



## 5.8 Main contributors to the Indigenous life expectancy gap

Life expectancy is an important measure of the health status of a population: it indicates how long a person can expect to live, based on current mortality patterns. Indigenous Australians tend to die at younger ages than non-Indigenous Australians and as such have shorter life expectancies. Life expectancy is affected by a range of factors, including disease incidence and prevalence; health behaviours such as smoking; social determinants such as education, income and employment; and access to health services (AHMAC 2015).

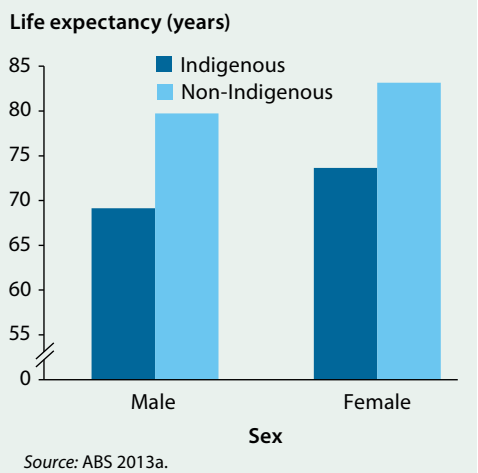
This article presents estimates of the contribution of different age groups and causes of death to the current gap in life expectancy between Indigenous and non-Indigenous Australians. This analysis will assist policymakers by showing where interventions are best targeted to reduce the gap. It is important to note that the gap in life expectancy is a relative measure and, as such, the size of the gap is not just influenced by changes in Indigenous life expectancy, but also by changes in the life expectancy of the non-Indigenous population.

The main analyses presented are for the 3-year period 2010–2012, to align with the most recent Indigenous life expectancy estimates available. Contextual information presented on the age profile and main causes of death among the Indigenous population is based on data for the 5-year period 2009–2013 (5 years of deaths are combined for reporting of Indigenous mortality to overcome the small number of Indigenous deaths from some conditions and age groups each year). All mortality data in this article relate to the five jurisdictions for which the quality of Indigenous identification is considered to be of acceptable quality for reporting—New South Wales, Queensland, Western Australia, South Australia and the Northern Territory (AIHW 2015a).

As this analysis refers to the life expectancy gap based on the 2010–2012 time period only, any comparisons over time (or with other time periods) should be made with caution. This is due to changes over time in the propensity of individuals to identify as Aboriginal or Torres Strait Islander, which may affect both the estimation of the size of the life expectancy gap, and comparability of associated analyses over time (see [The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples 2015](#) for more information on Indigenous identification).



**Figure 5.8.1: Life expectancy at birth, by Indigenous status and sex, 2010–2012**



## What do we know?

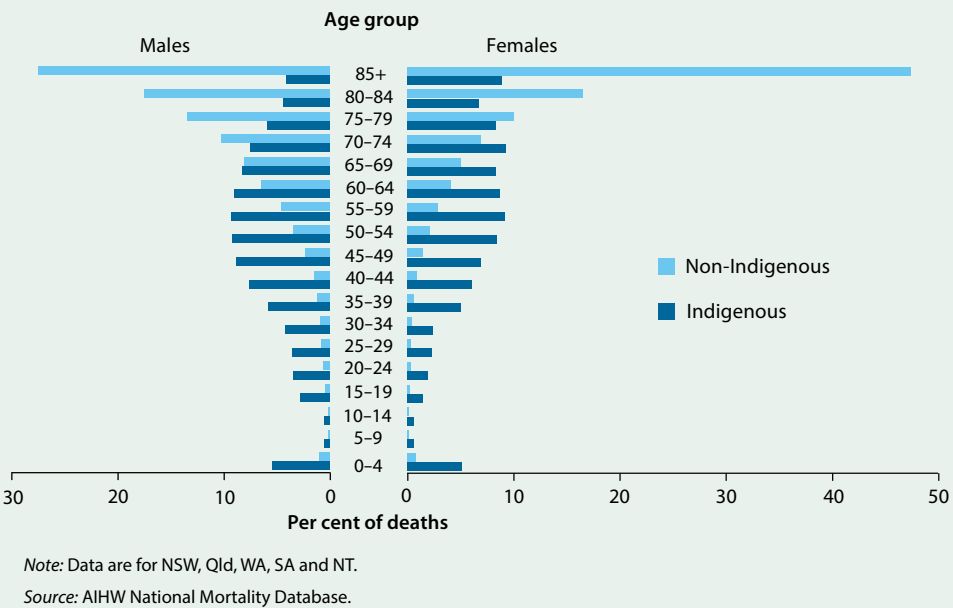
### How big is the gap?

The gap in life expectancy between Indigenous and non-Indigenous Australians in 2010–2012 was around 10 years: 10.6 years for males (Indigenous life expectancy at birth 69.1 years, non-Indigenous 79.7) and 9.5 years for females (Indigenous life expectancy at birth 73.7 years, non-Indigenous 83.2) (Figure 5.8.1).

## Mortality age profile

Most deaths for Indigenous Australians occur in the middle age groups. In contrast, most deaths for non-Indigenous Australians occur in the older age groups. This partly reflects the younger age profile of the Indigenous population. A relatively large proportion of Indigenous deaths were premature (for example, before age 75) (Figure 5.8.2). During the 5-year period 2009–2013, around 81% of deaths among Indigenous people occurred before the age of 75, compared with 34% of deaths for non-Indigenous people (AIHW 2015a). (See 'Chapter 3.2 Premature mortality').

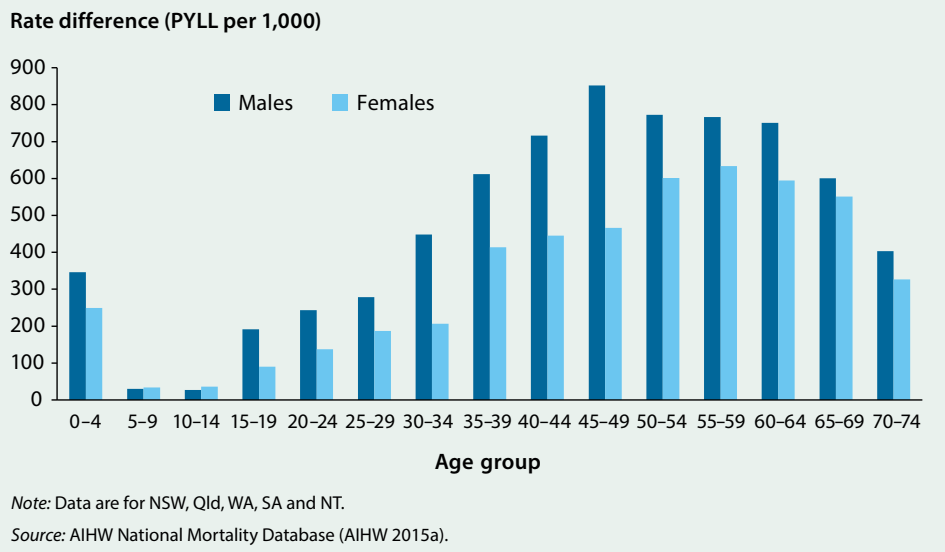
**Figure 5.8.2: Age distribution of deaths, by Indigenous status, age and sex, 2009–2013**





The largest gaps in mortality between Indigenous and non-Indigenous Australians were in the 35–59 age groups, based on potential years of life lost (PYLL) due to premature mortality (Figure 5.8.3). PYLL is the number of additional years a person would have been expected to live had they not died before the age of 75.

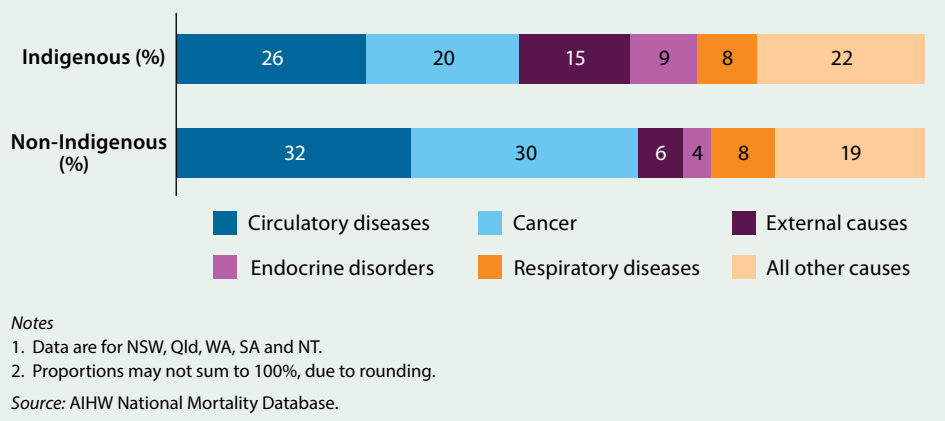
**Figure 5.8.3: Gap (rate difference) in potential years of life lost (PYLL) before age 75 between Indigenous and non-Indigenous Australians, by age and sex, 2009–2013**



## Main causes of death

The main broad causes of deaths among Indigenous Australians in the 2009–2013 period were cardiovascular disease (25%); cancer (neoplasms) (20%); external causes (including suicide and transport accidents) (15%); endocrine, metabolic and nutritional disorders (including diabetes) (8.9%); and respiratory diseases (7.9%) (Figure 5.8.4). Compared with non-Indigenous Australians, cardiovascular diseases and cancer represented a smaller proportion of deaths, and external causes and endocrine, metabolic and nutritional disorders represented a larger proportion of deaths, among Indigenous Australians.

**Figure 5.8.4: Causes of death, by Indigenous status, 2009–2013**





## The contribution of age group and causes of death to the life expectancy gap

New analysis undertaken by the AIHW measures the contributions of age and causes of death to the gap in life expectancy between Indigenous and non-Indigenous Australians (see Box 5.8.1).

### Box 5.8.1: Estimating the contribution of age group and causes of death to the life expectancy gap

There were two steps in estimating the contribution of age groups and causes of death to the gap in life expectancy between Indigenous and non-Indigenous Australians in 2010–12:

1. Indigenous and non-Indigenous life expectancy estimates and associated age-specific mortality rates for Australia for the period 2010–2012 (the latest available data for life expectancy) were sourced from the ABS (ABS 2013a, 2013b, 2014, 2015). Causes of death data for 2010–2012 were obtained from five jurisdictions: New South Wales, Queensland, South Australia, Western Australia and the Northern Territory (analysis of the AIHW National Mortality Database).
2. Decomposition methods were used to estimate the contribution (in number of years) of age groups and causes of death to the life expectancy gap for 2010–2012 (Arriaga 1984; Pollard 1982; Preston et al. 2001; Wilson et al. 2007). This involved estimating the contribution of the difference in all-cause mortality between the Indigenous and non-Indigenous populations in each 5-year age group (<1, 1–4, 5–9 and so forth, to 85 years and over) to the difference in life expectancy at birth for both males and females. The sum of the contribution of age groups to the life expectancy gap between Indigenous and non-Indigenous Australians is equal the total life expectancy gap. The proportion of deaths in each age group in the Indigenous and non-Indigenous populations due to each of the six causes of death examined (cardiovascular diseases, diabetes, external causes, cancer, respiratory diseases and other causes) were then applied to the all-cause mortality differences, to estimate the relative contribution of each cause of death to the life expectancy gap.

## Which age groups contribute the most to the life expectancy gap?

The analysis presented was undertaken by 5-year age group; however, results are presented in broader 20-year age groups for ease of interpretation.

Deaths in the 55–74 age group contributed the most to the life expectancy gap in 2010–2012 for both males and females, with each 5-year age group contributing around 1 year to the life expectancy gap (Table 5.8.1). This age group contributed 42% to the total life expectancy gap for males and 45% to the total life expectancy gap for females. The 35–54 age group made the second largest contribution to the life expectancy gap for both males and females (31% and 26% respectively). The very young and very old made a smaller contribution to the gap.



Table 5.8.1: Contribution of age groups to the life expectancy gap, by sex, 2010–2012

Age group	Life expectancy gap (years)		Life expectancy gap (%)	
	Males	Females	Males	Females
0–14	0.5	0.5	4.7	5.3
15–34	1.3	0.8	12.3	8.4
35–54	3.3	2.5	31.1	26.3
55–74	4.4	4.3	41.5	45.3
75+	1.0	1.4	9.4	14.7
<b>Total</b>	<b>10.6</b>	<b>9.5</b>	<b>100.0</b>	<b>100.0</b>

Sources: AIHW analysis of the AIHW National Mortality Database and ABS 2013a.

## Which causes of death contribute the most to the life expectancy gap?

The contribution of different age groups to the life expectancy gap between Indigenous and non-Indigenous Australians is largely determined by patterns in the disease profiles of those age groups.

In 2010–2012, for males, the largest contributors to the life expectancy gap were cardiovascular diseases (2.9 years), external causes (or injuries) (1.9 years) and cancer (neoplasms) (1.5 years). For females, the largest contributors were also cardiovascular diseases (2.7 years), cancer (1.6 years) and external causes (1.3 years).

Different age groups had different disease profiles. For the 0–14 age group, the main causes of death contributing to the gap were conditions originating in the perinatal period (included in the 'other' category in Figure 5.8.4 and Table 5.8.2). External causes (injuries) contributed the most to the gap in life expectancy in the 15–34 age group, for both males and females. For age groups 35–54, 55–74 and 75 years and over, cardiovascular diseases contributed the most to the gap in life expectancy for both males and females (Table 5.8.2).



**Table 5.8.2: Contribution of causes of death to life expectancy gap, by age and sex, 2010–2012 (years)**

Age group	Causes of death						Total
	Cardiovascular	Diabetes	External	Cancer	Respiratory	Other <sup>(a)</sup>	
<b>Males (years)</b>							
0–14	0.0	0.0	0.1	0.0	0.0	0.4	0.5
15–34	0.2	0.0	1.0	0.0	0.0	0.1	1.3
35–54	1.1	0.3	0.5	0.3	0.2	0.9	3.3
55–74	1.3	0.6	0.2	1.0	0.5	0.8	4.4
75+	0.3	0.2	0.0	0.1	0.2	0.2	1.0
<b>Total</b>	<b>2.9</b>	<b>1.1</b>	<b>1.9</b>	<b>1.5</b>	<b>0.9</b>	<b>2.3</b>	<b>10.6</b>
<b>Females (years)</b>							
0–14	0.0	0.0	0.1	0.0	0.0	0.3	0.5
15–34	0.1	0.0	0.6	0.0	0.0	0.1	0.8
35–54	0.8	0.2	0.4	0.3	0.1	0.6	2.5
55–74	1.2	0.6	0.2	1.1	0.4	0.7	4.3
75+	0.5	0.2	0.0	0.2	0.3	0.3	1.4
<b>Total</b>	<b>2.7</b>	<b>1.0</b>	<b>1.3</b>	<b>1.6</b>	<b>0.9</b>	<b>2.1</b>	<b>9.5</b>

(a) Includes digestive diseases, conditions originating in the perinatal period, nervous system diseases, kidney diseases, infectious and parasitic diseases, and other causes.

Sources: AIHW analysis of the AIHW National Mortality Database and ABS 2013a.

## What are the implications of these findings?

The findings suggest that chronic diseases, such as cardiovascular diseases and cancer, as well as injuries, which usually occur in the 35 to 74 year age groups in the Indigenous population, are responsible for the majority of the life expectancy gap. In comparison, the relative contribution of infant and child deaths to the gap is small. Strategies and programs to close the gap, however, should consider addressing disparities in childhood as well as the older age groups, because health conditions that become more apparent at older ages can begin in childhood or young adulthood. For example, factors such as poor diet, smoking, and unresolved mental trauma early in life can lead to heart disease or depression later in life.

## What is the AIHW doing?

The AIHW's Enhanced Mortality Database project is using data linkage to improve estimates of Indigenous deaths and life expectancy. Death registrations are linked with hospital, residential aged care and perinatal data to investigate opportunities to improve the measurement of Indigenous deaths and life expectancy.

The AIHW is currently undertaking a study to measure the burden of disease experienced by the Indigenous population. The study will provide updated information on the impact of diseases and injuries on Indigenous Australians, as well as estimates of the gap in disease burden between Indigenous and non-Indigenous Australians. An initial report has been published: *Australian Burden of Disease Study: fatal burden of disease in Aboriginal and Torres Strait Islander people 2010* (AIHW 2015b). A comprehensive report with 2011 and 2003 estimates of fatal and non-fatal burden, as well as the burden attributable to selected risk factors, will be released later this year.



## What is missing from the picture?

Behavioural risk factors (such as smoking, diet and physical activity) as well as social determinants (such as income, education and employment) are also important factors which contribute to disparities in health outcomes between Indigenous and non-Indigenous Australians and, consequently, to the life expectancy gap. While previous studies have shown the importance of social determinants in addressing the health gap between Indigenous and non-Indigenous people (AIHW 2014; Booth & Carroll 2005; DSI Consulting 2009; Marmot 2011; Zhao et al. 2013), these were based on survey data now over a decade old. These studies did not look at the contribution of lack of access to affordable and culturally acceptable health services to the life expectancy gap, which is another important determinant of health that is difficult to measure. The evidence suggests that a complex relationship exists between health service access, social disadvantage, health behaviours, and health outcomes. Additional research, using the latest available data, on the overlap and causal links between these factors for the Indigenous population will provide a broader and more comprehensive understanding of the main drivers of the life expectancy gap, and where interventions are best targeted to reduce this gap. (For more information see 'Chapter 4.2 Social determinants of Indigenous health' and 'Chapter 6.6 Indigenous Australians' access to health services').

## Where do I go for more information?

More information about Indigenous life expectancy and the gap in health status between Indigenous and non-Indigenous Australians is available at [www.aihw.gov.au/indigenous-observatory](http://www.aihw.gov.au/indigenous-observatory).

Information on Indigenous burden of disease is available at <http://www.aihw.gov.au/burden-of-disease/>.

The report [Australian Burden of Disease Study: fatal burden of disease in Aboriginal and Torres Strait Islander people 2010](#) and other recent publications are available for free download.

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