

# Potential Years of Life Lost by Aboriginal and Torres Strait Islander people: variations by age, socioeconomic disadvantage and remoteness

## Findings

### Background

Potential years of life lost (PYLL) is a measure of the sum of the potential years of life lost from deaths at 15 years, assuming those dying at those ages had all lived to 74 years of age. As such, it is an important measure of the mortality burden and is sometimes used as an indicator of the social and economic impact of premature deaths. When analysed by geographical area, it shows the extent of inequality in the burden of these premature deaths borne across Australia.

### Overall

Aboriginal people had much poorer outcomes under this measure, with an age-standardised rate for the Aboriginal population some 2.8 times that for the non-Indigenous population.

Aboriginal males had 48 % more PYLL over the five years 2016 to 2020, with the largest numbers of PYLL in the 45 to 64 and 24 to 44 years age groups, where the number of PYLL by males was over twice (2.11 times) the number for females.

The data also show the higher rates of PYLL among Aboriginal and Torres Strait Islander people when compared with non-Indigenous people.

The highest rates of PYLL were recorded for premature deaths from external causes, with 24.5 PYLL per 1,000 persons (a rate of 11.1 for suicide and 4.8 for road traffic injury). The next highest rates were for deaths from circulatory system diseases, cancer and respiratory system diseases.

### Equity gap

The rate of PYLL in the most disadvantaged areas for all causes of premature mortality was over twice (2.27 times) that in the least disadvantaged areas. For the three causes of premature mortality with the largest numbers of PYLL, the rate for external causes was 88% higher; for circulatory system diseases it was nearly three (2.86) times higher; and for cancer it was 64% higher in the most disadvantaged areas. For individual causes of death there are substantial equity gaps for suicide and self-inflicted injury (2.04 times higher in the most disadvantaged areas), ischaemic heart disease (3.20), diabetes (5.02 times) and road traffic injuries (3.84 times).

The rate of PYLL in the Very Remote areas, when compared with the Major Cities areas, was nearly twice (1.91 times) that for premature death from all causes; for the three causes of premature mortality with the largest numbers of PYLL, the rate for external causes was 61% higher, for circulatory system diseases it was two and a half (2.51) times higher and for cancer it was 52% higher; and there were also substantial equity gaps for suicide and self-inflicted injury (60% higher in the most disadvantaged areas), ischaemic heart disease (2.56 times), diabetes (4.64 times) and road traffic injuries (3.94 times).

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### Related Fact sheets

[Potential Years of Life Lost: variations by age, socioeconomic disadvantage and remoteness](#)

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# Potential Years of Life Lost by Aboriginal and Torres Strait Islander people: variations by age, socioeconomic disadvantage and remoteness

## Background

Some 78% of all deaths of Aboriginal and Torres Strait Islander people<sup>1</sup> over the years 2016 to 2020 occurred before 75 years of age, although the proportion varies by sex and by cause, as shown [here](#). This is nearly two and a half (2.4) times the proportion in the non-Indigenous population, of 33%. The proportion of deaths of Aboriginal people occurring before 55 years of age and before 65 years of age were also substantial, at 39% and 58%, respectively.

Although these statistics are often quoted, the comparisons remain as a sobering reminder of the gap in mortality faced by Aboriginal people, when compared with non-Indigenous people.

However, depending on the age at which a person dies, the number of years of life lost, had they lived until, say, 74 years of age, will vary. Potential years of life lost (PYLL) is a measure of the sum of the potential years of life lost from deaths at 15 years (60 years), 45 years (30 years) and so on, assuming those dying at those ages had all lived to 74 years of age [1].

Further, a particular PYLL value will be higher if mortality among young people, for example from suicide or road traffic accidents, is high; chronic diseases causing death among older people, on the other hand, have little effect on these values. PYLL therefore provides an important measure of the mortality burden measure for Aboriginal people, with their high rates of death among young people, and is sometimes used as an indicator of the social and economic impact of premature deaths [1]. When analysed by geographical area, it shows the extent of inequality in the burden of these premature deaths borne across Australia.

In this Fact sheet we offer comment on some findings from the [Aboriginal and Torres Strait Islander](#) and [Indigenous Status Comparison](#) Social Health Atlases of Australia, and highlight variations by geographical area (based on a person's usual residence recorded in the death certificate), presented by socioeconomic status and by Remoteness Area.

Note: The data described here are limited to the following jurisdictions, for whom the identification of Aboriginal and Torres Strait Islander people in death records is considered to be acceptable for reporting: the jurisdictions are New South Wales, Queensland, South Australia, Western Australia and the Northern Territory.

## The data

Some notable variations seen in the data for the five years 2016 to 2020 available to PHIDU are described below [2].

### Overall

In Australia, there were 313,127 PYLL by Aboriginal people over the five years 2016 to 2020, of which 60% were for males and 40% were for females.

Aboriginal people had much poorer outcomes under this measure, with 104.6 PYLL per 1,000 population over the five years 2016 to 2020, compared with 36.7 PYLL per 1,000 population for the non-Indigenous population: this age-standardised rate for the Aboriginal population is 2.8 times that for the non-Indigenous population.<sup>2</sup>

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<sup>1</sup> Where used, the terms Aboriginal people or Indigenous people refer to Aboriginal and Torres Strait Islander people.

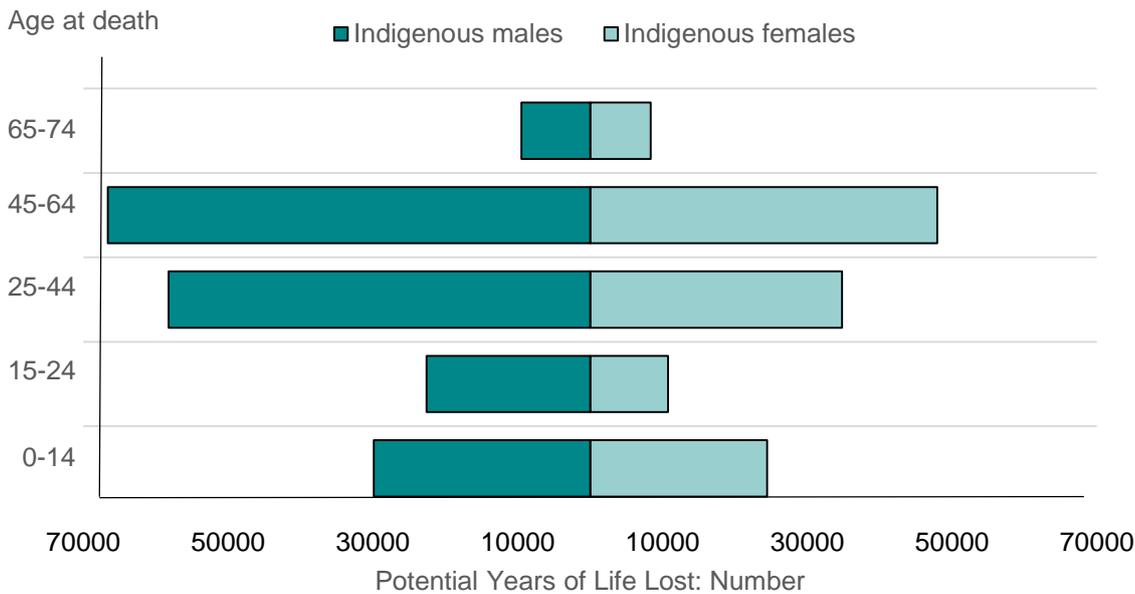
<sup>2</sup> The rate of 104.6 has been produced using the total population. Where data are shown for Aboriginal and Torres Strait Islander people (i.e., not by Indigenous status), the data have been standardised to the Aboriginal and Torres Strait Islander population.

## Age group and sex

Aboriginal males had 48 % more PYLL over the five years 2016 to 2020, with the largest numbers of PYLL in the 45 to 64 and 24 to 44 years age groups (Figure 1).

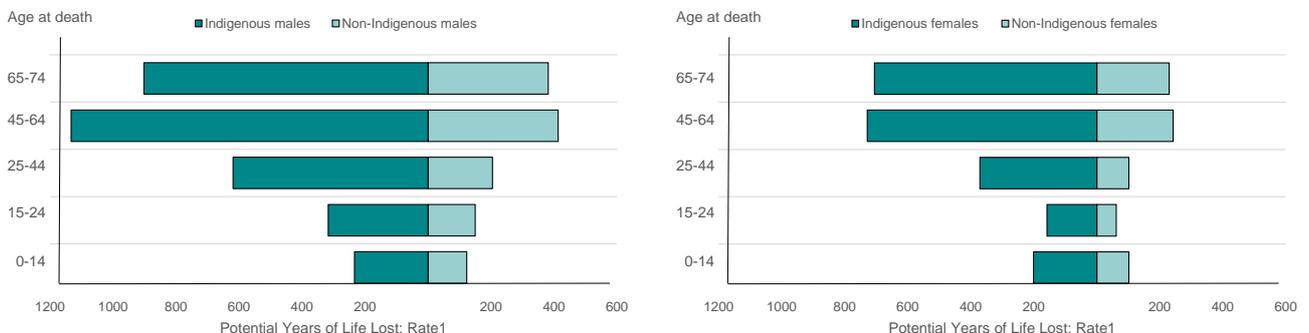
The difference between the number of PYLL by males and females is greatest at ages 15 to 24 (where the number of PYLL by males was over twice (2.11 times) the number for females), followed by the 25 to 44 years age group (67% higher) and the 45 to 64 years age group (39% higher). The differences at ages 0 to 14 years and 65 to 74 years are 22% and 13%, respectively. The age-standardised rates of PYLL for males compared with those for females give the same pattern across the age groups as shown for the number of PYLL.

Figure 1: Number of PYLL from all causes, Aboriginal and Torres Strait Islander people, by age and sex, NSW, Qld, SA, WA and NT, 2016 to 2020



The following charts compare PYLL by sex and Indigenous status, by charting the rate of PYLL per 100,000 population. Evident are both the higher rates of PYLL among Aboriginal and Torres Strait Islander people and the higher rates for males than for females, regardless of Indigenous status.

Figure 2: Rate of PYLL from all causes, by Indigenous status, age and sex, NSW, Qld, SA, WA and NT, 2016 to 2020<sup>1</sup>



<sup>1</sup> Rate is the age-standardised rate per 1,000 population.

## Cause of death: at the chapter (broadest) level of the International Classification of Diseases to which the cause of death is coded

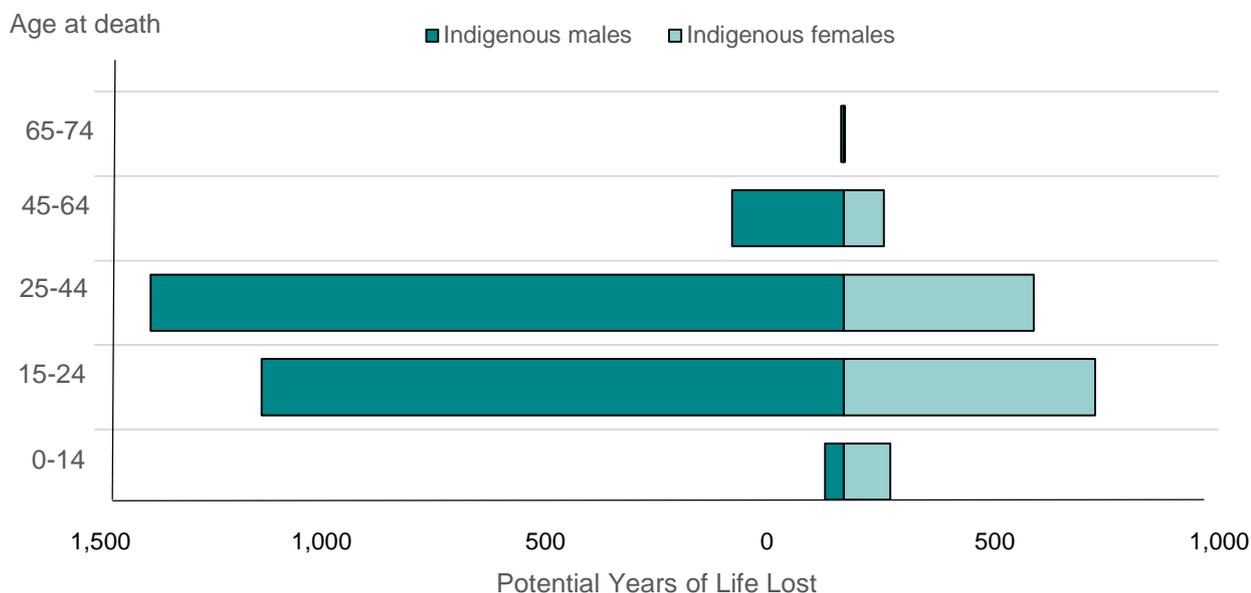
The highest rates of PYLL were recorded for premature deaths from external causes (which includes suicide and road traffic injury), with 24.5 PYLL per 1,000 persons. The next highest rates at the chapter level were for deaths from circulatory system diseases, cancer and respiratory system diseases (rates of 14.4, 13.4 and 5.2 PYLL per 1,000 persons, respectively).

## Cause of death: by individual cause under the International Classification of Diseases

For individual causes of death, the highest rates were for suicide (11.1 PYLL per 1,000 persons), road traffic injury (4.8 PYLL per 1,000 persons) and diabetes (4.0 PYLL per 1,000 persons).

Males had substantially more PYLL from suicide than females other than in the 0 to 14 years age group, where there were more than twice (2.4 times) the number of female PYLLs (Figure 3).

Figure 3: Number of PYLL from suicide and self-inflicted injuries, Aboriginal and Torres Strait islander people, by age and sex, NSW, Qld, SA, WA and NT, 2016 to 2020



Suicide accounted for the highest proportion of PYLL at ages 25 to 44 years for males (49.8%) and at ages 15 to 24 years for females (50.7%). Second highest was the 15 to 24 years age group for males (41.2%) and the 25 to 44 years age group for females (35.2%). Premature deaths from suicide at these ages also contributed the highest proportion of PYLL from all causes. For the 15 to 24 years age group, 53.2% of male and 48.0% of female PYLL were from suicide. For both males and females, the next highest proportion of PYLL from suicide was in the 25 to 44 years age group – 23.1% and 10.8%, respectively.

### By socioeconomic disadvantage note

Rates of PYLL are substantially higher for Aboriginal people who lived in the most **disadvantaged areas** of Australia when compared with the **least disadvantaged areas**. For example<sup>3</sup>:

<sup>3</sup> Additional data by area (capital cities and regional areas, states and the Northern Territory and other causes of death are available from a work book at this link – [Indigenous Status Comparison Socioeconomic Disadvantage of Area data \(xls\)](#); interactive graphs are available at this link – <https://phidu.torrens.edu.au/social-health-atlases/graphs/monitoring-inequality-in-australia/aboriginal-and-torres-strait-islander-population>.

- for **all causes**, the rate in the most disadvantaged areas was over twice (2.27 times) that in the least disadvantaged areas (this is referred to as an equity gap) and was lower in the capital cities (86% higher in the most disadvantaged areas, a rate ratio of 1.86) than outside of the capital cities (2.52 times higher in the most disadvantaged areas);
- for **all causes by sex**, the higher rate in the most disadvantaged areas in the capital cities was the same for *males* and *females*; however, outside of the capital cities females had a higher rate, with the equity gap at 2.88, in comparison with 2.29 for males;
- for the three causes of premature mortality **at the chapter level** with the largest numbers of PYLL, the rate for *external causes* was 88% higher, for circulatory system diseases it was nearly three (2.86) times higher and for *cancer* it was 64% higher in the most disadvantaged areas; and
- for **individual causes of death** there are substantial equity gaps for *suicide and self-inflicted injury* (2.04 times higher in the most disadvantaged areas), *ischaemic heart disease* (3.20), *diabetes* (5.02 times) and *road traffic injuries* (3.84 times).

The extent to which rates are not only higher in the most disadvantaged areas in comparison with the most advantaged quintile, but also in the majority of cases are higher than in the intermediate quintiles, is shown graphically in Figure 4.

Figure 4: Impact of PYLL from selected causes of premature death by socioeconomic status quintiles<sup>1</sup>, Australia, 2016 to 2020

Age-standardised rates (figures in brackets show the number of PYLL)

Chapter level				
Extent of socioeconomic disadvantage	All Causes (306,965)	All Cancers (48,562)	External causes (87,838)	
Least disadvantaged (Q1)	55	75	72	
Quintile 2	66	78	91	
Quintile 3	75	92	86	
Quintile 4	90	115	100	
Most disadvantaged (Q5)	125	123	135	
Rate ratio	2.27**	1.64**	1.88**	
Key: Variation from national rate 20.1% and more above Australian rate 10.1 to 20% above Australian rate within +/- 10% of Australian rate 10.1 to 20% below Australian rate 20.1% and more below Australian rate  Rate ratio is the ratio of the rate in the Most disadvantaged to that in the Least disadvantaged areas: ** the rate ratio is statistically significant at the $P < 0.01$ level				
Specific causes				
Extent of socioeconomic disadvantage	Suicide (38,331)	Ischaemic heart disease (28,151)	Diabetes (14,544)	Road traffic injury (16,984)
Least disadvantaged (Q1)	76	48	37	49
Quintile 2	87	67	43	67
Quintile 3	99	83	90	72
Quintile 4	118	111	95	102
Most disadvantaged (Q5)	110	155	188	187
Rate ratio	1.44**	3.20**	5.02**	3.84**

<sup>1</sup> Quintiles compiled from data by Indigenous Area using the Index of Relative Socioeconomic Outcomes: further details can be found here <https://phidu.torrens.edu.au/help-and-information/about-our-data/geographical-structures#indigenous-quintiles>.

## By Remoteness Area

Rates of PYLL generally increase with remoteness and are highest for Aboriginal people who lived in the most remote areas of Australia. For those who lived in the Very Remote areas, the rate of PYLL, compared with the rate in the Major Cities areas, was<sup>4</sup>:

- nearly twice (1.91 times) that for premature death from **all causes**, with relatively higher rates in Outer Regional (10% above) and Remote (38% above) – but with the same rate in Inner Regional as in Major Cities;
- for the three causes of premature mortality at the chapter level with the largest numbers of PYLL, the rate for **external causes** was 61% higher, for circulatory system diseases it was two and a half (2.51) times higher and for **cancer** it was 52% higher in the Very Remote areas;
- for **individual causes of death**, there were substantial equity gaps for suicide and self-inflicted injury (60% higher in the most disadvantaged areas), ischaemic heart disease (2.56 times), diabetes (4.64 times) and road traffic injuries (3.94 times).

The extent to which rates are not only higher in the Very Remote areas in comparison with the Major Cities areas, but also in the majority of cases are higher than in the intermediate remoteness classes, is shown graphically in Figure 5.

Figure 5: Impact of PYLL from selected causes of premature death by Remoteness Area, Australia, 2016 to 2020

Age-standardised rates (figures in brackets show the number of PYLL)

Chapter level				
Remoteness Area	All Causes (306,965)	All Cancers (48,562)	External causes (87,838)	Key: Variation from national rate
Major Cities	77	84	87	20.1% and more above Australian rate
Inner Regional	77	89	78	10.1 to 20% above Australian rate
Outer Regional	110	105	103	within +/- 10% of Australian rate
Remote	138	122	124	10.1 to 20% below Australian rate
Very Remote	147	128	139	20.1% and more below Australian rate
Rate ratio	1.91**	1.52**	1.61**	Rate ratio is the ratio of the rate in the Very Remote to that in the Major Cities areas: ** the rate ratio is statistically significant at the $P < 0.01$ level
Specific causes				
Remoteness Area	Suicide (38,331)	Ischaemic heart disease (28,151)	Diabetes (14,544)	Road traffic injury (16,984)
Major Cities	81	66	46	56
Inner Regional	86	73	61	68
Outer Regional	111	110	116	112
Remote	133	141	164	146
Very Remote	130	168	213	221
Rate ratio	160**	2.56**	4.64**	3.94**

<sup>2</sup> Details of Remoteness Areas can be found here <https://phidu.torrens.edu.au/help-and-information/about-our-data/geographical-structures#remoteness-areas>. Note that Darwin is classified as Outer Regional in these data.

<sup>4</sup> Additional data, for states and the Northern Territory and other causes of death, are available from a work book at this link – [Indigenous Status Comparison Remoteness Area data](#) : interactive graphs are available at this link – <https://phidu.torrens.edu.au/social-health-atlases/graphs/remoteness-in-australia>.

## *References*

1. Australian Institute of Health and Welfare (AIHW), Deaths in Australia. Available from <https://www.aihw.gov.au/reports/web/152/deaths/deaths-in-australia/contents/age-at-death>; last accessed 6 June 2022.
2. Data compiled by PHIDU, based on Cause of Death Unit Record Files supplied by the Australian Coordinating Registry and the Victorian Department of Justice, on behalf of the Registries of Births, Deaths and Marriages and the National Coronial Information System; 2016 to 2020.