden.

Data

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