

# 2 Life expectancy and premature loss of life

Life expectancy is an indication of how long a person can expect to live given prevailing mortality rates. It is the average number of years of life remaining to a person at a specified age, assuming current age-specific mortality rates continue during the person’s lifetime. It is therefore a good measure of population health. Low infant mortality rates and an ageing population are both indicative of longer life expectancy.

The expected length of a life is inversely related to the mortality rates at that time. In Australia, life expectancy has increased significantly over the century, reflecting decreases in mortality rates from infectious diseases in the first half of the century and from cardiovascular disease in the later part of the century (Table 2.1). For instance, mortality rates for cardiovascular disease began decreasing in 1968, which in turn resulted in an increase in life expectancy (see further discussion in Chapter 3).

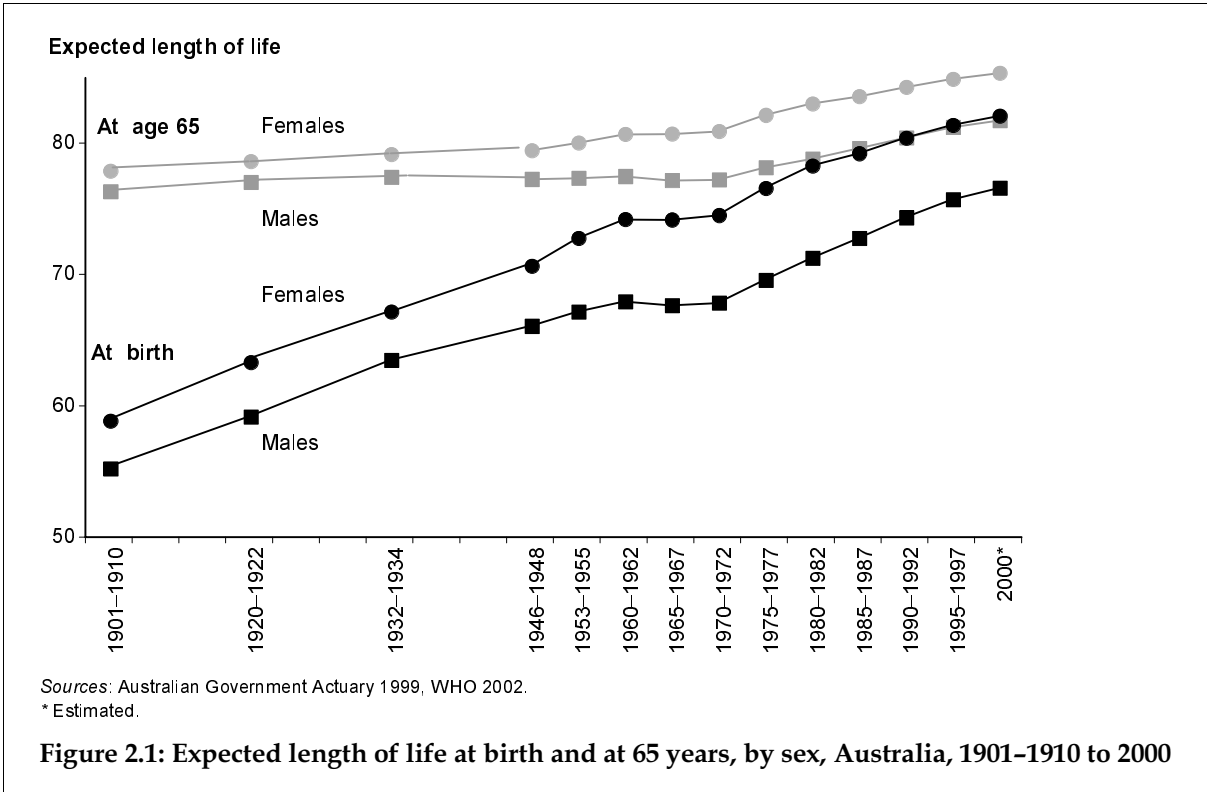


Figure 2.1: Expected length of life at birth and at 65 years, by sex, Australia, 1901-1910 to 2000

There are many influences on mortality and life expectancy, for instance cigarette smoking. Cigarette smoking increased over the century, peaking in 1945 for males and 1976 for females (Winstanley et al. 1995). As a result, mortality rates due to lung cancer increased and growth in life expectancy decreased (there is a time lag of 20 to 30 years between smoking patterns and mortality rates). Measures aimed at decreasing tobacco smoking (increases in tobacco taxes, restriction of tobacco advertising and health promotion campaigns) were then introduced, and smoking prevalence for males declined, resulting in a decline in male deaths due to lung cancer (since 1982). Smoking rates for females have changed little since 1945 and lung cancer mortality rates continue to rise.

**Table 2.1: Life expectancy, Australia, selected years**

Year	At birth		At age 1		At age 15		At age 65	
	Males	Females	Males	Females	Males	Females	Males	Females
	Annual averages							
1901–1910	55.2	58.8	60.0	62.9	49.0	51.9	11.3	12.9
1920–1922	59.2	63.3	62.7	66.0	51.4	54.6	12.0	13.6
1946–1948	66.1	70.6	67.3	71.5	54.3	58.3	12.3	14.4
1960–1962	67.9	74.2	68.5	74.5	55.1	61.0	12.5	15.7
1970–1972	67.8	74.5	68.3	74.7	54.8	61.2	12.2	15.9
1980–1982	71.2	78.3	71.1	78.0	57.4	64.3	13.8	18.0
1990–1992	74.3	80.4	73.9	79.9	60.2	66.1	15.4	19.3
1995–1997	75.7	81.4	75.2	80.8	61.4	67.0	16.2	19.9
2000*	76.6	82.1	76.0	81.4	62.2	67.6	16.7	20.2

Source: Australian Government Actuary 1999; WHO 2002.

\* Estimated.

A boy born during 2000 was expected to live to 76.6 years, on average, while a girl was expected to live to 82.1 years, on average. However, a boy and girl aged 15 in 2000 could expect to live to ages 77.2 and 82.6 years, respectively.

Over the period 1901–2000, life expectancy at birth increased by 21.4 years for males and by 23.3 years for females. However, the rate of growth in life expectancy over the century was not constant. This is illustrated by the analysis over three periods – 1900 to 1950, 1950 to 1970, and 1970 to 1998 (Figure 2.1).

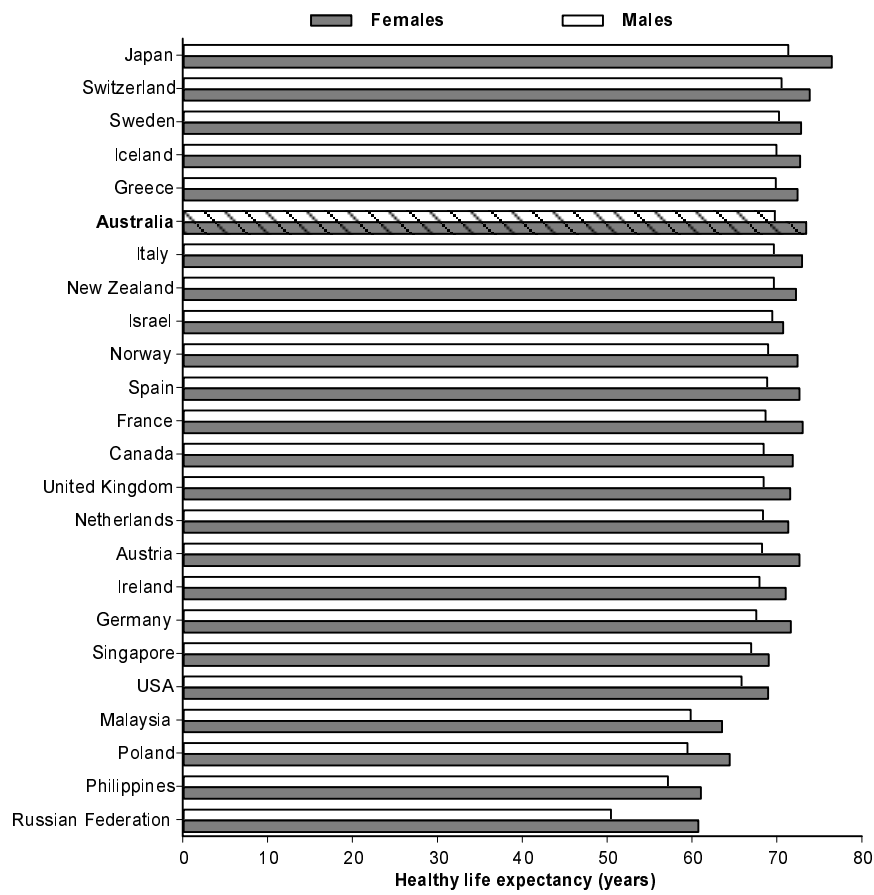
## International comparisons

Worldwide life expectancy increased considerably in the last decades of the 20th century, and Australians have among the highest life expectancies in the world. The increase world wide is due to a decrease in mortality rates, which can be largely explained by general socioeconomic gains, resulting in improved standards of living and health care (e.g. improved methods of treatment, public health strategies such as immunisation campaigns) (Cambois & Robine 1994).

As part of the measure of overall life expectancy, the World Health Organization (WHO) has proposed ‘healthy life expectancy’ (HALE) as a measure of the expected number of years to be lived without reduced functioning. HALE calculations adjust the overall life expectancy by the years of life lived with reduced functioning because of ill health (WHO 2002).

Australia’s healthy life expectancy is among the highest in the world. Australian males can expect to live 69.9 years of life without reduced functioning, ranked sixth in the world, and females 73.3 years, ranked third (Figure 2.2; Table 2.2).

The comparison countries were selected on the basis of having a comparable health system or relevance to immigrant communities living in Australia, and availability of data. Of the selected countries, Japan had the highest healthy life expectancy for both males and females. Healthy life expectancy was lowest for males and females in the Russian Federation (where life expectancy decreased since the early 1980s). The greatest difference in healthy life expectancy between males and females was in the Russian Federation where the difference was 10.3 years. The smallest difference was in Israel, where the difference was 1.3 years.



Source: WHO 2002.

**Figure 2.2: Healthy life expectancy at birth by sex, selected countries, 2000**

**Table 2.2: Expected length of life (years) at birth by sex, selected countries, 2000**

	Males			Females			
	Life expectancy	Healthy life expectancy		Life expectancy	Healthy life expectancy		
		Years	Per cent		Years	Per cent	
Japan	77.5	71.2	91.9	Japan	84.7	76.3	90.1
Switzerland	76.7	70.4	91.9	Switzerland	82.5	73.7	89.3
Sweden	77.3	70.1	90.7	<b>Australia</b>	<b>82.1</b>	<b>73.3</b>	<b>89.3</b>
Iceland	77.1	69.8	90.5	France	83.1	72.9	87.8
Greece	75.4	69.7	92.4	Italy	82.4	72.8	88.4
<b>Australia</b>	<b>76.6</b>	<b>69.6</b>	<b>90.9</b>	Sweden	82.0	72.7	88.7
Italy	76.0	69.5	91.5	Iceland	81.8	72.6	88.7
New Zealand	75.9	69.5	91.5	Austria	81.4	72.5	89.1
Israel	76.6	69.3	90.4	Spain	82.3	72.5	88.1
Norway	75.7	68.8	90.8	Greece	80.8	72.3	89.5
Spain	75.4	68.7	91.2	Norway	81.4	72.3	88.8
France	75.2	68.5	91.1	New Zealand	80.9	72.1	89.0
Canada	76.0	68.3	89.8	Canada	81.5	71.7	88.0
United Kingdom	74.8	68.3	91.3	Germany	80.6	71.5	88.6
Netherlands	75.4	68.2	90.4	United Kingdom	79.9	71.4	89.4
Austria	74.9	68.1	91.0	Netherlands	81.0	71.2	88.0
Ireland	74.1	67.8	91.5	Ireland	79.7	70.9	89.0
Germany	74.3	67.4	90.7	Israel	80.6	70.6	87.6
Singapore	75.4	66.8	88.6	Singapore	80.2	68.9	85.9
USA	73.9	65.7	88.9	USA	79.5	68.8	86.6
Malaysia	68.3	59.7	87.4	Poland	77.7	64.3	82.8
Poland	69.2	59.3	85.6	Malaysia	74.1	63.4	85.5
Philippines	64.6	57.0	88.1	Philippines	71.1	60.9	85.7
Russian Federation	59.4	50.3	84.7	Russian Federation	72.0	60.6	84.2

## Premature loss of life

As described earlier, PYLL is a measure of premature death before the age of 75, and as such can be used as a measure of the cost of mortality to a population. The two main contributors to PYLL in 1998 were cancer, accounting for about 35%, and cardiovascular disease, accounting for about 10%. The largest single cause of PYLL was suicide for males (12.2%) and breast cancer for females (9.1%). Another major cause for loss of life was motor vehicle accidents. While PYLL due to motor vehicle accidents halved over the 1987–1998 period to about 64,000 in 1998, it still represented about 7% of PYLL for all causes in 1998. PYLL due to AIDS peaked in 1994 before falling to about 6,000 in 1998. In 1998, tobacco smoking was

responsible for an estimated 118,000 PYLL, representing a preventable 13% of all premature loss of life (Table 2.3).

**Table 2.3: Person years of life lost to the Australian population for major causes of death by sex, Australia, 1998**

Rank	Disease	Person years of life lost (PYLL)					
		Males	%	Females	%	Persons	%
1	Ischaemic heart disease	74,000	12.1	22,000	6.6	96,000	10.2
2	Suicide	75,000	12.2	17,000	5.2	92,000	9.8
3	All other cancers (ICD-9 140–208) not listed in this table	38,000	6.3	29,000	8.7	67,000	7.1
4	Motor vehicle accidents	47,000	7.6	17,000	5.0	64,000	6.7
5	Cancer of the lung	31,000	5.0	14,000	4.3	45,000	4.8
6	Mental disorders	33,000	5.3	9,000	2.8	42,000	4.4
7	Colorectal cancer	19,000	3.1	14,000	4.2	33,000	3.5
8	Breast cancer	—	—	30,000	9.1	30,000	9.1
9	Cerebrovascular disease	16,000	2.6	13,000	3.8	29,000	3.0
10	Lymphoma <sup>(a)</sup>	11,000	1.9	9,000	2.7	20,000	2.2
11	Cancer of the brain	9,000	1.5	7,000	2.1	16,000	1.7
12	Chronic obstructive pulmonary disease	10,000	1.6	6,000	1.9	16,000	1.7
13	Leukaemia	9,000	1.5	7,000	2.0	16,000	1.7
14	Diabetes	9,000	1.5	6,000	1.7	15,000	1.6
15	Chronic liver disease due to alcohol	9,000	1.4	3,000	1.0	12,000	1.3
16	Homicide	8,000	1.3	4,000	1.2	12,000	1.2
17	Melanoma of the skin	7,000	1.2	4,000	1.2	11,000	1.2
18	Cancer of the pancreas	6,000	1.0	4,000	1.2	10,000	1.1
19	Cancer of the stomach	5,000	0.8	3,000	0.9	8,000	0.9
20	Asthma	3,000	0.5	4,000	1.3	7,000	0.8
21	Cancer of the prostate	6,000	1.0	—	—	6,000	0.7
22	Dementia <sup>(b)</sup>	1,000	0.2	1,000	0.4	2,000	0.2
	Smoking-related diseases	86,000	14.1	32,000	9.9	118,000	12.6
	Alcohol-related diseases	52,000	8.5	15,000	4.7	67,000	7.2

(a) Includes non-Hodgkin's disease and Hodgkin's disease (ICD-9 200–202).

(b) Data are for 1996. See Appendix D Coding issues.