



Australian Government
Centre for Population

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Australia's future fertility:

A quick guide to
potential impacts on
future population



Australia's fertility rates have been declining

Since the 1970s Australia's fertility rate has been below the rate required for a generation to replace itself.

The total fertility rate (TFR) is a commonly used summary measure for the average number of children a woman can be expected to have during her reproductive lifetime. Australia's TFR rose from 2.1 babies per woman in 1934 to a peak of 3.55 babies per woman in 1961 during the 'baby boom' years. Since then, the TFR has fallen almost continuously, reflecting Australian women gradually having children later in life, and having fewer children when they do.

The TFR was 1.66 in 2020-21, well below the replacement rate of 2.1 (the rate needed for a generation to replace itself). A fertility rate below the replacement rate means that, in the absence of overseas migration, the size of Australia's population would decline over time.

It can take a generation before changes in fertility rates fully affect the size, growth and age structure of the population. The TFR, which captures the *number of babies born per woman*, interacts with the *number of women at childbearing age* to impact population change. This means that a country's population may continue to grow even after fertility has fallen below the replacement rate, if there are sufficient women in the population moving into their reproductive age.

Key findings

This quick guide compares three fertility scenarios to illustrate the potential impact of different fertility rates on Australia's future population. These impacts include:

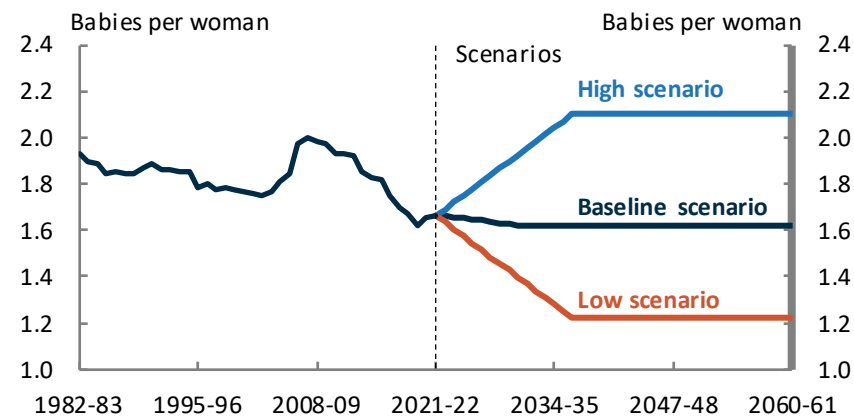
- **Population size:** under the *low* TFR scenario of 1.22 babies per woman, Australia's population would be 6.8 million people smaller by 2060-61 than under the *high* scenario of 2.1 babies per woman. Under the *low* scenario, deaths would outnumber births by 2048-49.
- **Population age structure:** under the *low* scenario, the median age would increase from 38.6 in 2021-22 to 45.8 in 2060-61 and the old-age dependency ratio would increase from 26.5 per cent in 2021-22 to 40.1 per cent in 2060-61. In contrast, under the *high* scenario the median age would increase only slightly to 39.1 in 2060-61, and the old-age dependency ratio would reach 35.1 per cent.

Scenarios range from the high 'replacement rate' TFR, to the low fertility rates seen in some other developed countries.

Long-term impacts of different fertility rates

Three scenarios have been modelled to show the long-term effects of different fertility rates on population size and age structure, under a given set of assumptions for migration and mortality. The scenarios use the 2022-23 October Budget population projections as the baseline and model the impact of varying fertility rates out to 2060-61. For further information on the baseline population projections, refer to the [2022 Population Statement](#).

Figure 1 – Australia's TFR under different fertility scenarios



Note: The high and low scenarios are illustrative only and do not reflect assumed TFR trajectories.

Source: Australian Bureau of Statistics, National, state and territory population, March 2022, 2022; Centre for Population, 2022.

The three scenarios are:

- 1. Baseline scenario:** the TFR is broadly stable, falling slightly from 1.66 babies per woman in 2021-22 to 1.62 by 2030-31. This reflects the medium-term assumption used in the 2022-23 October Budget and the 2022 Population Statement. The TFR then remains at this level for the following three decades
- 2. High scenario:** the TFR gradually increases from 1.66 babies per woman in 2021-22 to 2.1 by 2036-37, which is the replacement rate (the rate required for a generation to replace itself). The Australian TFR has been below 2.1 since the 1970s.
- 3. Low scenario:** the TFR gradually falls from 1.66 babies per woman in 2021-22 to 1.22 babies by 2036-37. This scenario illustrates the effects of the low fertility rates currently seen in several developed countries, including Spain and Italy (though not as low as in some East Asian countries).

Population under different fertility rate scenarios

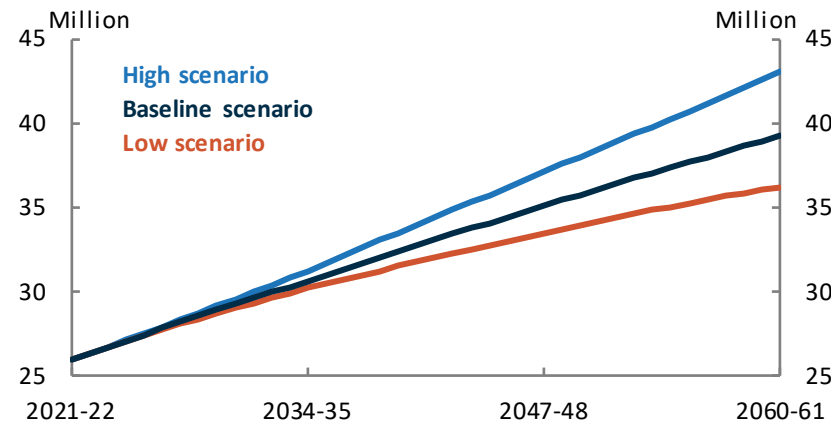
Under the low fertility scenario, the population is projected to be 36.2 million in 2060-61.

Under the high scenario, the population is projected to be 43.1 million in 2060-61.

A country's future population growth is driven by natural increase (births less deaths) and overseas migration.

Under all scenarios, Australia's population continues to grow through to 2060-61. This is because, despite varying fertility rates, it is assumed that positive net overseas migration will continue to drive population growth, and the current age structure of the population means that there will continue to be cohorts of women reaching reproductive age and having children. However, the different fertility rates affect how quickly the population is expected to grow.

Figure 2 – Australia's projected population under different fertility scenarios



Source: Centre for Population, 2022.

Under the *high* scenario, the population is projected to reach 43.1 million by 2060-61, 9.8 per cent larger than the *baseline*. In the *low* scenario, the population is projected to be 36.2 million people by 2060-61, 7.7 per cent lower than the *baseline*.

Table 1 – Australia's projected population, scenarios

		Low scenario	Baseline scenario	High scenario
2021-22	Total population (m)	-	26.0	-
	Growth rate (%)	-	1.1	-
2040-41	Total population (m)	31.7	32.7	33.9
	Growth rate (%)	0.8	1.1	1.4
2060-61	Total population (m)	36.2	39.2	43.1
	Growth rate (%)	0.5	0.8	1.1

Source: Centre for Population, 2022.

While Australia's population is projected to continue to grow even under the *low* fertility scenario, some other developed countries are already facing population decline due to very low fertility rates. For example, Japan's population has been declining since 2009 due to low fertility rates combined with low overseas migration.

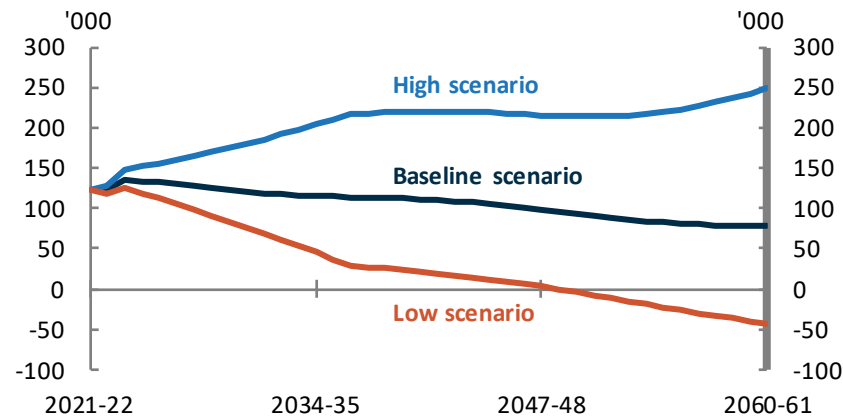
Births and deaths under different fertility rate scenarios

Under the low fertility scenario, deaths will exceed births from 2048-49.

Under the high scenario, the number of births grows more quickly than the number of deaths.

Natural increase makes a positive contribution to population growth as long as births exceed deaths. The other component of Australia's population growth is net overseas migration, the net gain or loss of population through immigration and emigration. In the 2010s, natural increase contributed 40 per cent of Australia's population growth, while net overseas migration contributed the remaining 60 per cent.

Figure 3 – Australia's projected natural increase under different fertility scenarios



Source: Centre for Population, 2022.

The contribution of natural increase to population growth is projected to differ significantly under each scenario:

- **Baseline scenario:** continued population ageing and increasing deaths reduces the contribution of natural increase to total population growth to around a quarter by 2060-61.
- **High scenario:** more births mean natural increase contributes over half of total population growth by 2060-61. The growth in natural increase compounds over time, as more births lead to a larger cohort of young women in the future, who start having children of their own from around 2051-52.
- **Low scenario:** there are fewer births relative to the number of deaths, culminating in negative natural increase by 2048-49. This means that without overseas migration to support population growth, the Australian population would begin to shrink. In South Korea, very low fertility rates saw natural increase become negative in 2020.

Age structure under different fertility rate scenarios

Under the low fertility scenario, the median age is projected to be 6.7 years older than under the high scenario by 2060-61.

Different fertility rates affect the age structure of Australia's population, reflected in changes to the median age and the share of Australians in young and older age cohorts.

Under the *baseline* scenario, the share of people aged 0 to 19 is projected to decrease from 24.2 per cent in 2021-22 to 21.1 per cent by 2060-61, reflecting fewer births relative to the size of the population (Table 2). This share is 17.2 per cent under the *low* scenario by 2060-61, while it is projected to increase to 25.3 per cent under the *high* scenario.

Under all scenarios, the share of people aged 65 and over is projected to account for a larger proportion of Australia's population in the future, due to the ageing of the baby boomer cohort and increasing life expectancies. However, the rate of population ageing varies between the three scenarios. By 2060-61, the proportion of people aged 65 and over is expected to reach 23.1 per cent under the *baseline* scenario, compared to 25.0 per cent under the *low* scenario and 21.1 per cent under the *high* scenario.

There is also significant variation in the median age across the three scenarios. The population is younger under the *high* scenario, with a median age of 39.1 years by 2060-61, while the median age is projected to be 45.8 years under the *low* scenario.

Table 2 – Australia's age structure, scenarios

		Low scenario	Baseline scenario	High scenario
2021-22	Median age (years)	-	38.6	-
	Share of 0-19 (%)	-	24.2	-
	Share of 65+ (%)	-	17.1	-
2040-41	Median age (years)	41.8	40.7	39.3
	Share of 0-19 (%)	19.4	21.8	24.6
	Share of 65+ (%)	21.6	20.9	20.2
2060-61	Median age (years)	45.8	42.8	39.1
	Share of 0-19 (%)	17.2	21.1	25.3
	Share of 65+ (%)	25.0	23.1	21.1

Source: Australian Bureau of Statistics, National, state and territory population, March 2022, 2022; Centre for Population, 2022.

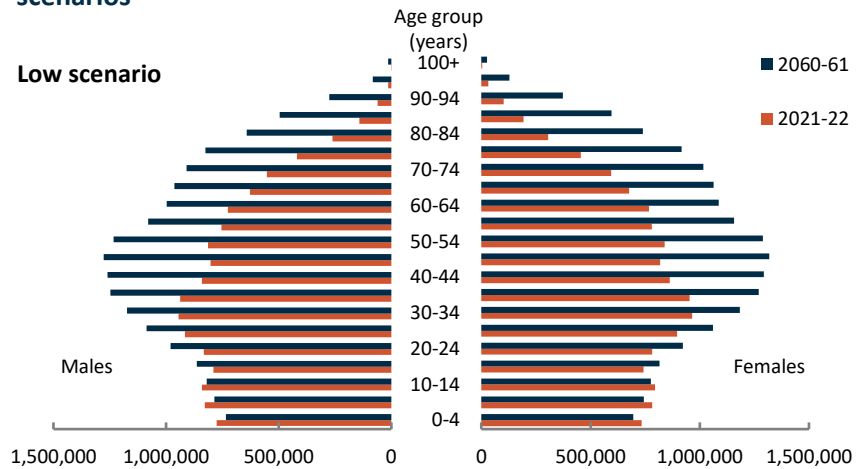
Age structure under different fertility rate scenarios – illustrated

Under the low fertility scenario, middle and older age groups take a larger share in the age distribution.

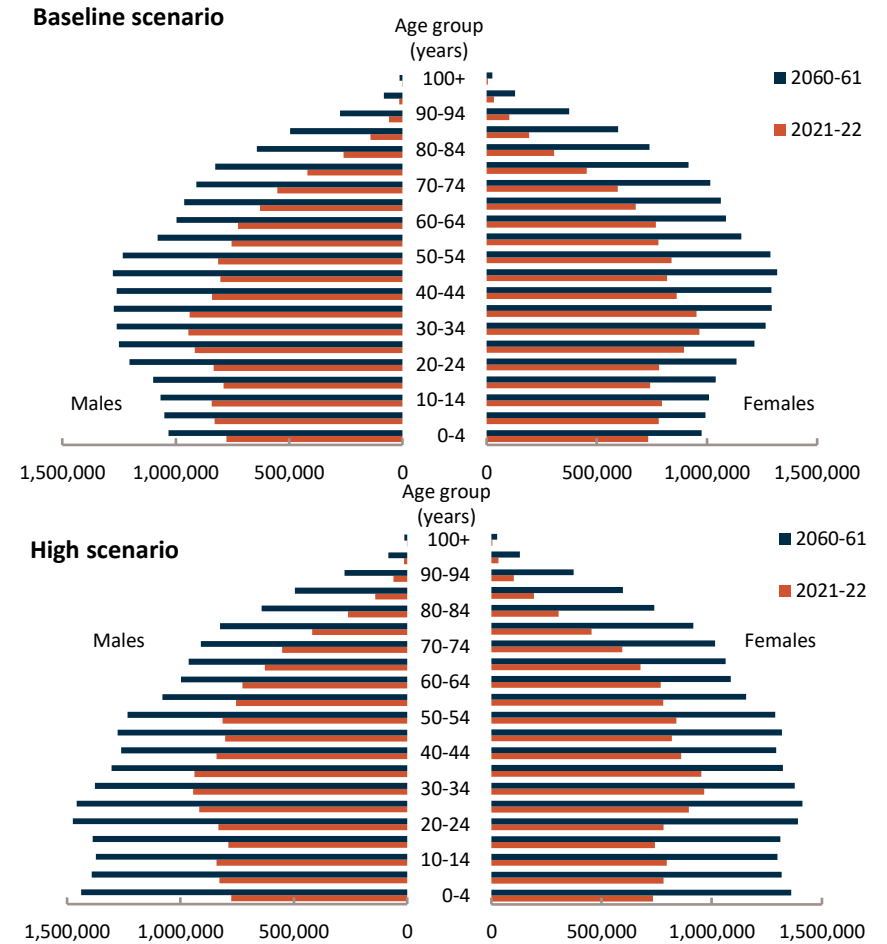
Under the high fertility scenario, younger age groups take a larger share in the age distribution.

A way to visualize the changes in the age structure of the population is through population pyramids, which show the distribution of age groups in a population. Figure 4 illustrates the impact that different fertility scenarios have on the projected age structure of Australia's population. The lower the fertility rate, the narrower the base of the pyramid. Under the *low* scenario, the pyramid takes on the shape of a kite, as the base continues to decrease, reflecting slower growth in the younger age groups, and faster growth in the middle to older age groups. In contrast, under the *high* scenario, a more pyramid-like age structure is observed, with each age cohort generally smaller than the one immediately younger than it.

Figure 4 – Australia's projected age structure under different fertility scenarios



Note: As the three scenarios are only projected out to 2060-61 (40 years), the different fertility rates will only create differences in the population of age groups below 40 years of age.



Old-age dependency ratio under different fertility rate scenarios

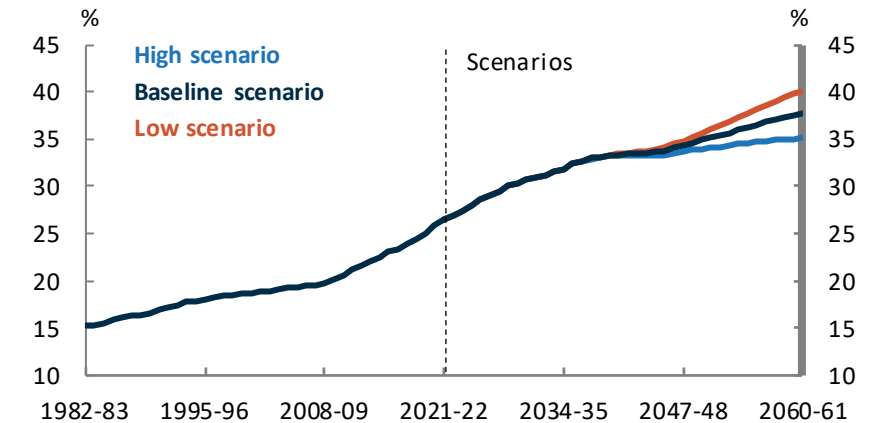
The old-age dependency ratio will increase under all scenarios from the late-2030s and will increase more rapidly under lower fertility rates.

The old-age dependency ratio is the number of people aged 65 and over per 100 people aged 15 to 64. A higher old-age dependency ratio implies a smaller share of the traditional working-age population and a larger share of people of traditional retirement age.

However, the labour market participation of different age groups has changed significantly. Over time, fewer people are entering the labour force in their teens or early twenties, while longer healthy life spans mean more people continue to work past the age of 65.

Australia has experienced a significant increase in the old-age dependency ratio over the past decade, which is expected to continue until the late 2030s as the majority of baby boomers reach age 65. Initially, the old-age dependency ratio is projected to continue to increase at the same rate under all fertility scenarios. However, differences start to emerge from the mid-2030s as those born in 2021-22 start to turn 15. By 2060-61, the old-age dependency ratio is projected to be 37.7 per cent under the *baseline* scenario, compared to 40.1 per cent under the *low* scenario, and 35.1 per cent under the *high* scenario (Figure 5).

Figure 5 – Old-age dependency ratio under different fertility scenarios



Note: The old-age dependency ratio referred to in text and in this chart is the number of people aged 65 and over per 100 people of traditional working-age (15-64).

Source: Australian Bureau of Statistics, National, state and territory population, March 2022, 2022; Centre for Population, 2022.

Glossary of key demographic and fertility concepts

Total fertility rate (TFR): a commonly used summary measure for the number of children a woman is expected to have during her lifetime. This provides an indication of the number of children a woman would have during her life if she experienced the age-specific fertility rates for that year over her entire lifetime.

The TFR in a year reflects the interplay of two components: the timing (tempo) and level (quantum) of fertility.

Tempo effect: refers to how changes to the timing of childbearing over a woman's lifetime affects births and the TFR. Developed countries have seen families postpone having children, raising the average age of childbearing. This lowers the TFR for that year, even if the number of children that women have over their lifetime does not change, due to falling age-specific fertility rates at younger ages. In these circumstances, the TFR can become a less reliable measure of the average number of children that cohorts of women are having across their lifetimes.

Population momentum: refers to the effect that the age structure of the current population has on its future size and composition. Population momentum can be conducive to positive or negative population growth.

The current age structure can be driven by the fertility rates of previous generations or previous waves of overseas migration. Younger age structures contribute to faster population growth, as births from the relatively large number of women of reproductive age outnumber the number of deaths.

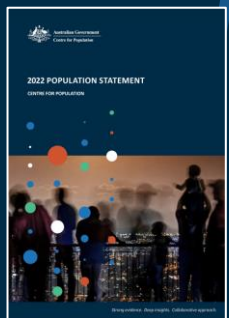
This means that a young population can continue to grow, even if there are constant levels of mortality, net migration of zero and fertility at or below replacement level. Older age structures contribute to slower rates of growth or, in more extreme cases, to population decline.¹

Population momentum and tempo effects are demonstrated in the baby boomer generation which drove rapid population growth in the 1950s and 1960s. Due to the large baby boomer cohort ageing past 65, Australia is now experiencing rapid population ageing in the 2010s and 2020s, and as the large cohort of the children of baby boomers reach 65 in the 2050s, this effect will continue. Over time, however, the influence of a country's current age distribution on its future population will diminish and will be driven increasingly by future fertility, mortality and migration.

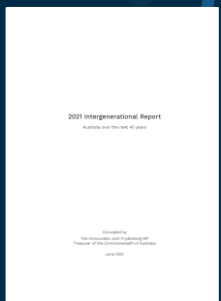
Replacement rate: replacement-level fertility is the number of babies a female would need to have over her reproductive life span to replace herself and her partner. Given not all babies survive to reproductive age and babies are slightly more likely to be male, replacement fertility is around 2.1 babies per woman in most developed countries.

Old-age dependency ratio: the old-age dependency ratio refers to the number of people aged 65 and older for every 100 people of traditional working age (15-64) and is expressed as a percentage in this guide.

¹ United Nations Population Division. (2017). The impact of population momentum on future population growth. Population Facts No. 2017/4. Retrieved from: https://population.un.org/wpp/publications/Files/PopFacts_2017-4_Population-Momentum.pdf



2022
Population
Statement



2021
Intergenerational
Report



A projection
of Australia's
future fertility
rates

More information on fertility

The latest data, research and analysis on fertility can be found at www.population.gov.au.

Relevant Centre for Population and Treasury publications

- [Impact of policies on fertility rates](#) - A report from the Australian National University, commissioned by the Centre for Population. It includes a literature review of trends in fertility in Australia and internationally, analysis of Household, Income and Labour Dynamics in Australia (HILDA) data on the impact of key policies on the fertility rate, and results from the ANUPoll survey on fertility intentions.
- [2022 Population Statement](#) - Discussion of population projections produced by the Centre for Population for the 2022-23 October Budget. It includes projections of births and discussion of the Centre for Population's fertility assumptions, as well as a summary of this guide.
- [2021 Intergenerational Report](#) - Projections of Australia's economic and fiscal conditions over the next 40 years. It examines the long-term sustainability of current policies and how demographic, technological and other structural trends may affect the economy and the budget.
- [A projection of Australia's future fertility rates](#) - Analysis by Professor Peter McDonald, commissioned by the Centre for Population. The report discusses Australia's past fertility trends and develops projections of Australia's future fertility rates under a number of scenarios (which have since been superseded).

Australian Bureau of Statistics data

- [ABS, National, state and territory population](#) - Statistics about the population and components of change (births, deaths, migration) for Australia and its states and territories. Provides financial year estimates of the TFR, published quarterly.
- [ABS, Births, Australia](#) - Statistics about births and fertility rates for Australia, states and territories, and sub-state regions. Provides calendar year estimates of TFR, published annually.



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