National Population Projections: 2016(base)–2068

Embargoed until 10:45am – 19 October 2016

Key facts

National population projections give an indication of New Zealand's future population.

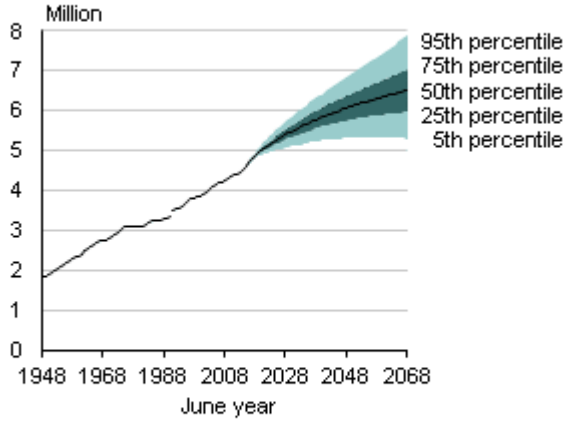
In the short term the projections indicate:

- Annual population growth has a 50 percent probability of being 1.7–2.1 percent in 2017 and 1.4–2.0 percent in 2018, reflecting significant gains from net migration.
- New Zealand's population (4.69 million in 2016) has a 90 percent probability of increasing to 4.89–5.14 million in 2020, and to 5.01–5.51 million in 2025.

In the long term the projections indicate:

- Increasing numbers and proportions of the population at the older ages.
- The population aged 65+ (0.70 million in 2016) has a 90 percent probability of increasing to 1.32–1.42 million in 2043, and to 1.62–2.06 million in 2068.
- The proportion of the population aged 65+ (15 percent in 2016) has a 90 percent probability of increasing to 21–26 percent in 2043, and 24–33 percent in 2068.
- The population aged 85+ (83,000 in 2016) has a 90 percent probability of increasing to 239,000–284,000 in 2043, and to 333,000–467,000 in 2068.
- Population growth will slow as New Zealand's population ages and the gap between the number of births and deaths narrows.
- New Zealand's population (4.69 million in 2016) has a 90 percent probability of increasing to 5.29–6.58 million in 2043, and to 5.30–7.88 million in 2068.

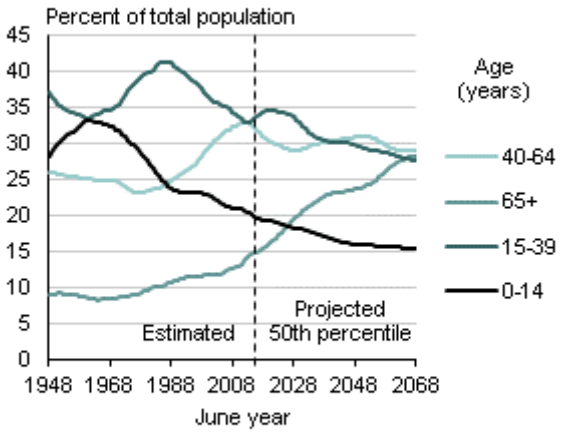
New Zealand population
1948–2068



Note: The break in data between 1990 and 1991 denotes a change from the defacto population concept to the resident population concept

Source: Statistics New Zealand

Age distribution of population
1948–2068



Source: Statistics New Zealand

Liz MacPherson, Government Statistician. ISSN 1178-0584. 19 October 2016

Commentary

Important advice for using projections

National population projections indicate the future population usually living in New Zealand. They indicate probable outcomes based on different combinations of fertility, mortality, and migration assumptions. Customers can make their own judgement as to which projections are most suitable for their purposes.

These projections are not predictions. The projections are designed to meet both short-term and long-term planning needs, but are not designed to be exact forecasts or to project specific annual variation. They should be used as an indication of the overall trend, rather than as exact forecasts. The projections are updated every 2–3 years to maintain their relevance and usefulness, by incorporating new information about demographic trends and developments in methods.

The following results highlight the main trends from the projections.

See population projections tables for links to more-detailed projection assumptions and results in NZ.Stat.

Reference period

This release contains 2016-base projections of the population usually living in New Zealand. These supersede the 2014-base projections released in November 2014. The new projections have the provisional estimated resident population at 30 June 2016 as a base, and cover the period 2017–68 at one-year intervals. Email demography@stats.govt.nz for extended projections beyond 2068.

Which projection should I use?

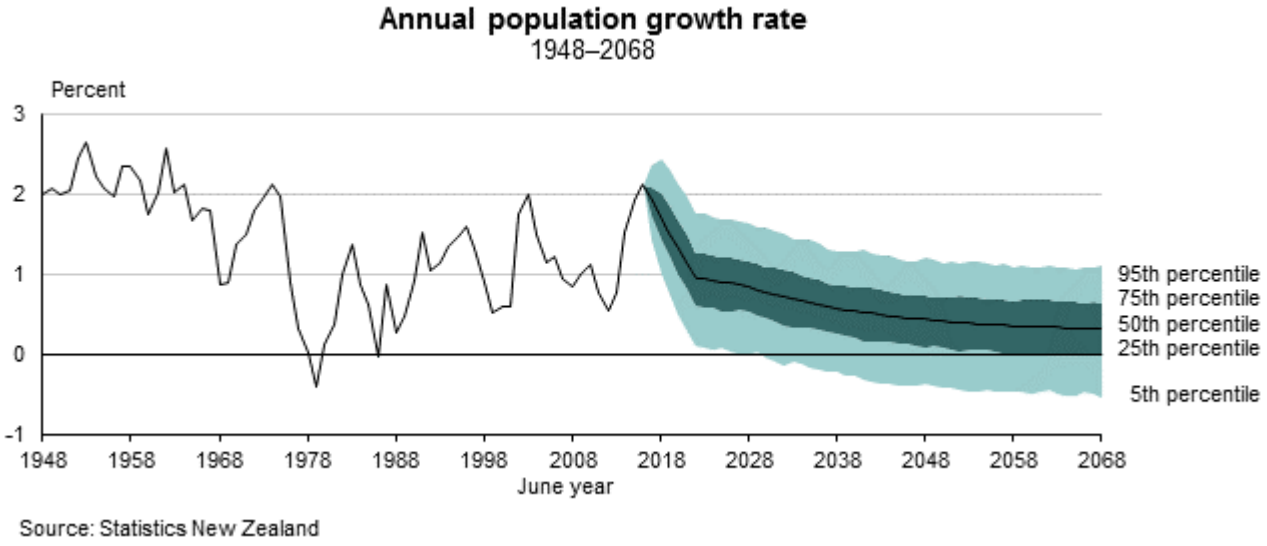
Customers can make their own judgement as to which projections are most suitable for their purposes. At the time of release, the median projection (50th percentile) indicates an estimated 50 percent chance that the actual value will be lower, and a 50 percent chance that the actual value will be higher, than this percentile. Other percentiles indicate the distribution of values (such as projection results or assumptions). For example, the 25th percentile indicates an estimated 25 percent chance that the actual value will be lower, and a 75 percent chance that

the actual value will be higher, than this percentile. Shading in graphs indicates the chance that actual values will fall within a certain range. Different shading is used to distinguish different ranges.

Slowing population growth

Growth is likely to slow in the long term, despite the highest population growth rate since the 1960s (2.1 percent in the year ended June 2016) and the projected growth in 2017–18. There is roughly a 1 in 4 chance that the population will be declining by the 2060s.

New Zealand's population grew by an average of 1.4 percent a year between 1948 and 2016. The growth rate slowed as fertility rates fell and the population's age structure changed. Population growth averaged 2.2 percent during the 1950s but only 0.6 percent during the 1980s. Growth averaged 1.2 percent in the 10 years to 2016.

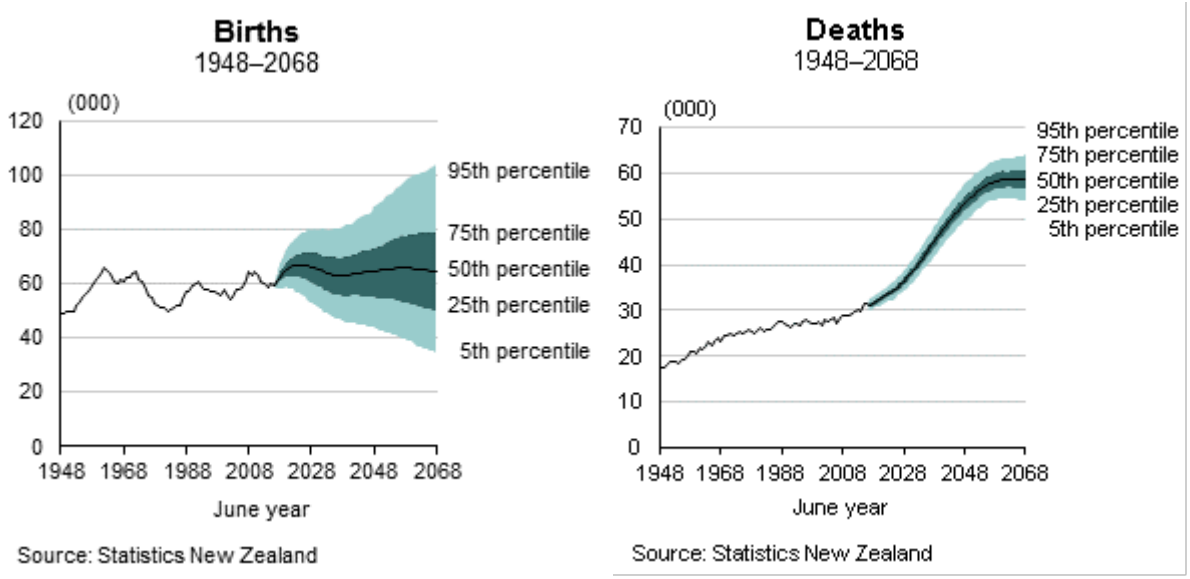


Source: Statistics New Zealand

Narrowing gap between births and deaths

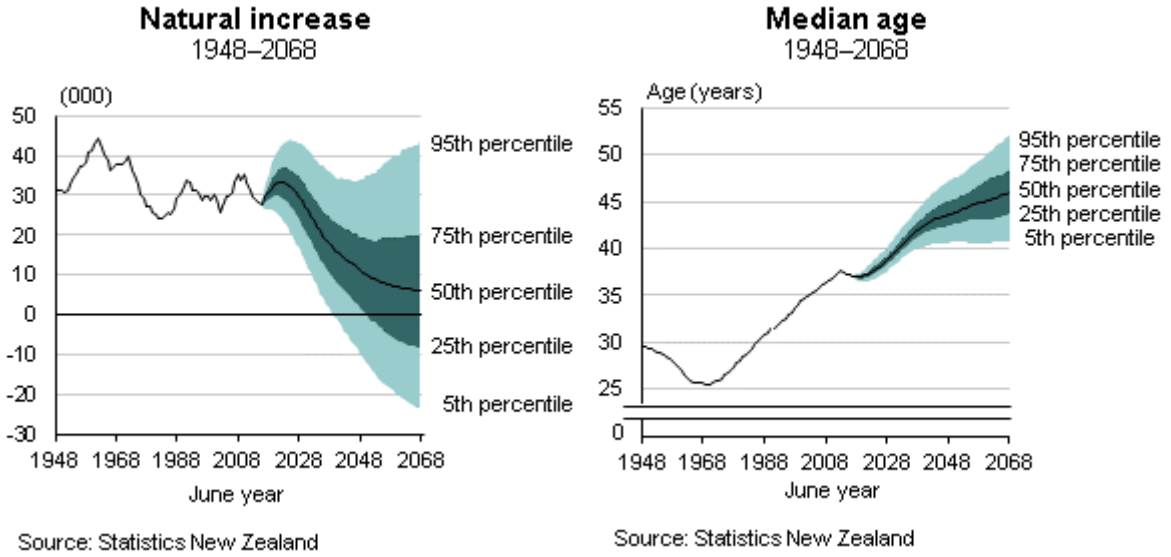
The narrowing gap between births and deaths is driving slower population growth. Births are likely to fluctuate from year to year but average at least 60,000 a year. From 59,000 in 2016, births are expected to be 60–70,000 in the 2020s.

However, there is considerable uncertainty about the number of births. Future birth numbers depend on the number of women of childbearing age and their fertility rates – how many children they have and the timing of their births. By 2068, there is roughly a 1 in 4 chance that annual births could exceed 80,000, and a similar chance they could be under 50,000.



The future number of deaths is more certain. Deaths are expected to increase steadily despite assumed lower death rates and increasing life expectancy. From 31,000 deaths in 2016, it is highly likely they will exceed 40,000 by the mid-2030s and exceed 50,000 by the late 2040s. Deaths will rise as more people reach the older ages where most deaths occur. Currently, about 3 in 4 male deaths, and 5 in 6 female deaths, occur at age 65 and over (65+).

With deaths rising faster than births, annual natural increase (births minus deaths) is likely to decrease. There is roughly a 3 in 4 chance that annual natural increase will be under 20,000 by the late 2040s, down from 28,000 in 2016. By 2068, there is roughly a 1 in 3 chance of natural decrease – more deaths than births.



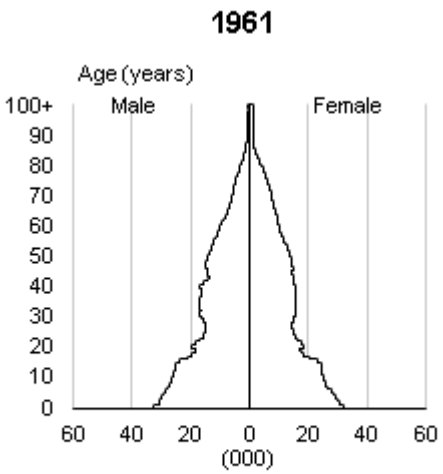
Ageing population

Significant changes in the age structure of the population will continue. The median age of New Zealand's population increased from 25.6 years in 1970 to 37.1 years in 2016. A median age of 40 years is likely to be reached in the early 2030s. By 2068, half the population could be older than 46 years. The gradual ageing reflects the combined effect of people having fewer

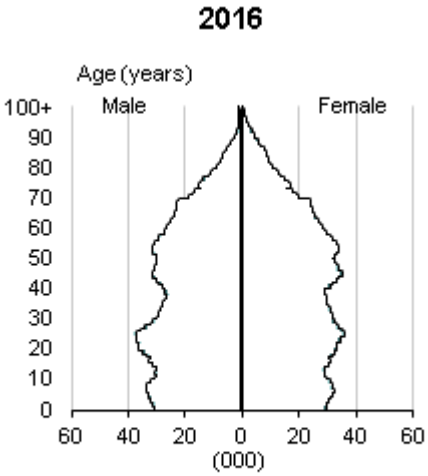
children (sub-replacement fertility) and people living longer. This impact is accentuated by the large number of people born between 1950 and the early 1970s moving into the older ages.

Population ageing is not caused by the baby boomers, but by the transition to lower birth rates and lower death rates. The projections indicate that once the baby boomers have moved through the age structure, the New Zealand population will not revert to a younger age structure – barring major changes in childbearing patterns (fertility rates).

Population age-sex pyramids
1961, 2016, 2043, and 2068



Source: Statistics New Zealand



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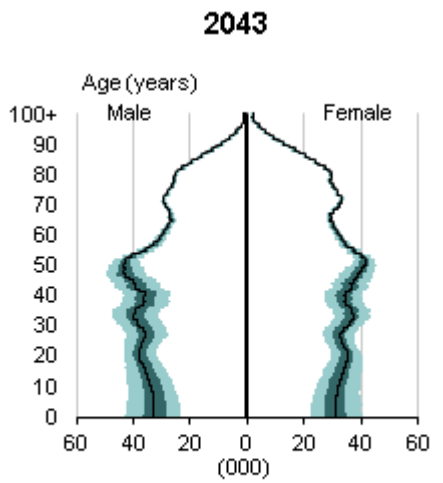

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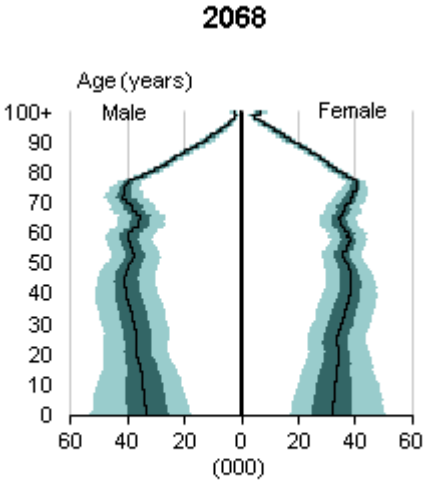


Source: Statistics New Zealand

Note: Percentiles shown are 5th, 25th, 50th, 75th, and 95th.

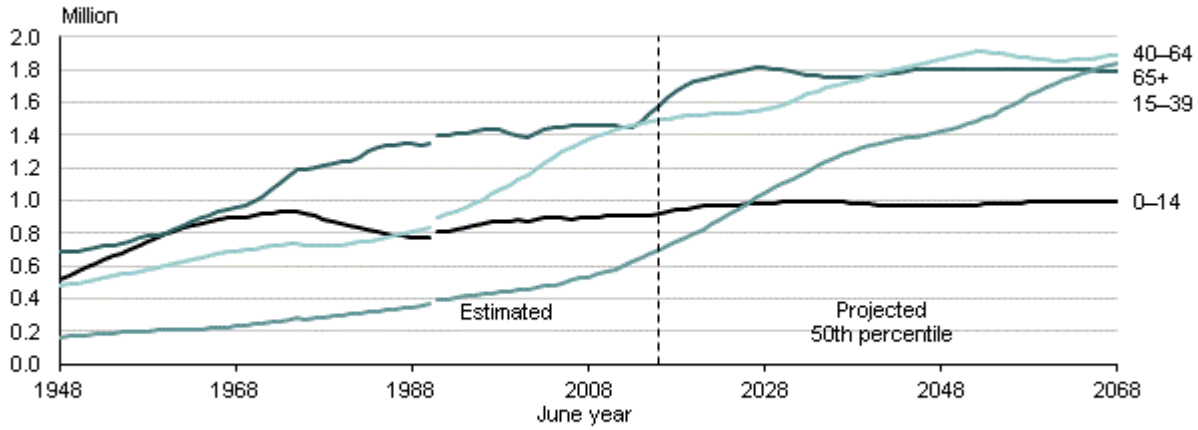
Slightly more children

The number of children aged 0–14 years peaked at 940,000 in 1974, decreased steadily to 770,000 in 1989, and then rebounded to 920,000 in 2016. The number of children is likely to

increase slowly, nudging 980,000 in the late 2020s and 990,000 in the early 2060s (in the median projection). Projections of the number of children are more uncertain than those for older age groups because the number of future births is uncertain.

Although the number of children may increase, it will not increase as fast as the older segment of the population. As a result, the proportion of the population under 15 years is likely to decrease. From 1 in 3 of the population during the early 1960s, and 1 in 5 of the population in 2016, it is highly likely that children will account for less than 1 in 5 of the population throughout the projection period (2017–68).

Population by broad age group
1948–2068



Note: The break in data between 1990 and 1991 denotes a change from the de facto population concept to the resident population concept.

Source: Statistics New Zealand

More people aged 15–64 years

The number of people aged 15–64 years doubled between 1963 and 2016 to 3.07 million. This group is projected to grow gradually, with the median projection indicating 3.58 million in 2043 and 3.68 million in 2068. Those aged 15–64 years would then make up 57 percent of the total population, down from 65 percent in 2016.

The median projection indicates that the number of people aged 15–39 years (1.58 million in 2016) will increase to 1.78 million in 2043, and 1.79 million in 2068. This age group accounted for about 41 percent of the population in the mid-1980s and 34 percent of the population in 2016. It is expected to account for only 30 percent in 2043, and 28 percent in 2068.

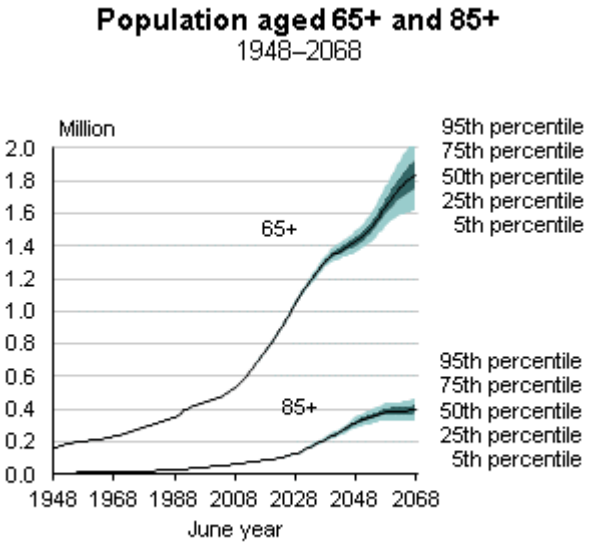
The number of people aged 40–64 years increased rapidly during the 1990s and 2000s as the baby boomers moved into this age group. The increase will slow during the 2010s and 2020s as the number of people entering the age group only slightly exceeds those leaving it. The median projection indicates the number of people in this age group (1.49 million in 2016) will increase to 1.80 million in 2043, and 1.89 million in 2068. In 2068, 29 percent of the population would be aged 40–64 years, down from a peak of 33 percent in 2012.

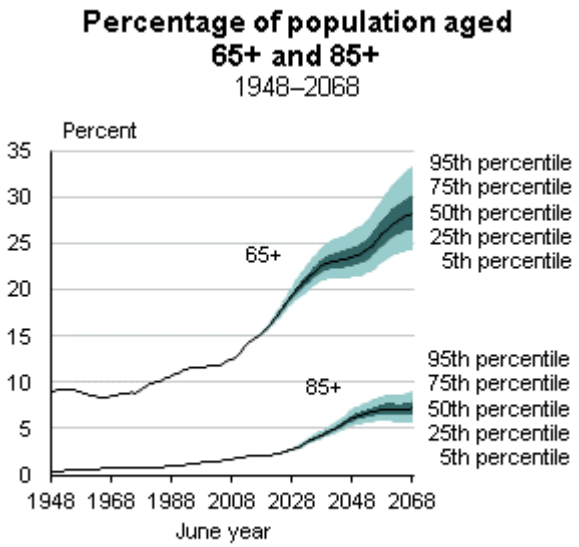
Fastest growth at older ages

The number of people aged 65+ doubled between 1988 and 2016, to reach 700,000. The number is projected to double again by 2046. It is expected there is a 90 percent probability that

there will be 1.32–1.42 million people aged 65+ in 2043, and 1.62–2.06 million in 2068. The largest growth occurs between 2011 and 2037 as the baby boomers move into the 65+ age group.

By 2032, it is expected that 20–22 percent of New Zealanders will be aged 65+, compared with 15 percent in 2016. By 2050, this proportion is expected to reach 21–27 percent, and reach 24–33 percent by 2068.





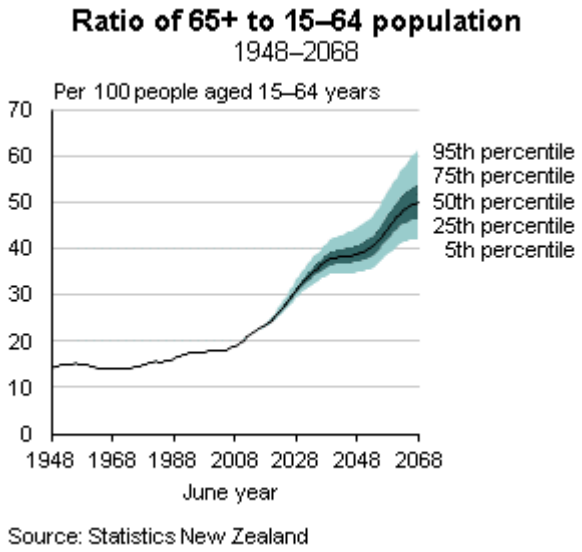
Within the 65+ age group, the number of people aged 85 and over (85+) is expected to increase significantly. It is expected that 240,000–280,000 people will be aged 85+ in 2043, and 330,000–470,000 in 2068, up from 83,000 in 2016. By the end of the 2040s, about 2 in 9 people aged 65+ will be 85+, compared with 1 in 9 in 2016.

More aged 65+ relative to those aged 15–64

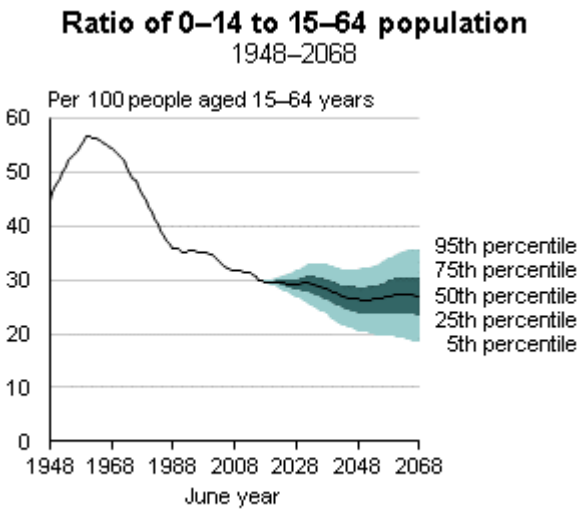
Dependency ratios relate the number of people in the 'dependent' age groups (defined here as 0–14 and 65+ years) to the 'working-age' population (15–64 years). They indicate changes in New Zealand's age structure. Dependency ratios do not allow for some people in the working-age population not being in the workforce, while some people aged 65+ may be in the workforce. For those aged 65+, the term 'dependency' does not necessarily imply financial or economic dependency – people are progressively living longer, are healthier, and are working longer.

The 65+ dependency ratio (the number of people aged 65+ per 100 people aged 15–64 years) increased gradually from 14 per 100 in the mid-1960s to 23 per 100 in 2016. It is projected to increase significantly, with the ratio expected to be in the range of 33–39 per 100 in 2035, 37–49 per 100 in 2055, and 42–61 per 100 in 2068. This means that for every person aged 65+, there will be about 2.8 people aged 15–64 in 2035, 2.4 in 2055, and 2.0 in 2068. This compares with 4.4 people in 2016 and 7.1 in the mid-1960s.

In contrast, the 0–14 dependency ratio (the number of people aged 0–14 years per 100 people aged 15–64 years) decreased from a peak of 57 per 100 in 1961 to 30 per 100 in 2016. This downward trend is likely to continue, with the ratio expected to be in the range of 25–33 per 100 in 2035, 20–33 per 100 in 2055, and 18–36 per 100 in 2068.

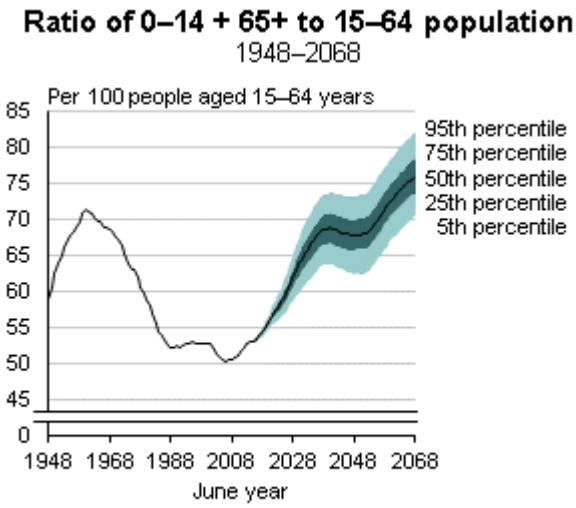


Source: Statistics New Zealand

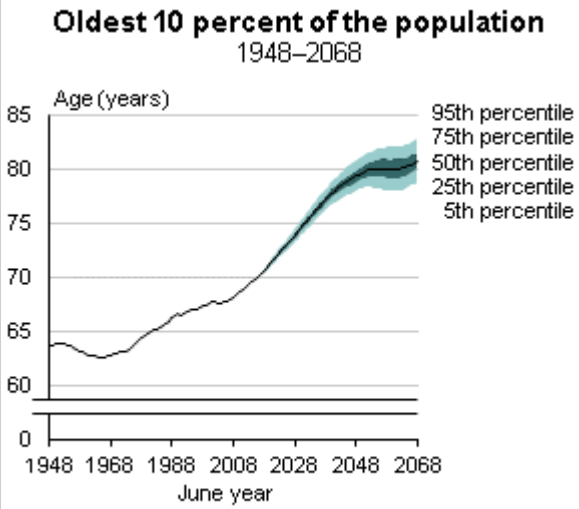


Source: Statistics New Zealand

The total dependency ratio (sum of the 0–14 and 65+ dependency ratios) reached its lowest level since the mid-1930s in 2006 (50 per 100). It is projected to increase from 53 per 100 in 2016, to be in the range of 60–70 per 100 in 2035, 62–76 per 100 in 2055, and 69–87 per 100 in 2068. The 65+ dependency ratio will then contribute more than three-fifths to the total dependency ratio, compared with two-fifths in 2016. A total dependency ratio of over 70 per 100 was also experienced around 1960, when the 65+ dependency ratio contributed about one-fifth to the total dependency ratio.



Source: Statistics New Zealand



Source: Statistics New Zealand

Rising oldest quintile

The age of the oldest 10 percent of the population is also projected to rise significantly. In 2016, 10 percent of the population is over 69.9 years. It is projected that the age of the oldest 10 percent of the population will increase to 75.3–77.1 years in 2035, 78.2–81.8 years in 2055, and 78.8–82.8 years in 2068.

Additional 'what if?' scenarios

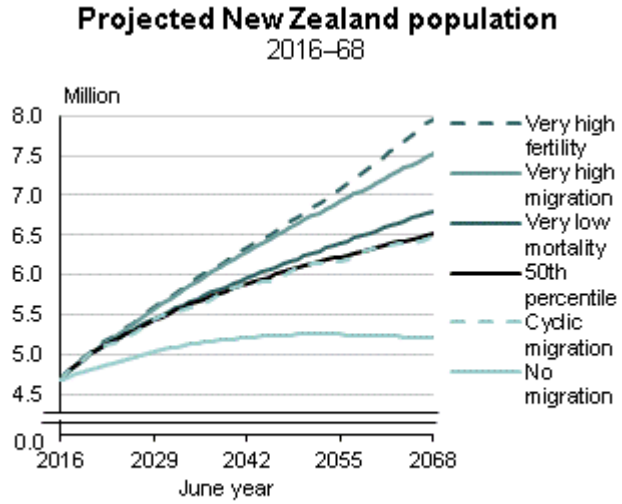
The projections discussed above indicate probable outcomes based on different combinations of fertility, mortality, and migration assumptions. Five additional projections were derived to explore other scenarios of interest. The median projection indicates the population will increase by about 1.8 million between 2016 and 2068, to reach 6.5 million. Population growth would be higher if fertility, life expectancy, or net migration (arrivals minus departures) were higher.

What if fertility was higher?

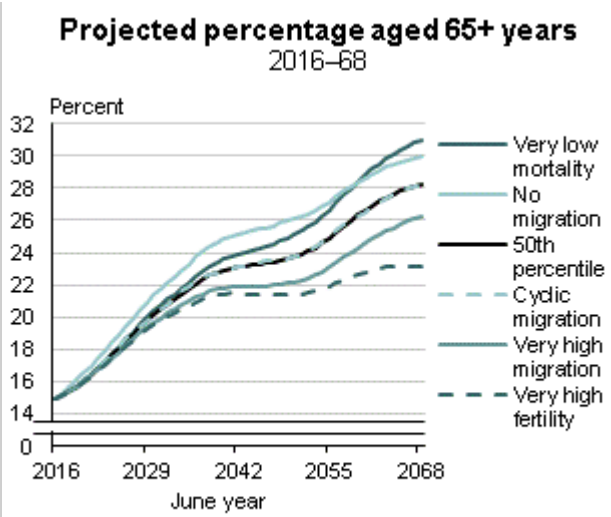
The population would reach 8 million by 2068 with a total fertility rate of 2.5 births per woman (very-high fertility), with a much younger age structure compared with the median projection.

With a total fertility rate of 2.5 births per woman, births would continue to outnumber deaths – by 39,000 in 2043 and 56,000 in 2068. There would be 120,000 births in 2068 under this scenario, compared with 65,000 under the median projection. The number of children would rise 81 percent over the projection period, compared with 8 percent under the median projection. Population ageing would continue but at a much slower rate, with the median age increasing from 37.1 years in 2016 to peak at 39.7 in 2041, before easing to 38.8 in 2068. By comparison, in the median projection, the median age increases steadily to 46.0 years in 2068.

The very-high fertility scenario results in a lower 65+ dependency ratio in 2068 – 41 per 100 compared with 50 per 100 in the median projection. However, the 0–14 dependency ratio would be much higher – 37 per 100 compared with 27 per 100 in the median projection. The total dependency ratio would therefore be only slightly higher – 79 per 100 compared with 77 per 100 in the median projection.



Source: Statistics New Zealand



Source: Statistics New Zealand

What if migration was higher?

The population would reach 7.5 million by 2068 with net migration of 30,000 a year. The populations ageing would also slow, but much less than the very-high fertility scenario. The median age would increase to 44.7 years in 2068 with very-high net migration – only slightly lower than the median projection (46.0 years). This reflects that migrants also age.

There would be 16 percent more people, 20 percent more births, and 4 percent more deaths in 2068 than in the median projection. By 2068, births would exceed deaths by 17,000, compared with a gap of 6,000 in the median projection.

What if life expectancy was higher?

The median projection assumes recent reductions in age-specific death rates continue over the projection period. If recent increases in period life expectancy at birth continue, people could live even longer. Life expectancy could reach 96.0 years for males and females in 2068 (very low mortality). In this scenario the population would then reach 6.8 million in 2068. This is 290,000 more people than under the median projection. There would be an additional 270,000 people in

the 65+ age group, which would triple in size to 2.11 million in 2068. The 85+ age group would increase to 625,000 in 2068, 220,000 more than the median projection.

With more people in the older ages, the population would age even faster than in the median projection – the median age of the population would be over 47 years in 2068. The 65+ dependency ratio would also be higher, reaching 57 per 100 in 2068 compared with 50 per 100 under the median projection. Annual deaths would be 49,000 in the 2060s compared with 58,000 under the median projection.

What if there was no migration?

An interesting projection for comparative purposes is to assume no arrivals and no departures. This shows how the population is affected by births and deaths. With no migration, the population would peak at 5.3 million in the early-2050s then slowly decline as deaths outnumber births. Despite deaths outnumbering births, the population of 5.2 million in 2068 would still be 520,000 more than in 2016. Compared with the median projection, the population would be lower in all age groups, but the median age and 65+ dependency ratio would be higher.

What if migration fluctuated?

The stochastic projections assume that net migration varies each year, although the median assumption equates to a constant level of 15,000 from 2022. However, actual net migration tends to fluctuate significantly from year to year. The cyclic migration scenario assumes annual net migration fluctuates between -5,000 and +45,000 on a 10-year cycle. The net migration gain between 2016 and years ending in 2 and 8 (eg 2022, 2028), is the same as the median assumption.

The population in 2068 is just 11,000 lower in the cyclic migration scenario than the median projection. However, between 2016 and 2068 the population is as much as 55,000 lower than the median projection, because of the annual differences in net migration. Other characteristics of the population (eg age distribution, dependency ratios, births, deaths) are very similar between the two projections. This scenario therefore indicates that a constant level of net migration in the long term is a sufficient assumption for most purposes.

Projection assumptions

The following technical information is useful to help understand the national population projection results.

Projection assumptions for fertility, mortality, and migration are formulated after analysing short-term and long-term historical trends, recent trends and patterns observed in other countries, and government policy.

Main changes since the previous 2014-base projections

Deriving the projections involved a review of all projection assumptions. The main changes from the previous 2014-base projections relate to the base population, migration, and fertility assumptions.

The base population at 30 June 2016 of 4.693 million is 38,000 (0.8 percent) higher than the 2014-base median projection for 2016. This is mainly because observed net migration for the two

years ended 30 June 2016 (127,000) was 40,000 higher than the assumed median net migration (87,000) in the 2014-base projections.

The median annual net migration gain is assumed to be 15,000 in the long-term, an increase from the long term level assumed in the 2014-base projections of 12,000. In the short term, the median net migration assumptions are also higher: 60,000 in the June year 2017, decreasing by 9,000 a year to 15,000 in 2022. Simulations of net migration are produced using an ARIMA(1,0,1) model, the same model used in the 2011-base projections, rather than the ARIMA(0,1,2) model used in the 2014-base projections.

The median period total fertility rate (TFR) is assumed to be 1.85 births per woman in the long-term, a slight decrease from the long term level assumed in the 2014-base projections of 1.90 births per woman. The change reflects the recent decreases in fertility, to a TFR of 1.90 births per woman in the year ended June 2016.

Base population

These projections have as a base the provisional estimated resident population (ERP) of New Zealand at 30 June 2016. This population (4.693 million) was derived from the ERP at 30 June 2013 (4.442 million), updated for births, deaths, and net migration between 30 June 2013 and 30 June 2016 (+251,000). The ERP at 30 June 2013 was derived from the census usually resident population count at 5 March 2013 (4.242 million) with adjustments for:

- net census undercount (+104,000)
- residents temporarily overseas on census night (+82,000)
- births, deaths, and net migration between census night and 30 June 2013 (+9,000)
- reconciliation with demographic estimates at ages 0–9 years (+5,000).

See demographic estimates for more information about the base population.

The ERP is the best available measure of the number of people usually living in New Zealand. However, for projection purposes, some uncertainty in the base population has been assumed. This uncertainty is assumed to vary by age and sex, and arises from two broad sources.

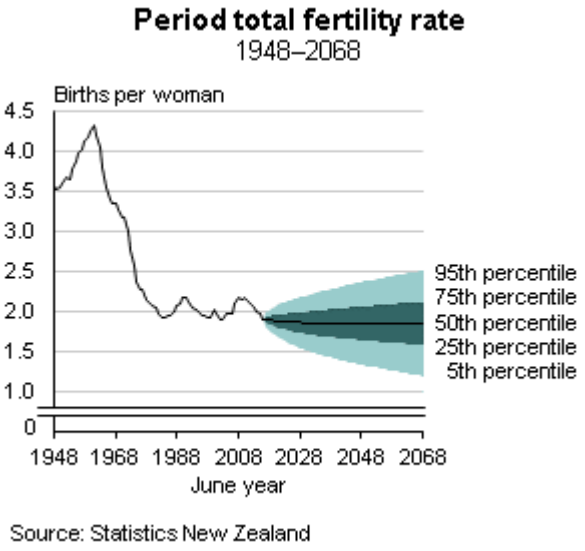
- Census enumeration and processing. Coverage errors may arise from non-enumeration and mis-enumeration (eg residents counted as visitors from overseas, and vice versa), either because of deliberate or inadvertent respondent or collector error. Errors may also arise during census processing (eg scanning, numeric and character recognition, imputation, coding, editing, creation of substitute forms).
- Adjustments in deriving population estimates. This includes the adjustments applied in deriving the ERP at 30 June of the census year (eg net census undercount). It also includes uncertainty associated with the post-censal components of population change (eg estimates of births occurring in each time period based on birth registrations; changes in classification of external migrants between ‘permanent and long-term’ and 'short-term').

Simulations of the base population are produced by drawing a random number sampled from a normal distribution with a mean of zero. For each simulation, a random number is multiplied by the assumed standard error for each age-sex then added to the base ERP.

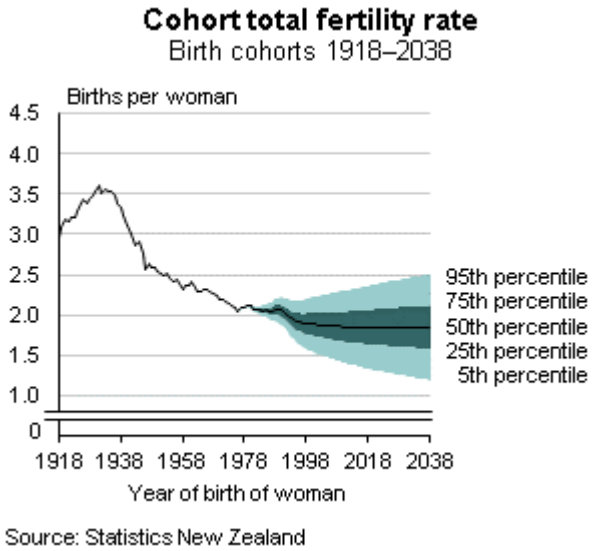
Fertility

Fertility rates are assumed to vary throughout the projection period. The median period TFR declines gradually from 1.90 births per woman in 2016 to 1.87 in 2025, and to 1.85 in 2036 and beyond.

- The period TFR decreased from 1.99 in 2014 to 1.90 in 2016.
- In the 40 years from 1977 to 2016, the period TFR was generally in the range of 1.9–2.2 births per woman.
- The cohort TFR indicates a progressive decline in completed family size. Women born in the early 1970s averaged 2.2 births each, compared with 2.5 for those born in the early 1950s.
- Census data (1981, 1996, 2006, 2013) on the number of children ever born also indicate progressive declines in completed family size and progressive increases in childlessness.
- Internationally, TFRs are generally declining, or are already lower than in New Zealand. New Zealand's TFR is one of the highest among Organisation for Economic Co-operation and Development countries.

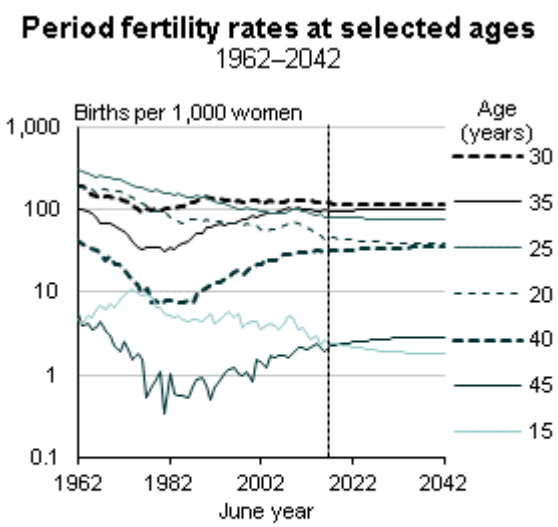


Source: Statistics New Zealand



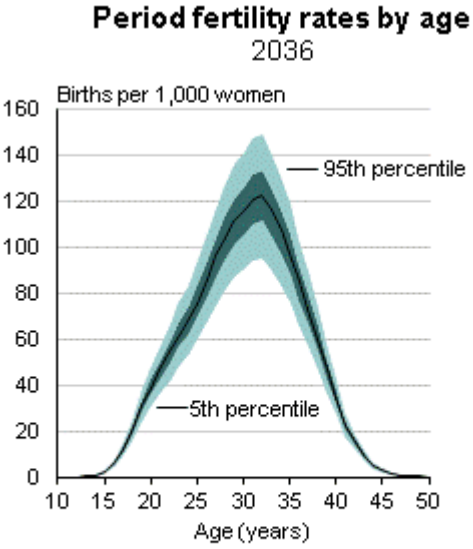
Source: Statistics New Zealand

Age-specific fertility rates (ASFRs) are assumed to vary throughout the projection period. The median ASFRs decline for women aged under 35 years, and increase for women aged 35 years and over.



Note: These figures are estimated up to 2016. From 2017, figures are the assumed 50th percentile.

Source: Statistics New Zealand



Note: Percentiles shown are 5th, 25th, 50th, 75th, 95th.

Source: Statistics New Zealand

Simulations of TFR are produced using a simple random walk with drift model. Random errors are sampled from a normal distribution with a mean of zero and a standard deviation of 0.0553. The standard deviation is derived by fitting an autoregressive integrated moving average or ARIMA(0,1,0) model to annual TFR for June years 1977–2016. The drift function shifts the median of the TFR simulations to follow the assumed median TFR. Median ASFRs are scaled to sum to the simulated TFR.

Simulations of the sex ratio at birth for each year are produced by drawing a random number sampled from a normal distribution with a mean of 105.5 males per 100 females and a standard deviation of 1.0. The mean and standard deviation are calculated from historical data for December years 1900–2015.

Mortality

Mortality/survival assumptions are formulated using death registrations, period and cohort mortality rates, and international comparisons. Death rates are assumed to vary throughout the projection period, with the assumptions driven by trends in age-sex death rates. Life expectancy assumptions are not explicitly formulated but are derived from the assumed death rates.

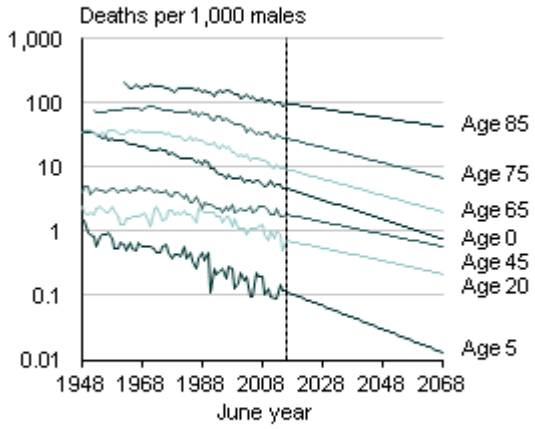
Male and female age-specific death rate assumptions are formulated using a coherent functional demographic method (FDM) developed by Hyndman, Booth, and Yasmeen (Coherent mortality forecasting: the product-ratio method with functional time series models, 2012). This method builds on the FDM of Hyndman and Ullah (Robust forecasting of mortality and fertility rates: A functional data approach, 2007), which is itself an extension of the Lee-Carter method widely used in mortality forecasting. The research of the authors and Booth, Hyndman, Tickle, and de Jong (Lee-Carter mortality forecasting: a multi-country comparison of variants and extensions, 2006) indicates that FDM forecasts are more accurate than the original Lee-Carter method and at least as accurate as several other Lee-Carter variants. The advantage of the coherent FDM is that it ensures male and female assumptions do not diverge over time.

The coherent FDM uses smoothed historical data to fit the model, which is then forecast using ARIMA and autoregressive fractionally integrated moving average (ARFIMA) time-series models. The historical data is derived from Statistics NZ's cohort mortality series, transposed to give

period death rates for each age for June years 1977–2015. Simulations of death rates are produced using an ARIMA(0,2,2) model to give plausible uncertainty bounds.

Forecasting mortality in New Zealand has more detail about the coherent FDM.

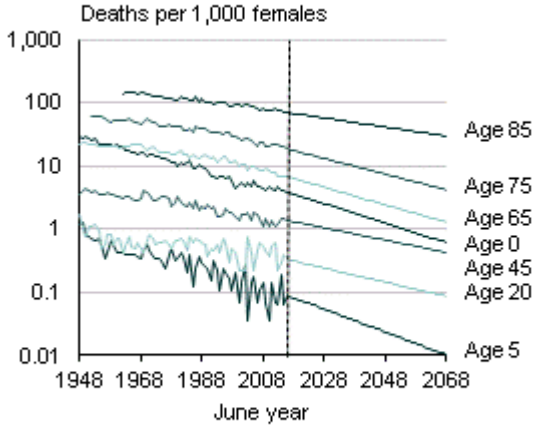
Male death rates at selected ages
1948–2068



Note: These figures are estimated up to 2016. From 2017, figures are the assumed 50th percentile.

Source: Statistics New Zealand

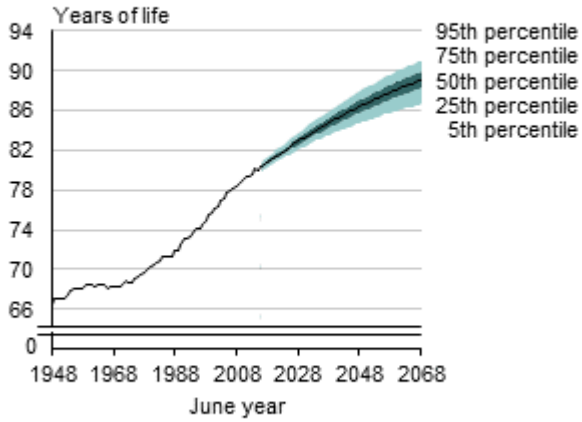
Female death rates at selected ages
1948–2068



Note: These figures are estimated up to 2016. From 2017, figures are the assumed 50th percentile.

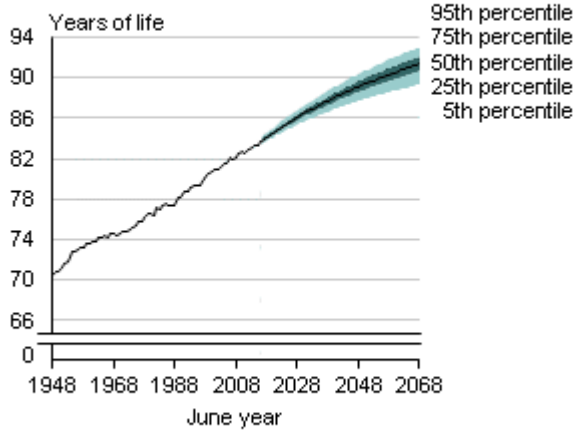
Source: Statistics New Zealand

Male period life expectancy at birth
1948–2068

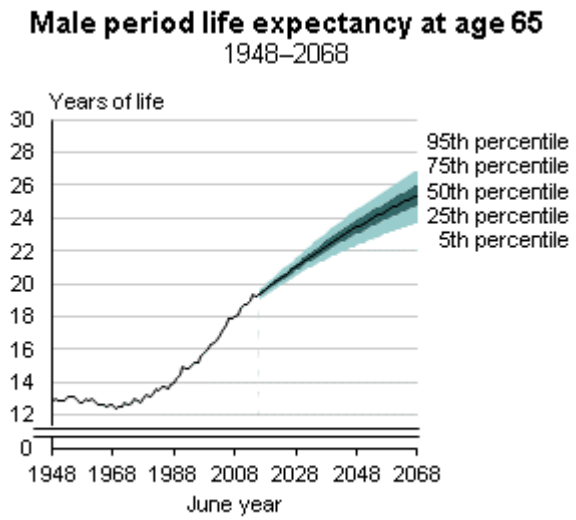


Source: Statistics New Zealand

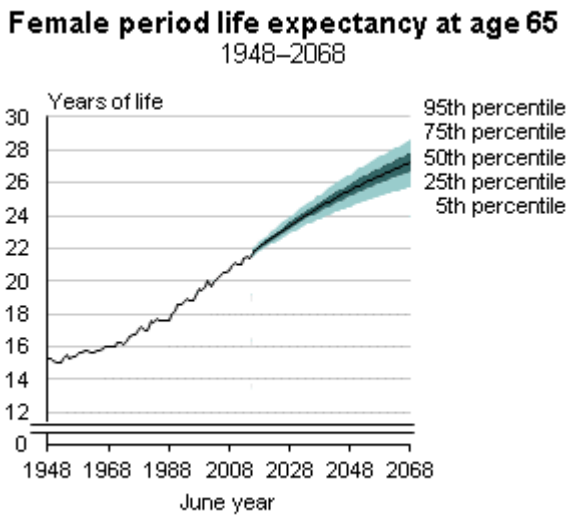
Female period life expectancy at birth
1948–2068



Source: Statistics New Zealand

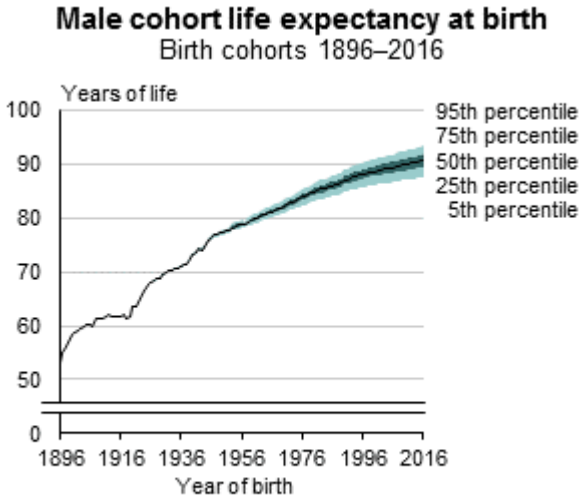


Source: Statistics New Zealand

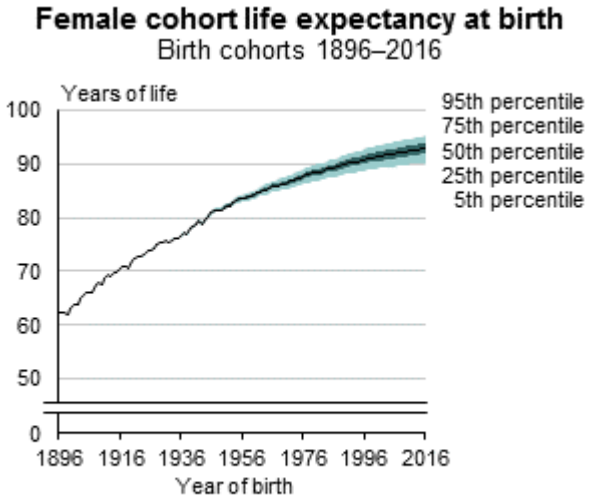


Source: Statistics New Zealand

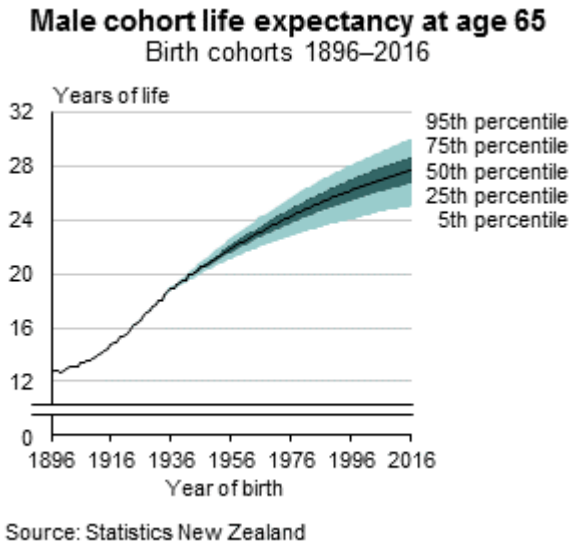
The median assumption has a male period life expectancy at birth of 85.6 years in 2043 and 89.1 years in 2068. The corresponding female period life expectancy at birth is 88.5 years in 2043 and 91.3 years in 2068.

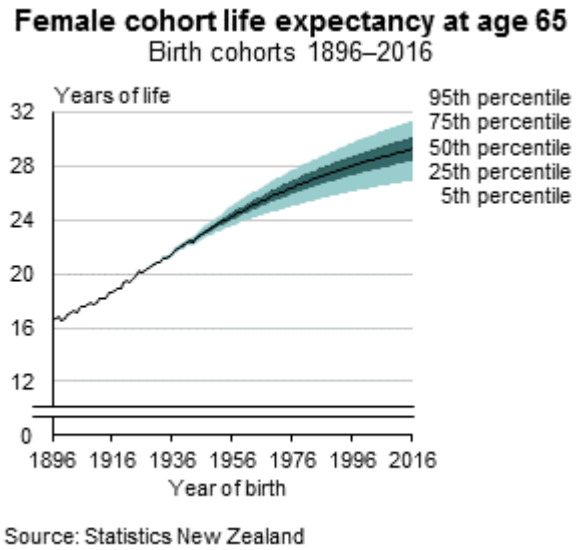


Source: Statistics New Zealand



Source: Statistics New Zealand





The median assumption has a male cohort life expectancy at birth of 78.9 years for those born in 1956 and 90.7 years for those born in 2016. The corresponding female cohort life expectancy at birth is 83.5 years for those born in 1956 and 92.9 years for those born in 2016.

Despite differences in methods, the New Zealand life expectancy assumptions are broadly consistent with those in other countries.

Although mortality reductions are expected to continue in the future, the extent of the trends is uncertain and depends on many factors:

- changes in population composition and different trends in population subgroups (including ethnic groups).
- changes in biomedical technology, regenerative medicine, and preventative methods including monitoring, treatment, and early intervention
- changes in health care systems including effectiveness of public health
- changes in behaviour and lifestyle (e.g. smoking, exercise, diet)
- changes in infectious diseases and resistance to antibiotics
- environmental change, disasters, and wars.

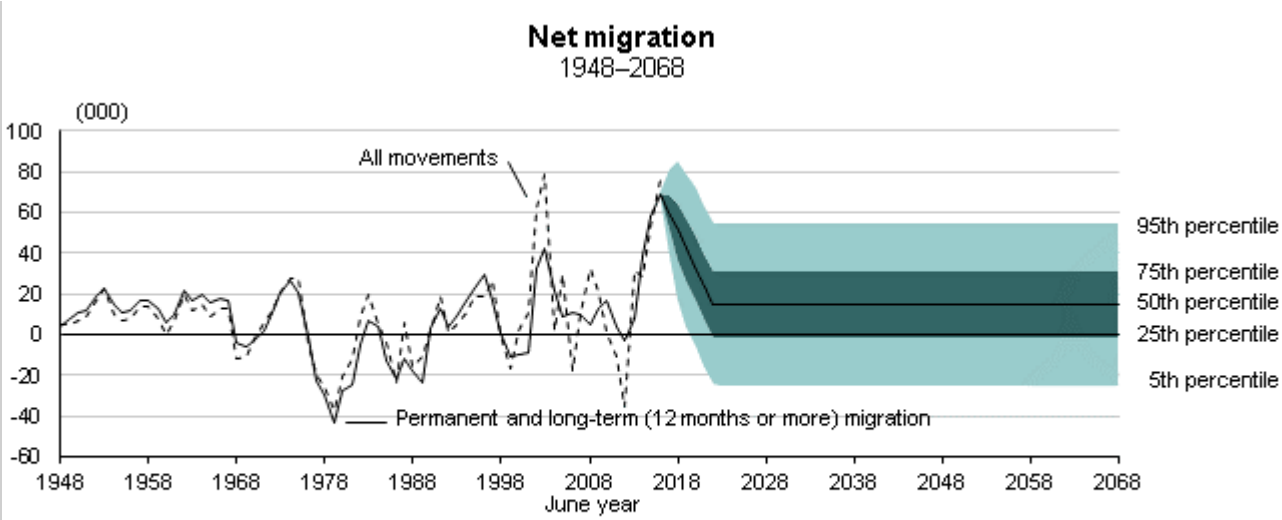
Migration

Migration assumptions are formulated using international travel and migration data (including arrivals and departures by country of citizenship and age), immigration applications and approvals, census data on people born overseas (including years since arrival in New Zealand), and consideration of immigration policies (in New Zealand and other countries).

Migration is assumed to vary throughout the projection period. The median net migration (arrivals less departures) is 60,000 in 2017 and decreases by 9,000 annually to 15,000 in 2022 and beyond. The assumed long-run median annual net migration of 15,000 reflects the average annual gain of 10,000–20,000 since the late 1980s. The short-term net migration levels are broadly in line with recent forecasts available from Treasury, Reserve Bank of New Zealand, and the Ministry of Business, Innovation and Employment.

Net migration is assumed to gradually decrease from a June year record of just over 69,000 in 2016, due to a combination of factors:

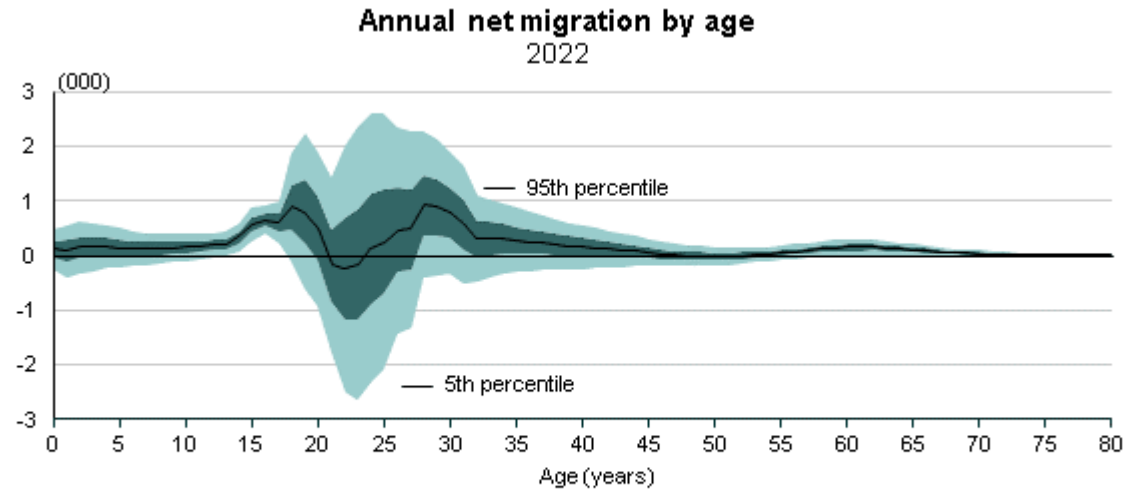
- more New Zealand citizens departing to Australia and fewer returning from Australia, as economic conditions in Australia gradually improve
- fewer arrivals of non-New Zealand citizens, as immigration approvals ease
- more departures of non-New Zealand citizens, reflecting those who have been in New Zealand on short-term/temporary student and work visas.



Note: All movements including the short-term (less than 12 months) movement of overseas and NZ residents, as well as permanent and long-term migration

Source: Statistics New Zealand

Net migration by age-sex reflects recent observed trends, with the largest movements at ages 15–38 years.



Note: Percentiles shown are 5th, 25th, 50th, 75th, 95th.

Source: Statistics New Zealand

Future migration trends are uncertain and depend on a range of factors in source and destination countries:

- changes in immigration policy (in New Zealand and other countries)

- changes in the main motives for migration (eg work, family reunification, education, asylum, retirement)
- changes in migration pressure in source countries (eg population growth, economic growth)
- changes in the attractiveness of New Zealand as a place to live (eg work opportunities, economic conditions, wages relative to costs and other countries, settlement and integration practices)
- costs of migration, including cost of travel and existence of networks and pathways that facilitate migration
- environmental change, disasters, and wars.

Simulations of net migration are produced using an ARIMA(1,0,1) with drift model. The autoregressive and moving average parameters are derived by fitting an ARIMA(1,0,1) model to annual 'permanent and long-term' migration for June years 1988–2016. The drift function shifts the median of the net migration simulations to follow the assumed median net migration. Net migration by age-sex is interpolated between a high and low pattern, to sum to the simulated net migration level.

Accuracy of projections

The accuracy of these projections is unknown at the time of release. While the assumptions are formulated from an assessment of short-term and long-term demographic trends, there is no certainty that any of the assumptions will be realised. The projections do not take into account non-demographic factors (eg war, catastrophes, major government and business decisions) which may invalidate the projections.

See How accurate are population estimates and projections? An evaluation of Statistics New Zealand population estimates and projections, 1996–2013 for an evaluation of previous Statistics NZ national and subnational population estimates and projections.

Find data tables and information about this release

For more data see the Excel table in the ‘Downloads’ box. Go to our population projections tables page for links to more detailed projection results and assumptions in NZ.Stat.

See DataInfo+ for more information on the method for producing projections, definitions and data quality.

Related links

- Next releases
- Past releases
- Data quality
- Related information

Next releases

National population projections (2018-base) will be released in late 2019.

Territorial authority population projections (table only) will be released 14 December 2016.

Subnational population projections will be released on 22 February 2017.

Area Unit population projections (table only) will be released progressively through 2017.

National ethnic population projections will be released on 18 May 2017.

Subscribe to information releases, including this one, by completing the online subscription form.

The release calendar lists all our upcoming information releases by date of release.

Past releases

National Population Projections – information releases has links to past releases.

Data quality

Period-specific information

National Population Projections Methodology 2016-base – DataInfo+
Methodology and assumptions used to produce 2016-base national population projections.

General information

National Population Projections – DataInfo+
General information about national population projections.

National Population Projections Methodology – DataInfo+
General methodology used to produce national population projections.

Projection method concepts – DataInfo+
Definitions of terms relating to the methodology used in this release.

Population concepts – DataInfo+
Definitions of terms relating to population used in this release.

Fertility concepts – DataInfo+
Definitions of terms relating to fertility used in this release.

Mortality concepts – DataInfo+
Definitions of terms relating to mortality used in this release.

Principles and protocols for producers of Tier 1 statistics
Statistics in this release are produced in accordance with the Official Statistics System principles and protocols for producers of Tier 1 statistics for quality. They conform to the Statistics NZ Methodological Standard for Reporting of Data Quality.

Related information

Interactive population pyramid: illustrates the changing age structure of the population from 1936 to 2068.

Could New Zealand reach 7 million people by 2061?: outlines how fertility, mortality, and migration would need to change for the population to reach 7 million, 10 million, and 15 million by 2061 from the 2011-base national population projections.

Experimental stochastic population projections for New Zealand: 2009(base)–2111: outlines a stochastic method, and summarises the results, for 2009-base projections of the New Zealand population.

National population estimates: show quarterly and annual changes in the population of New Zealand.

Subnational population estimates: show annual changes in the population of regional council and territorial authority areas.

Subnational population projections: indicate the future population of regional council and territorial authority areas.

Area unit population projections: indicate the future population of area units ('suburbs').

How accurate are population estimates and projections?: evaluation of 1996–2013 Statistics NZ national and subnational population estimates and projections.

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Tables

The following table is available in Excel format from the 'Downloads' box. If you have problems viewing the files, see opening files and PDFs.

1. Summary of New Zealand population projections, 2016(base)–2068

Access more detailed data in NZ.Stat

Use NZ.Stat, a free online database to access time-series data specific to your needs. To access the projections in NZ.Stat, select **Population projections** (as the theme), then one of the following tables:

- National population projections, by age and sex, 2016(base)–2068
- National population projections, characteristics, 2016(base)–2068
- National population projections, projection assumptions, 2016(base)–2068

The projections can be downloaded in Excel or comma delimited format.

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