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Life expectancy trends — Australia

Life expectancy at birth is one of the most widely used and internationally recognised indicators of population health. High life expectancy at birth indicates low levels of infant mortality, a safe environment in which to live, a good health care system, sufficient food, and the adoption of preventative health measures.

How long people live is of considerable social policy interest in light of the implications for population growth, projected Australian government spending on health, age-related pensions and aged care, and the workforce's ability to maintain current levels of economic growth.[1] This article examines the substantial increase in life expectancy in Australia over the past 125 years, some of the reasons for the increase, and some of the challenges posed by living longer.

Life expectancy at birth

Since the late 1800s, life expectancy for Australian boys and girls has increased by over 30 years. During 1881–1890, the average life expectancy of a newborn boy was 47.2 years and that of a newborn girl 50.8 years. By 2007–2009, average life expectancy had risen to 79.3 years for newborn boys and 83.9 years for newborn girls.

Over the past 125 years there have been changes in what Australians have died of, and the age at which they have died. Up until 1932, infectious and parasitic diseases caused at least 10% of all deaths each year, with death rates from these diseases highest among the very young and very old.[2] Improvements in living conditions in the early 20th century, such as better water supplies, sewerage systems, food quality and health education, led to overall lower death rates and longer life expectancy at all ages.[3]

During the 20th century, degenerative diseases such as heart disease, stroke and cancer replaced infectious and parasitic diseases as the main cause of death of older people.[4] Not only had infection control measures improved in medical facilities, but public awareness of the value of preventative actions such as hand washing had grown. Increases in life expectancy at all ages in the second half of the 20th century have been attributed to improving social conditions and advances in medical technology such as mass immunisation and antibiotics.[3]

The past two decades have seen further increases in life expectancy. These increases have been partly due to lower infant mortality, fewer young people dying in motor vehicle accidents, and fewer older men dying from heart disease. The reduction in deaths from heart disease has been linked to medical advances and behavioural changes such as improvements in diet and less smoking.[5]

...gender differences

In Australia, as in most other countries, life expectancy at birth has generally been greater for girls than boys. Since the late 1800s,

Data sources and definitions

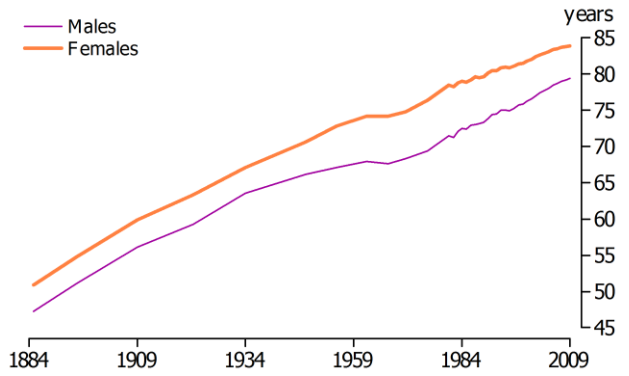
Estimates of life expectancy presented in this article are from life tables produced by the ABS (and previously by the Australian Government Actuary). Life tables are created using ABS estimated resident population data and death registrations provided to the ABS by state and territory Registrars of Births, Deaths and Marriages. Other data have been sourced from the AIHW (Australian Institute of Health and Welfare) GRIM (General Record of Incidence of Mortality) books, the ABS Causes of Death collection, ABS health surveys, and United Nations' mortality projections.

Life expectancy is the average number of additional years of life a person of a particular age and sex could expect to live if the age-specific death rates of the reference year(s) prevailed throughout his or her lifetime.

The ***infant mortality rate*** is the number of deaths of children under one year of age in a specified period of time per 1,000 live births during the same period of time.

Age-standardised death rates enable the comparison of death rates between populations with differing age structures by relating them to a standard population. Death rates presented in this article are per 100,000 population standardised to the age structure of the Australian population in 2001.

Life expectancy at birth

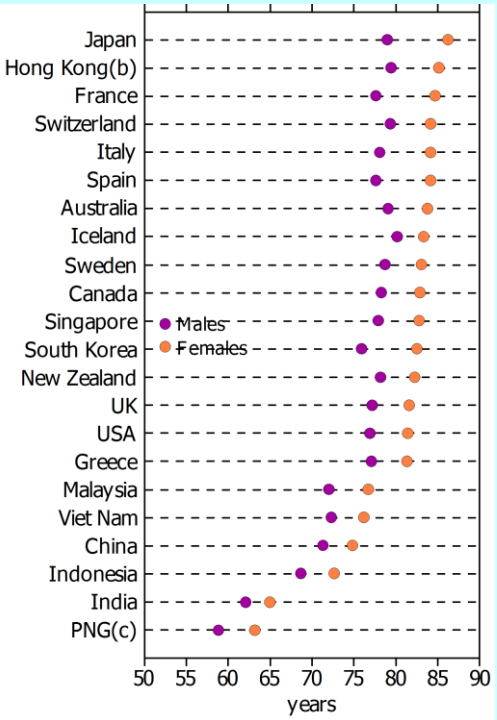


Source: ABS *Australian Historical Population Statistics 2008* (cat. no. 3105.0.65.001); ABS *Deaths, Australia, 2009* (cat. no. 3302.0)

International comparisons

According to United Nations' estimates for 2005–10, Australian life expectancy is ranked among the highest in the world. Life expectancy at birth for Australian boys is exceeded only by boys in Iceland, Hong Kong (SAR of China) and Switzerland.[6] Life expectancy at birth for Australian girls is exceeded by girls in Japan, Hong Kong (SAR of China), France, Italy, Switzerland and Spain.

Life expectancy at birth in selected countries — 2005-2010(a)



(a) Medium variant projection assuming normal mortality. Mortality is projected on the basis of models of change of life expectancy produced by the United Nations Population Division.

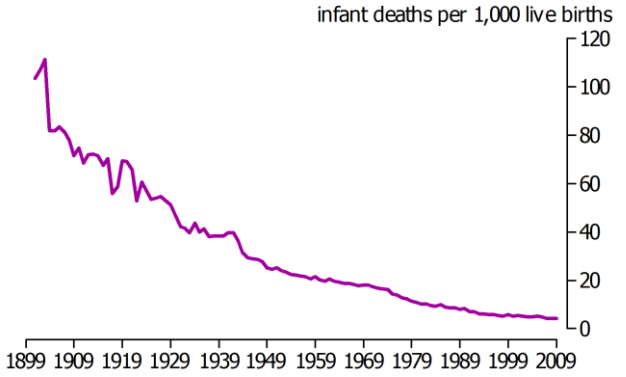
(b) Special Administrative Region of China.

(c) Papua New Guinea.

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat *World Population Prospects: The 2008 Revision Population Database* <www.un.org>

Australia's life expectancy gender gap has been widest (at about seven years) in the 1970s and early 1980s. The widening gap was largely due to a significant decline in heart disease, stroke and respiratory disease deaths among women,[5] combined with rising male death rates from circulatory disease and chronic bronchitis, and a greater increase in the lung cancer death rate among males than among females between 1950 and 1986.[7] Since then, the gender gap in life expectancy at birth has narrowed to around five years.[5] This narrowing has been attributed to a decline in motor vehicle accident deaths among young men, a decline in ischaemic heart disease among older men, and an increase in lung cancer among older women.[7]

Infant mortality rate



Source: ABS *Australian Historical Population Statistics 2008* (cat. no. 3105.0.65.001); ABS *Deaths, Australia, 2009* (cat. no. 3302.0)

...infant mortality rate

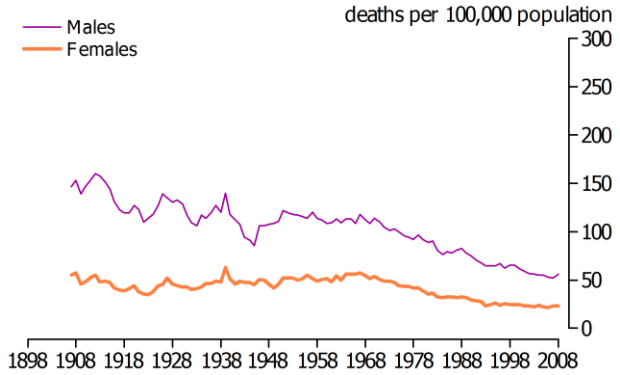
Life expectancy at birth is partly influenced by the proportion of babies who do not survive their first year of life. In the first few years of the 20th century (i.e. 1901 to 1903), over 10% of Australian babies died before their first birthday (equivalent to over 100 deaths per 1,000 live births). The infant mortality rate fell substantially during the first half of the 20th century, dropping below 25 deaths per 1,000 live births for the first time in 1950. The infant mortality rate has since continued to fall, albeit at a slower rate, to around 4 deaths per 1,000 live births in recent years. While Australia's infant mortality rate is not the lowest in the world, it is lower than many other OECD countries, including the United Kingdom, New Zealand, and the United States of America.[8]

Life expectancy (additional years of life) for people at selected years of age

	Males				*Females*			
	at 0	at 25	at 45	at 65	at 0	at 25	at 45	at 65
1881-1890	47.2	37.1	23.0	11.1	50.8	39.7	25.6	12.3
1891-1900	51.1	38.9	24.0	11.3	54.8	41.7	26.7	12.8
1901-1910	55.2	40.6	24.8	11.3	58.8	43.4	27.6	12.9
1920-1922	59.2	42.7	26.0	12.0	63.3	45.7	29.0	13.6
1932-1934	63.5	44.4	26.9	12.4	67.1	47.2	29.7	14.2
1946-1948	66.1	45.0	26.8	12.3	70.6	48.7	30.5	14.4
1953-1955	67.1	45.5	27.2	12.3	72.8	50.2	31.4	15.0
1965-1967	67.6	45.4	27.0	12.2	74.2	51.2	32.3	15.7
1975-1977	69.6	46.9	28.3	13.1	76.6	53.1	34.0	17.1
1985-1987	72.7	49.5	30.8	14.6	79.2	55.4	36.1	18.6
1995-1997	75.6	51.8	33.1	16.1	81.3	57.1	37.7	19.8
2004-2006	78.7	54.7	35.7	18.3	83.5	59.2	39.7	21.5
2007-2009	79.3	55.2	36.3	18.7	83.9	59.5	40.1	21.8

Source: ABS *Australian Historical Population Statistics 2008* (cat. no. 3105.0.65.001); ABS *Deaths, Australia, 2009* (cat. no. 3302.0)

Age-standardised death rate from all external causes of injury and poisoning(a)(b)(c)



(a) Mainly accidents, intentional self-harm and assault.

(b) Due to processing and classification changes, 1979–1996 rates have been upwardly adjusted by 6% to be comparable with 1997–2008 rates.

(c) 2008 data are preliminary and subject to revision.

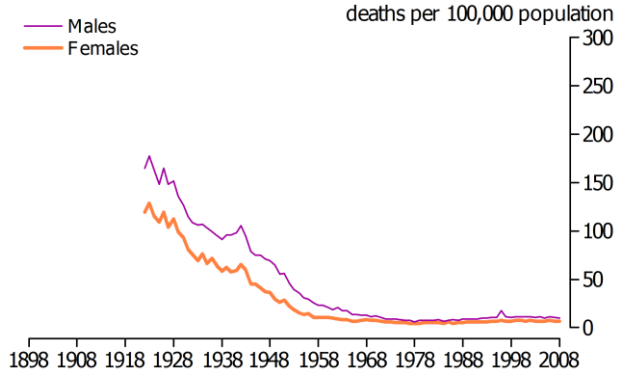
Source: AIHW *GRIM (General Record of Incidence of Mortality) Books*; ABS *Causes of Death, Australia, 2008* (cat. no. 3303.0)

Life expectancy at other ages

Increases in life expectancy at birth over the past 125 years are not due solely to declines in the infant mortality rate, as there have been increases in the average number of additional years of life that people at all ages could expect to live. While increases over time have been greater for younger people, there have still been substantial increases in life expectancy at older ages.

Early baby boomer generation boys and girls born between 1946 and 1948 could have expected to live for 66.1 and 70.6 years respectively. However, those who lived until their 24th birthday had a life expectancy of 70.6 and 76.5 years. Those who were still alive at 44 had a life expectancy of 76.9 and 82.0 years, while those who survived to turn 61 during 2007–2009 had a life expectancy of 83.0 and 86.3 years at that time.

Age-standardised death rate from all certain infectious and parasitic diseases(a)(b)

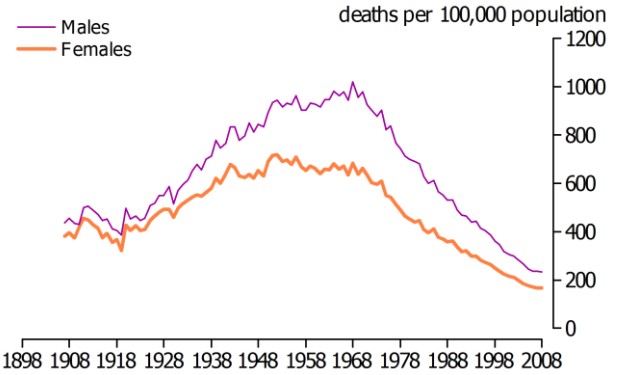


(a) Due to processing and classification changes, 1979–1996 rates have been upwardly adjusted by 6% to be comparable with 1997–2008 rates.

(b) 2008 data are preliminary and subject to revision.

Source: AIHW *GRIM (General Record of Incidence of Mortality) Books*; ABS *Causes of Death, Australia, 2008* (cat. no. 3303.0)

Age-standardised death rate from all diseases of the circulatory system(a)(b)



(a) Comprises all diseases and conditions involving the heart and blood vessels including ischaemic heart disease, cerebrovascular disease (stroke), peripheral vascular disease and heart failure. In Australia, these diseases mostly result from impeded or diminished supply of blood to the heart, brain or leg muscles.[9]

(b) 2008 data are preliminary and subject to revision.

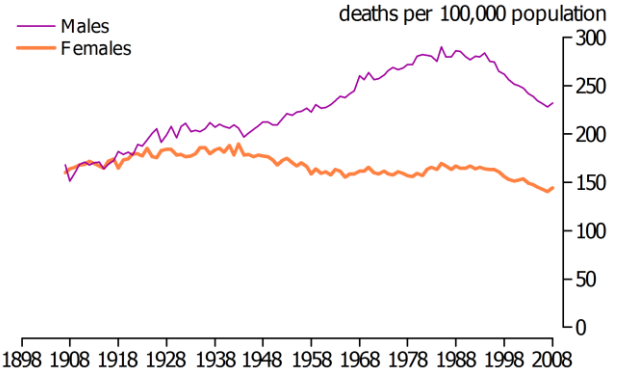
Source: AIHW *GRIM (General Record of Incidence of Mortality) Books*; ABS *Causes of Death, Australia, 2008* (cat. no. 3303.0)

...causes of death

A major reason for increased life expectancy in the first half of the 20th century was the falling death rate from infectious and parasitic diseases. Between 1922 and 1924, infectious and parasitic diseases caused 15% of all deaths in Australia. By 1966, they caused less than 1% of all deaths. This reduction is generally believed to be the result of medical advances, and an overall rise in living standards including improved nutrition levels, better sanitary, water and sewerage control, and better control of infection in hospitals.[10]

Increased life expectancy at all ages since the latter half of the 20th century is largely due to a large decline in the age-standardised death rate from circulatory disease. For males, the age-standardised death rate from all diseases of the circulatory system decreased from 1,020

Age-standardised death rate from cancer(a)(b)

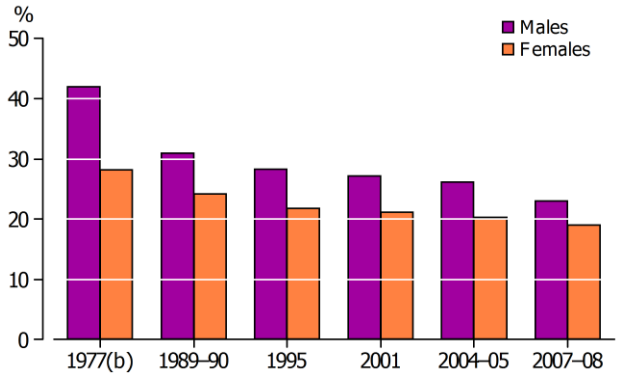


(a) Cancer deaths are deaths where the underlying cause of death, based on information on the death certificate, is cancer.

(b) 2008 data are preliminary and subject to revision.

Source: AIHW *GRIM (General Record of Incidence of Mortality) Books*; ABS *Causes of Death, Australia, 2008* (cat. no. 3303.0)

Age-standardised(a) proportions of adults who were current smokers



(a) To the age structure of Australia's estimated resident population on 30 June 2001.

(b) Excludes those who smoked only pipes and/or cigars.

Source: ABS *Alcohol and Tobacco Consumption Patterns, February 1977* (cat. no. 4312.0); ABS 1989-90, 1995, 2001, 2004-05 and 2007-08 National Health Surveys; ABS *Australian Demographic Statistics, June 2010* (cat. no. 3101.0)

deaths per 100,000 in 1968 to 234 deaths per 100,000 in 2008. For females, it decreased from 718 deaths per 100,000 in 1952 to 167 deaths per 100,000 in 2008.

Another leading cause of death is cancer. For males, the age-standardised death rate from cancer rose throughout most of the 20th century before declining from 290 deaths per 100,000 in 1985 to 232 deaths per 100,000 in 2008. For females, the rate increased during the first half of the 20th century but then slowly decreased from 190 deaths per 100,000 during the Second World War to 144 deaths per 100,000 in 2008. Improved chemotherapy, radiotherapy and surgical techniques, together with screening programs introduced in the 1990s, have contributed to improved cancer survival rates over recent years.

...risk factors

Smoking is one preventable activity that increases the likelihood of dying from either circulatory disease or cancer. Worldwide, tobacco use is the leading cause of preventable death, and is estimated to cause more than 5 million deaths each year.[11]

In Australia there has been behavioural change away from smoking over the past few decades. After standardising to remove the effect of different age structures, 23% of men and 19% of women were smoking in 2007–08, down significantly from 1977 when at least 42% of men and 28% of women were smoking.

Other risk factors associated with premature death include not being immunised against disease, excessive consumption of alcohol and saturated fat, low usual intake of fruit and vegetables, and insufficient exercise. It has been estimated that tobacco was responsible for 7.8% of all 'healthy' years of life lost in Australia in 2003 because of disability or premature death. Physical inactivity was estimated to be responsible for 6.6%, alcohol for 2.3%, and low fruit and vegetable consumption for 2.1%.[12]

Aboriginal and Torres Strait Islander life expectancy

While Australians can generally expect to live a relatively long life, there are differences between population groups within Australian society. In particular, life expectancy at birth for Aboriginal and Torres Strait Islander (Indigenous) Australians is considerably lower than it is for other Australians. Estimates of life expectancy at birth for Indigenous Australians are commonly used as a measure for assessing Indigenous population health and disadvantage.

Based on age-specific death rates prevailing during 2005–07, life expectancy at birth for Indigenous males is estimated to be 67.2 years, which is 11.5 years less than life expectancy at birth for non-Indigenous males (78.7 years). Life expectancy at birth for Indigenous females is estimated to be 72.9 years, which is 9.7 years less than life expectancy at birth for non-Indigenous females (82.6 years). The gap between Indigenous and non-Indigenous life expectancy for males is wider in the Northern Territory (14.2 years) and Western Australia (14.0 years). It is also wider between Indigenous and non-Indigenous females in these two jurisdictions (12.5 years in Western Australia and 11.9 years in the Northern Territory).

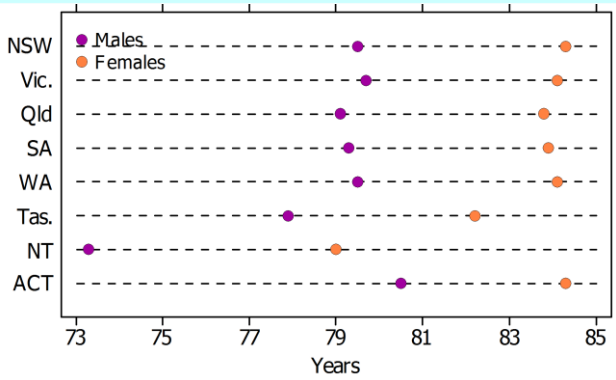
Life expectancy at birth for Indigenous males is estimated to be higher in New South Wales (69.9 years) than it is in the Northern Territory (61.5 years). Similarly, life expectancy at birth for Indigenous females is also estimated to be higher in New South Wales (75.0 years) than in the Northern Territory (69.2 years).

Source: ABS *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003)

State and territory differences

Life expectancy at birth differs between the states and territories. For 2007–2009, girls born in New South Wales and the Australian Capital Territory had the highest life expectancy (both

Life expectancy at birth, state and territory — 2007-2009



Source: ABS *Deaths, Australia, 2009* (cat. no. 3302.0)

84.3 years), followed by Victoria and Western Australia (both 84.1 years). Life expectancy at birth for females was lowest in Tasmania (82.2 years) and the Northern Territory (79.0 years).

There were similar differences for boys born during 2007–2009, with those born in the Australian Capital Territory having the highest life expectancy at birth (80.5 years). Life expectancy at birth for males was also lowest in the Northern Territory (73.3 years), in part reflecting the Northern Territory's relatively high proportion of Aboriginal and Torres Strait Islander peoples who have substantially lower life expectancy.

Implications of living longer

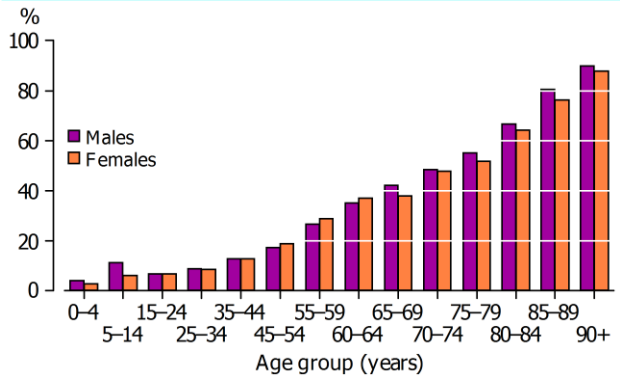
Increasing life expectancy has partly driven the ageing of the Australian population. In 1901, only 4% of Australians were aged 65 years or older. By June 2010, this proportion had risen to 13.5%, and is projected to increase to between 21% and 23% by 2041.

...rising Age Pension eligibility age

Increasing years of life between traditional retirement age and death have seen retirement income policies come into sharper focus over recent decades. Successive Australian governments have legislated compulsory superannuation contributions by employers, and provided incentives for Australians to save for retirement over their whole working life.

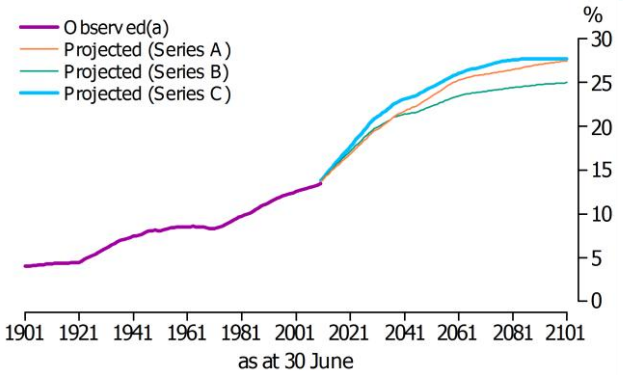
Since 1995, the Age Pension qualifying age for women has been gradually rising from 60 years and will reach 65 years in 2013. Between 2017 and 2023, the Age Pension qualifying age is scheduled to slowly increase from 65 years to 67 years for both men and women.[13] This may extend the number of years some people spend in the workforce, as reaching eligibility age for an age (or service) pension is the main factor influencing some workers' retirement date.[14] Despite the higher Age Pension qualifying age, Australian government spending on age-related pensions is projected to rise from 2.7% of gross domestic product (GDP) in 2009–10 to 3.9% in 2049–50.[1]

Disability rates by age group and sex — 2009



Source: ABS *Disability, Ageing and Carers, Australia: Summary of Findings, 2009* (cat. no. 4430.0)

Proportion of the Australian population aged 65 years or older



(a) 1902–10 and 1912–1920 data points have been interpolated. 2009 and 2010 data points were calculated using preliminary population estimates.

Series A assumes high levels of fertility, life expectancy, and overseas migration. Series B assumes medium levels of fertility, life expectancy and overseas migration. Series C assumes medium levels of life expectancy and low levels of fertility and overseas migration.

Source: ABS *Australian Historical Population Statistics 2008* (cat. no. 3105.0.65.001); ABS *Australian Demographic Statistics June 2010* (cat. no. 3101.0); ABS *Population Projections Australia 2006 to 2101* (cat. no. 3222.0)

...more people with a disability

There's a strong correlation between age and disability. In 2009, 40% of 65–69 year old Australians had a disability. The probability of having a disability increases with age, peaking at 88% for Australians in the 90 years or older age group.

If the age-specific rates of disability that prevailed in 2009 continue into the future, then the number of Australians with a disability appears likely to increase considerably during the 21st century. By 2101, there is projected to be between 9.3 and 17.1 million Australians aged 65 years or older,[15] well up on the preliminary estimate of 3.0 million people aged 65 years or older living in Australia on 30 June 2010.[16]

...greater demand for health services

The ageing population is expected to contribute to significantly increased spending on health care over the next 40 years. Australian government spending on health is projected to rise from 4.0% of GDP in 2009–10 to 7.1% in 2049–50.[1]

Not all of this projected increase in health spending is attributable to population ageing. Expected technological advancements in health, and demand for higher quality health services by people of all ages, are also expected to contribute to greater spending on health.[1]

...growing demand for aged care

Australian government spending on aged care is also projected to rise between 2009–10 and 2049–50 (from 0.8% to 1.8% of GDP). Growth in spending on residential aged care (e.g. nursing homes and hostels) is the main contributor to the increase, reflecting the expectation that the number of Australians aged 85 years or older will more than quadruple over the next 40 years. However, spending on community aged care (i.e. care provided to people in their own homes) is also projected to rise significantly. Population ageing is the primary driver of increased aged care spending to 2049–50, accounting for around two-thirds of the projected increase in real spending on aged care per person.[1]

Looking ahead

In 2008, the Council of Australian Governments (COAG) agreed to specific timeframes for overcoming Indigenous disadvantage by achieving six Closing the Gap targets. Two of these targets were halving the gap in 0–4 year old mortality rates within a decade, and closing the life expectancy gap within a generation.[17] Closing the life expectancy gap within a generation means increasing the life expectancy of Indigenous men by over 20 years and Indigenous women by over 16 years by 2031.[18] This entails raising Indigenous life expectancy by more than the gap estimated to exist in 2005–07, in order to also match gains in non-Indigenous life expectancy between 2005–07 and 2031.

The recent trend in obesity and excess body weight among Australian children has caused some concern that life expectancy at age 20 could fall by 1.7 years for males (back to 2001 levels) and 2.2 years for females (back to 1997 levels).[19] It is possible that continuous research and development of medical equipment, treatment procedures and pharmaceuticals will continue to increase life expectancy at all ages, regardless of greater risk posed by factors such as obesity.

Policies and programs aimed at keeping all Australians healthier while they are living continue to grow. For example, the campaign to further reduce smoking rates has recently been strengthened by the inclusion of prescription nicotine patches on the Pharmaceutical Benefits Scheme. Other current programs and campaigns include eliminating passive smoking, minimising the harmful effects of alcohol, preventing eating disorders, injury and suicide, increasing immunisation rates, encouraging greater participation in sport and other physical activity, and promoting daily consumption of fruit and vegetables.[20]

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