

# 1.18 Median age at death

**The age at which exactly half the deaths registered (or occurring) in a given time period were deaths of people above that age and half were deaths below that age**

## Data sources

Data for this measure come from the AIHW National Mortality Database.

The National Mortality Database is a national collection of de-identified information for all deaths in Australia and is maintained by the AIHW. Information on the characteristics and causes of death of the deceased is provided by the Registrars of Births, Deaths and Marriages and coded nationally by the ABS. Information on the cause of death is supplied by the medical practitioner certifying the death, or by a coroner. The data are updated each calendar year.

Although the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. These four jurisdictions represent approximately 60% of the Indigenous population of Australia. Data are presented by state/territory of usual residence rather than state/territory where death occurs.

Deaths for which the Indigenous status of the deceased was not reported have been excluded from the analysis. Data have been analysed using the year of registration of death for all years. Note that the 2006 edition of this report used year of occurrence of death for all years of analysis except for the latest year of available data for which year of registration of death was used. Data published in this report may therefore differ slightly from those published in the previous edition for comparable years of data.

## Analyses

Care should also be exercised when analysing Indigenous median age at death, as differences in identification by age may lead to biased summary indicators such as median age at death. Better identification of Indigenous infant deaths compared with older age groups will result in observed median age at death being underestimated. Median age at death values are influenced to some extent by the age structure of a population. The Indigenous population has a younger age structure than the non-Indigenous population and this is reflected in the median age at death of the two populations.

### Median age at death by state/territory

- Over the period 2002–2006, in Queensland, Western Australia, South Australia and the Northern Territory combined, the median age at death was 49 years for Indigenous males and 56 years for Indigenous females, compared with 76 years for non-Indigenous males and 82 years for non-Indigenous females in these jurisdictions.
- Over the period 2002–2006, in the four jurisdictions, the median age at death for Indigenous males ranged from 45 years in the Northern Territory to 52 years in

Queensland. For Indigenous females, the median age at death ranged from 52 years in the Northern Territory and South Australia to 59 years in Queensland (Table 1.18.1).

**Table 1.18.1: Median age at death, by Indigenous status and sex, Qld, WA, SA and NT, 2002–2006**<sup>(a)(b)(c)(d)</sup>

	Qld	WA	SA	NT	Qld, WA, SA & NT
<b>Indigenous males</b>					
2002	51	51	48	47	49
2003	51	50	48	46	49
2004	53	49.5	49	43	49
2005	51	52	42	45	49
2006	55	47	50	45	49
<b>2002–2006</b>	<b>52</b>	<b>50</b>	<b>47</b>	<b>45</b>	<b>49</b>
<b>Non-Indigenous males</b>					
2002	75	75	77	62.5	76
2003	75	76	77	65	76
2004	76	76	77	62.5	76
2005	76	76	77	63	76
2006	76	76	78	64	77
<b>2002–2006</b>	<b>76</b>	<b>76</b>	<b>77</b>	<b>63</b>	<b>76</b>
<b>Indigenous females</b>					
2002	58	52.5	54.5	49.5	55
2003	62	54	49.5	52	56
2004	57	63	53	53.5	58
2005	59	57	47	50	55
2006	56.5	56.5	59	55	56
<b>2002–2006</b>	<b>59</b>	<b>57</b>	<b>52</b>	<b>52</b>	<b>56</b>
<b>Non-Indigenous females</b>					
2002	82	82	82	70	82
2003	82	82	83	74	82
2004	82	82	83	71	82
2005	82	83	83	70	82
2006	83	83	84	74.5	83
<b>2002–2006</b>	<b>82</b>	<b>82</b>	<b>83</b>	<b>71</b>	<b>82</b>

(a) The incompleteness of Indigenous identification means that the number of deaths registered as Indigenous is an underestimate of the actual number of deaths which occur in the Aboriginal and Torres Strait Islander population.

(b) Variations in median age at death by Indigenous status, sex and jurisdiction should be interpreted with care as they are sensitive to differential data quality.

(c) Data are reported for Queensland, Western Australia, South Australia and the Northern Territory only. These four states and territories are considered to have adequate levels of Indigenous identification in mortality data. They do not represent a quasi-Australian figure.

(d) Data are by year of registration of death and state/territory of usual residence

Sources: AIHW analysis of National Mortality Database.

## Time series analysis

Total deaths can be partitioned into quartiles by age at death (the first quartile is the age below which 25% of all deaths occur, the median is the age below which 50% of all deaths occur, and the third quartile is the age below which 75% of all deaths occur). An analysis of this kind can reveal changes in patterns of mortality over time, such as an increase in the proportion of deaths occurring at older ages and a corresponding decrease in the proportion occurring at younger ages.

But any such changes must be interpreted with care before any inferences can be drawn regarding an improvement or deterioration in the mortality of Indigenous Australians. Fluctuations in the level of Indigenous mortality over time partly reflect changing levels of identification of Indigenous deaths and population estimates. Quartiles of age at death are also affected by changes in age distribution of the population resulting, for example, from changes in fertility, and therefore they support comparisons only if fertility rates remain consistent over the period being analysed.

Longer term mortality trend data are limited to three jurisdictions – Western Australia, South Australia and the Northern Territory, which have over 10 years of adequate identification of Indigenous deaths in their recording systems. As there is a consistent time series of population estimates from 1991, data for the period 1991–2006 have been used for the analysis of Indigenous mortality trends.

Because of the late inclusion of a ‘not stated’ category of Indigenous status in 1998 (before which ‘not stated’ responses were included with non-Indigenous deaths), quartiles of death and median age of death for Indigenous Australians have been compared with those of ‘other’ Australians (which include deaths of both non-Indigenous people and people for whom Indigenous status was not stated).

Table 1.18.2 and Figure 1.18.1 present trends in the median age at death for Indigenous and other Australians in Western Australia, South Australia and the Northern Territory combined over the period 1991–2006.

Table 1.18.3 and Figure 1.18.2 present quartiles of age at death for Indigenous Australians in Western Australia, South Australia and the Northern Territory by jurisdiction over the period 1991–2006.

- Over the period 1991–2006, there was no significant change in the median age at death for Indigenous males and females in Western Australia, South Australia and the Northern Territory combined (Table 1.18.2). Over the same period, there were increases in the median age at death for other males and other females in Western Australia, South Australia and the Northern Territory combined of around 6% for males and 5% for females (Table 1.18.2).
- When analysing age at death by quartiles over the period 1991–2006, there has been a significant increase in the age at death in the first quartile among Indigenous males in all three jurisdictions – Western Australia, South Australia and the Northern Territory – and among Indigenous females in South Australia (Table 1.18.3).

**Table 1.18.2: Median age at death, by Indigenous status and sex, WA, SA and NT, 1991–2006**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Annual change <sup>(a)</sup>	% change over period <sup>(b)</sup>
<b>Indigenous</b>																		
Males	46	49	46	49	48	47	48	45	48	46	48	48	48	47	47	46	-0.03	-1.1
Females	55	56	57	60	56	56	53	52	54.5	55	53	52	51	59	52	56	-0.2	-5.2
<b>Other</b>																		
Males	73	72	73	73	73	74	74	74	75	75	75	76	76	76	76	77	0.3*	6.1
Females	79	79	79	80	80	81	81	81	81	81	82	82	82	82	83	83	0.3*	5.1

\* Represents results with statistically significant increases or declines at the  $p < 0.05$  level over the period 1991–2006.

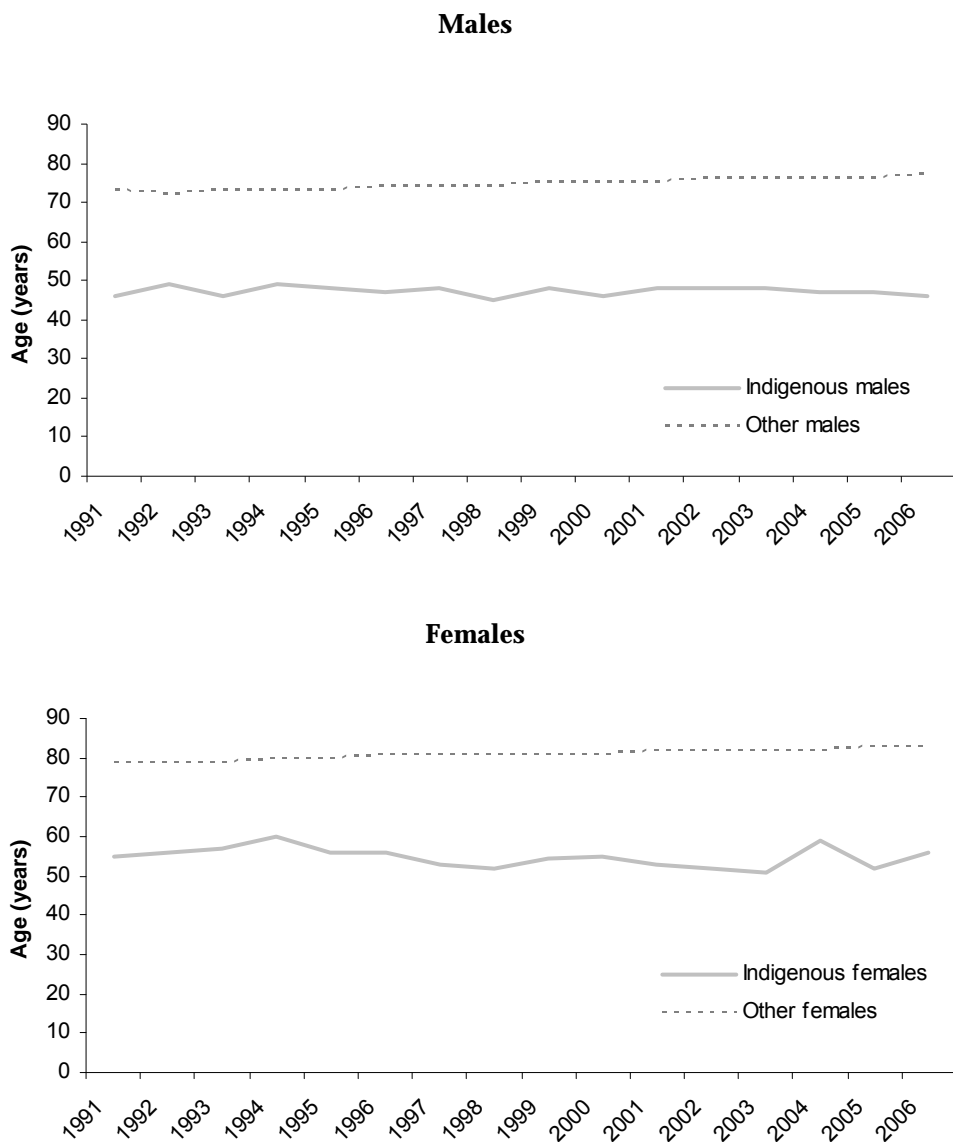
(a) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(b) Per cent change between 1991 and 2006 based on the average annual change over the period.

*Notes*

1. Data based on year of registration of death and state/territory of usual residence.
2. Data presented in this table may differ from data presented in the 2006 edition of this report for comparable years because of a change from using year of occurrence of death to year of registration of death for mortality analyses.

Source: AIHW analysis of National Mortality Database.



Source: AIHW analysis of National Mortality Database.

**Figure 1.18.1: Median age at death, by Indigenous status, WA, SA and NT combined, 1991–2006**

**Table 1.18.3: Quartiles of age at death, Indigenous Australians in WA, SA and NT, 1991–2006**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Annual change <sup>(a)</sup>	% change over period <sup>(b)</sup>
<b>First quartile of age at death</b>																		
<b>Males</b>																		
WA	26	31	29	31	32	32	33	29	31.5	31	34	33.5	36	36.5	37	35	0.5*	30.3
SA	23	22	27	38	28	26.5	32	32	37	31	34	35	37	35	31	36	0.7*	46.0
NT	26	29.5	26	28	29	32	33	31	30	29	32	33	33	31	32	33	0.4*	21.4
<b>Females</b>																		
WA	31	34	43	42.5	39	39	40	35	35	35	36	35	32	46	39	41	0.1	6.8
SA	27.5	33	34	32	41	36	35	39	36	39	45	38.5	40	39	35	44	0.6*	35.1
NT	33	37	31.5	37.5	39	36	36	35	36	37	38	33	39	36.5	37	39	0.2	8.7
<b>Median age at death</b>																		
<b>Males</b>																		
WA	49	51	48	51	49	48	48	44.5	49	46	51.5	51	50	49.5	52	47	0.0	0.9
SA	41	37	40	51	45	47	50	43.5	46	49	49.5	48	48	49	42	50	0.4*	16.4
NT	46	49	46.5	46	50	46.5	48	45	47	46	45	47	46	43	45	45	-0.2*	-6.6
<b>Females</b>																		
WA	59	58	61	62	59	57.5	57	56.5	55	55.5	53.5	52.5	54	63	57	56.5	-0.3	-6.4
SA	47.5	55	55.5	49	51	54	52	50	50	56	55	54.5	49.5	53	47	59	0.1	4.0
NT	52	55	51.5	60	56	53.5	52	49	56	53.5	52	49.5	52	53.5	50	55	-0.2	-4.7

(continued)

**Table 1.18.3 (continued): Quartiles of age at death, Indigenous Australians in WA, SA and NT, 1991–2006**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Annual change <sup>(a)</sup>	% change over period <sup>(b)</sup>
<b>Third quartile of age at death</b>																		
<b>Males</b>																		
WA	66	64	65	64	68	66	63	65	62.5	66	66	66.5	65	66	64	67	0.0	1.0
SA	57	59	56	63	62	62.5	67	67	58	62	63	65	57	66	55	60	0.1	1.9
NT	61	65	61	63	62	60	64	61	63	61	62	62	63	58	59	61	-0.2	-3.9
<b>Females</b>																		
WA	71	70	74	76	72	69.5	68	69	71	69	69	69	70	77	72	73	0.0	0.5
SA	62	64	69	67	64	72	68	69	72	70	72	68	65.5	71	70	72	0.4*	9.7
NT	66	67	65	72	68	68	67.5	67	71	68	69	66.5	67	69	64	72	0.1	1.7

\* Represents results with statistically significant increases or declines at the  $p < 0.05$  level over the period 1991–2006.

(a) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(b) Per cent change between 1991 and 2006 based on the average annual change over the period.

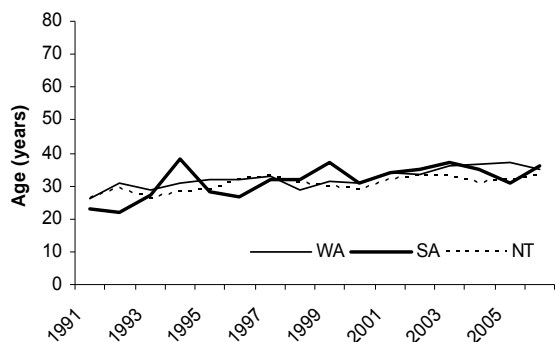
*Notes*

1. Data based on year of registration of death and state/territory of usual residence.

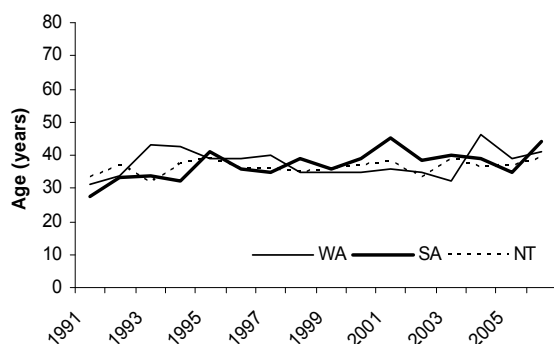
2. Data presented in this table may differ from data presented in the 2006 edition of this report for comparable years because of a change from using year of occurrence of death to year of registration of death for mortality analyses.

Source: AIHW analysis of National Mortality Database.

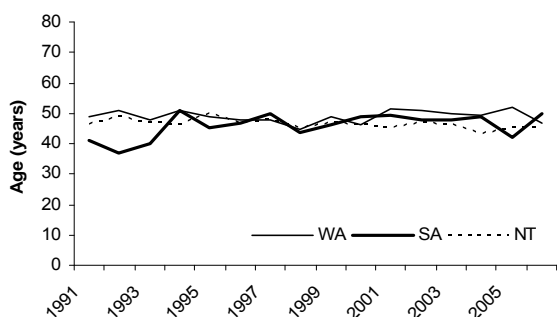
**First quartile, males**



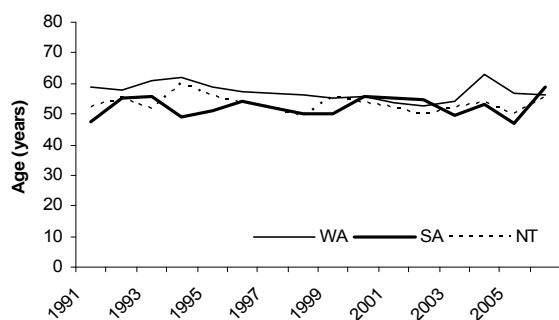
**First quartile, females**



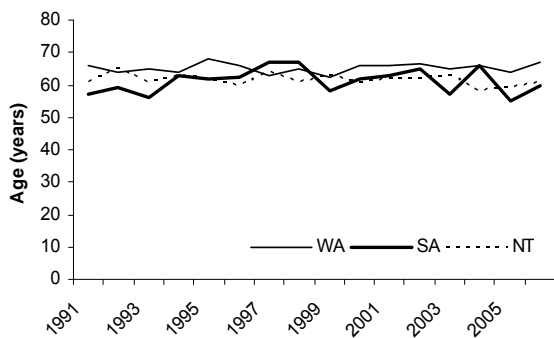
**Median age at death, males**



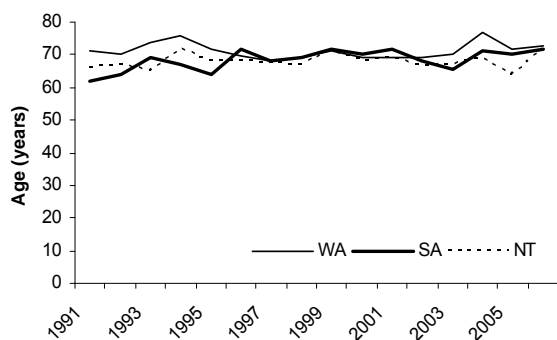
**Median age at death, females**



**Third quartile, males**



**Third quartile, females**



Source: AIHW analysis of National Mortality Database.

**Figure 1.18.2: Quartiles of age at death for Indigenous males and females in WA, SA and NT, 1991–2006**

Additional trends analysis has been presented for Queensland, Western Australia, South Australia and the Northern Territory combined from 1998 to 2006 for Indigenous and non-Indigenous Australians in Table 1.18.4 and Figure 1.18.3. Queensland has had adequate identification of Indigenous deaths in its recording systems since 1998, and these deaths have been compared with those of non-Indigenous Australians (excluding deaths for which Indigenous status was not stated).

- Over the period 1998–2006, there was no significant change in the median age at death for Indigenous males and females in Queensland, Western Australia, South Australia and the Northern Territory combined. Over the same period, there were significant increases in the median age at death for non-Indigenous males and other females of around 4% for males and 3% for females (Table 1.18.4).

**Table 1.18.4: Median age at death, by Indigenous status and sex, Qld, WA, SA and NT, 1998–2006**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	Annual change <sup>(a)</sup>	% change over period <sup>(b)</sup>
<b>Indigenous</b>											
Males	45	48	49	50	49	49	49	49	49	0.3	5.3
Females	55	57	57	53	55	56	58	55	56	0.05	0.7
<b>Non-Indigenous</b>											
Males	74	74	75	75	76	76	76	76	77	0.4*	3.8
Females	81	81	81	81	82	82	82	82	83	0.2*	2.3

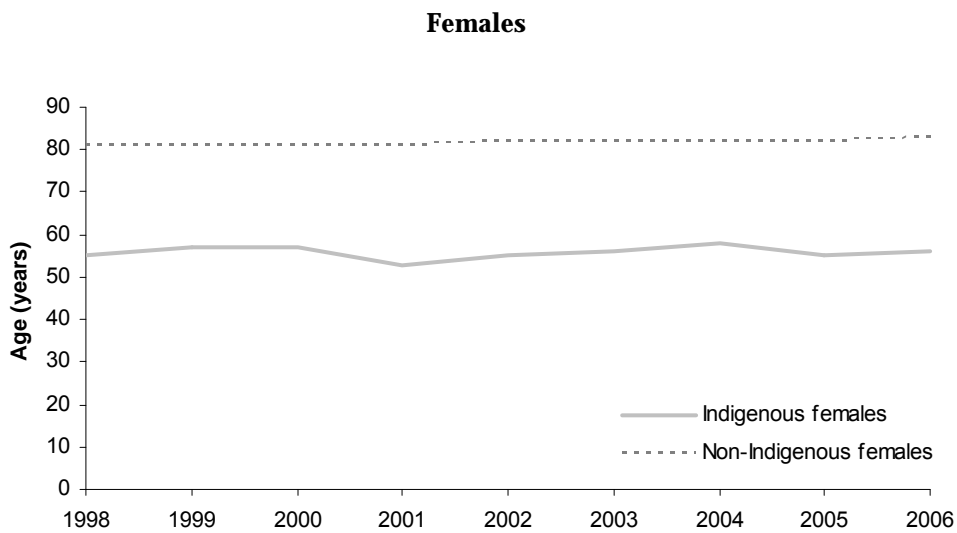
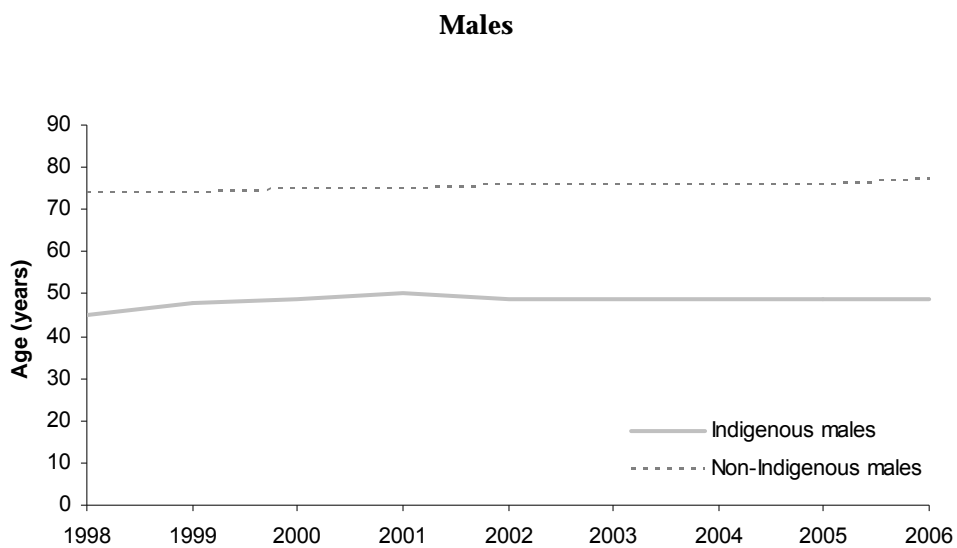
\* Represents results with statistically significant increases or declines at the  $p < 0.05$  level over the period 1998–2006.

(a) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(b) Per cent change between 1998 and 2006 based on the average annual change over the period.

Note: Data based on year of registration of death and state/territory of usual residence.

Source: AIHW analysis of National Mortality Database.



Source: AIHW analysis of National Mortality Database.

**Figure 1.18.3: Median age at death, by Indigenous status, Qld, WA, SA and NT combined, 1998–2006**

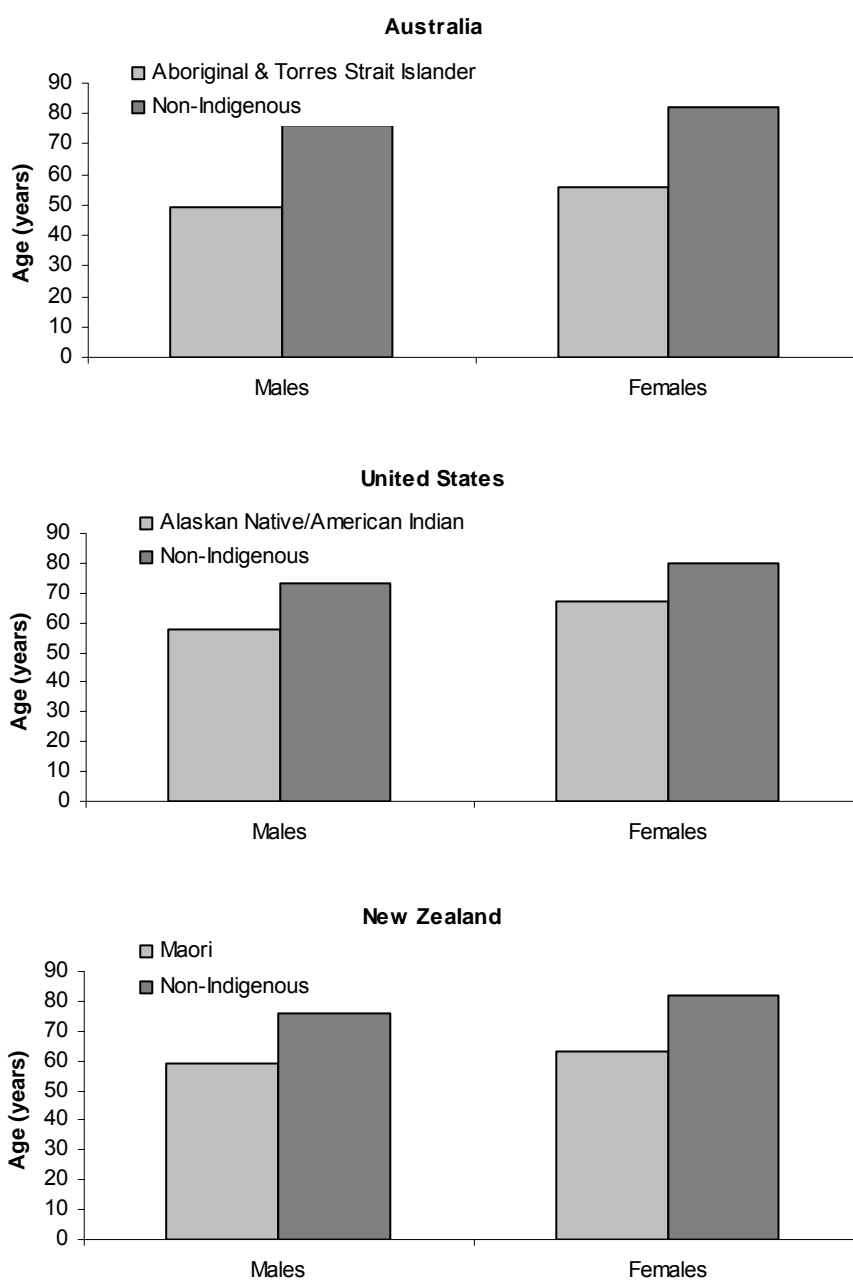
## International comparisons

International indigenous data are available for New Zealand, the United States and Canada. There are several common issues that adversely affect the quality of Indigenous mortality data in these three countries and Australia. These include the lack of an accurate denominator value for the Indigenous population and the lack of agreement over which population denominator values to use if they do exist. There are differences in how Indigenous status is defined in the different countries. There have also been frequent modifications to the ethnicity question recorded in the censuses in some of these countries. These frequent changes in the census ethnicity question have led to difficulties in comparing mortality trends over time and have also produced difficulties in estimating population denominator counts between censuses.

The most important issue in regard to the quality of Indigenous mortality data is the undercounting of deaths (the numerator for mortality data). In each of the four countries, the undercounting of Indigenous deaths is likely to lead to an underestimation of the relative size of disparities that exist between Indigenous and non-Indigenous populations.

The median age at death is available for American Indians and Alaskan Natives and is presented below. Median age at death is not available for Canadian First Nations because, for this population group, data are not accurately available by single year age groups. Because of differences in coverage of Indigenous deaths in the three countries, the median age at death should not be strictly compared between countries and the data presented below should be interpreted with caution.

- In the United States, for the period 2002–2005 the median age at death for American Indians and Alaskan Natives was 58 years for males and 67 years for females, compared with 73 years for non-Indigenous males and 80 years for non-Indigenous females (United States Department of Health and Human Services unpublished data).
- In New Zealand, for the period 2002–2006, the median age at death for Maoris was 59 years for males and 63 years for females, compared with 76 years for non-Indigenous males and 82 years for non-Indigenous females (Statistics New Zealand, unpublished data).
- The median age at death for Aboriginal and Torres Strait Islander peoples is well below that of American Indians/Alaskan Natives and New Zealand Maoris (Figure 1.18.4).



*Notes*

1. Australia data are 2002–2006 for Qld, WA, SA and NT, Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians.
2. US data are for 2002–2005 for US Indians/Alaskan Natives and non-Indigenous Americans.
3. New Zealand data are for 2002–2006 for Maoris and the non-Indigenous New Zealand population.
4. Because of differences in coverage of Indigenous deaths in the three countries, the median age at death should not be strictly compared between countries.

Sources: AIHW analysis of National Mortality Database; United States Department of Health and Human Services; Statistics New Zealand.

**Figure 1.18.4: Median age at death, by Indigenous status, Australia, United States and New Zealand, 2002–2006**

## **Data quality issues**

### **Mortality data**

#### ***Deaths***

*The mortality rate for Indigenous Australians can be influenced by identification of Indigenous deaths, late registration of deaths, and changes to death forms and/or processing systems. Because of the small size of the Indigenous population, these factors can significantly affect trends over time and between jurisdictions.*

#### ***Indigenous status question***

*All jurisdictions comply with the standard wording for the Indigenous status question and categories for their death registration forms. However, New South Wales, Victoria, South Australia, the Northern Territory and the Australian Capital Territory all have slightly different wording from the national standard for the instruction on those with both Aboriginal and Torres Strait Islander origin (ABS & AIHW 2005). Although the wording is only slightly different, it would be ideal to have all jurisdictions asking the question in exactly the same way.*

#### ***Under-identification***

*Almost all deaths in Australia are registered. However, the Indigenous status of the deceased is not always recorded, or recorded correctly. The incompleteness of Indigenous identification means the number of deaths registered as Indigenous is an underestimate of deaths occurring in the Aboriginal and Torres Strait Islander population (ABS 1997). As a result, the observed differences between Indigenous and non-Indigenous mortality are underestimates of the true differences.*

*Although the identification of Indigenous deaths is incomplete in all state and territory registration systems, four jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) have been assessed by the ABS and the AIHW as having adequate identification. Longer term mortality trend data are limited to three jurisdictions (Western Australia, South Australia and the Northern Territory) with over 10 years of adequate identification of Indigenous deaths in their recording systems. The quality of the time series data is also influenced by the late inclusion of a 'not stated' category for Indigenous status in 1998. Before this time, the 'not stated' responses were probably included with the non-Indigenous. The ABS calculated the implied coverage (identification) of Indigenous deaths for the period 2002–2006 using population estimates: New South Wales 45%, Victoria 32%, Queensland 51%, South Australia 62%, Western Australia 72%, Northern Territory 90%, Tasmania and the Australian Capital Territory were not calculated due to small numbers, Australia 55% (ABS 2007).*

#### ***Numerator and denominator***

*Rate and ratio calculations rely on good numerator and denominator data. The changes in the completeness of identification of Indigenous people in death records may take place at different rates from changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used here are sourced from Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2009 (ABS 2004).*

#### ***International comparisons***

*International Indigenous data are available for New Zealand, the United States and Canada.*

*In New Zealand, research has been undertaken that attempts to adjust for this undercounting by a process of probabilistic record linkage of death registration data with census data. This research has produced estimates of the considerable extent of the undercounting of Maori deaths. This adjusted data could not be used in international comparisons unless the data in the other countries were also adjusted (Bramley et al. 2004).*

*(continued)*

### **Data quality issues (continued)**

*In Canada the national mortality database administered by Statistics Canada does not contain ethnicity data. The regional offices of Health Canada collect mortality data for the Indigenous, on-reserve, First Nations population. Via a series of partnerships with each provincial vital statistics registrar, First Nations specific death certificate information is sent to the regional First Nations and Inuit Health Branch regional office. However, in a number of areas no such relationships exist (for example, the Atlantic, Ontario and Quebec regions), and therefore data are obtained directly from the local communities, or not at all. The availability of Indigenous mortality data in Canada is further limited by the lack of information that is available for off-reserve, or non-status, Indigenous peoples.*

*The varying degrees of completeness and accuracy of the Indigenous mortality databases that exist within the four countries are likely to affect the comparisons.*

## **References**

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Bramley D, Hebert P, Jackson R & Chassin M 2004. Indigenous disparities in disease-specific mortality, a cross-country comparison: New Zealand, Australia, Canada, and the United States. *New Zealand Medical Journal* 117(1207).

<[www.nzma.org.nz/journal/117-1207/1215](http://www.nzma.org.nz/journal/117-1207/1215)>.