National Labour Force Projections: 2015(base)–2068

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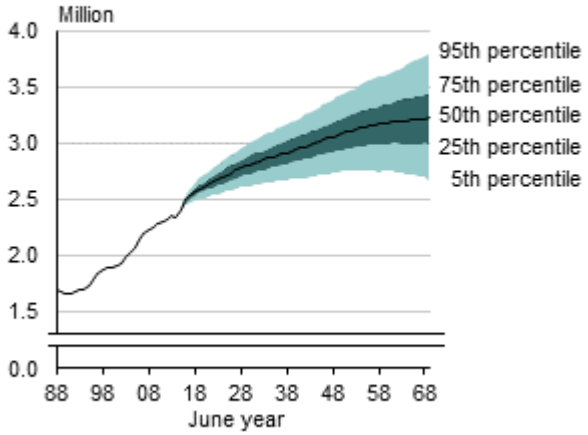
Key facts

National labour force projections give an indication of the future supply of people available for work.

The projections indicate:

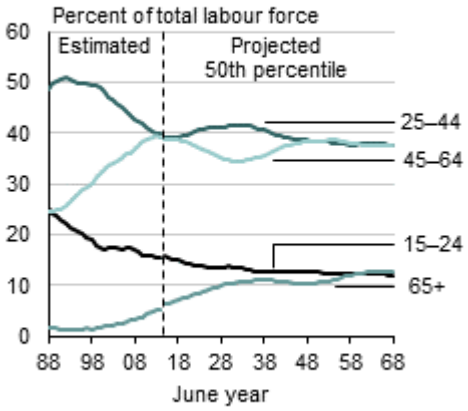
- New Zealand's labour force will continue to grow, but the growth rate will slow.
- The labour force (2.5 million in 2015) will increase to 2.7–3.2 million in 2038 and 2.7–3.8 million in 2068.
- The labour force will age, reflected in a rising median age and an increasing proportion of the labour force in the older ages.
- The labour force aged 65+ (160,000 in 2015) will increase to 250,000–400,000 in 2038 and 260,000–550,000 in 2068.
- The proportion of the labour force that is aged 65+ (6 percent in 2015) will increase to 9–13 percent in 2038 and 9–16 percent in 2068.
- The proportion of the 65+ population in the labour force (22 percent in 2015) is likely to increase slightly. The indicative range is 19–31 percent in 2038 and 16–33 percent in 2068.
- Even with further increases in labour force participation, especially as assumed at ages 55+, the overall participation rate (68 percent in 2015) is likely to fall. The indicative range is 59–69 percent in 2038 and 54–69 percent in 2068.
- The ratio of those not in the labour force to those who are (84 per 100 in 2015) is likely to increase in the long term. The indicative range is 73–104 per 100 in 2038 and 69–121 per 100 in 2068.
- The average number of hours that people in the labour force are working (or available for work) is projected to remain around 37 per week. The indicative range is 33–40 hours per week in 2038 and 31–42 hours per week in 2068.

New Zealand labour force
1988–2068



Source: Statistics New Zealand

Age distribution of labour force
1988–2068



Source: Statistics New Zealand

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Commentary

Important advice for using projections

National labour force projections give an indication of the future supply of people, usually living in New Zealand, available for work. In a new enhancement, these projections also indicate the extent to which people are available for work, by applying assumptions on the average number of hours worked per week to the labour force projections.

The labour force includes people aged 15 years and over who:

- regularly work for one or more hours per week for financial gain
- work without pay in a family business
- are unemployed and actively seeking part-time or full-time work.

People not in the labour force include:

- people under 15 years of age
- students who do not work for pay
- people who are unemployed and not actively seeking work
- some people with childrearing responsibilities
- people who work without pay (but not in a family business)
- people who have retired.

The projections cover a range of possible outcomes based on different combinations of assumptions about the population (fertility, mortality, migration) and labour force (labour force participation, average hours worked). Users can make their own judgement as to which projections are most suitable for their purposes.

These projections are not predictions. The projections 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.

At the time of release, the median projection (50th percentile) indicates an estimated 50 percent chance that the actual result will be lower, and a 50 percent chance that the actual result 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 result will be lower, and a 75 percent chance that the actual result

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

The following results highlight the main trends from the projections, while historical data is sourced from the Household Labour Force Survey.

Increasing labour force

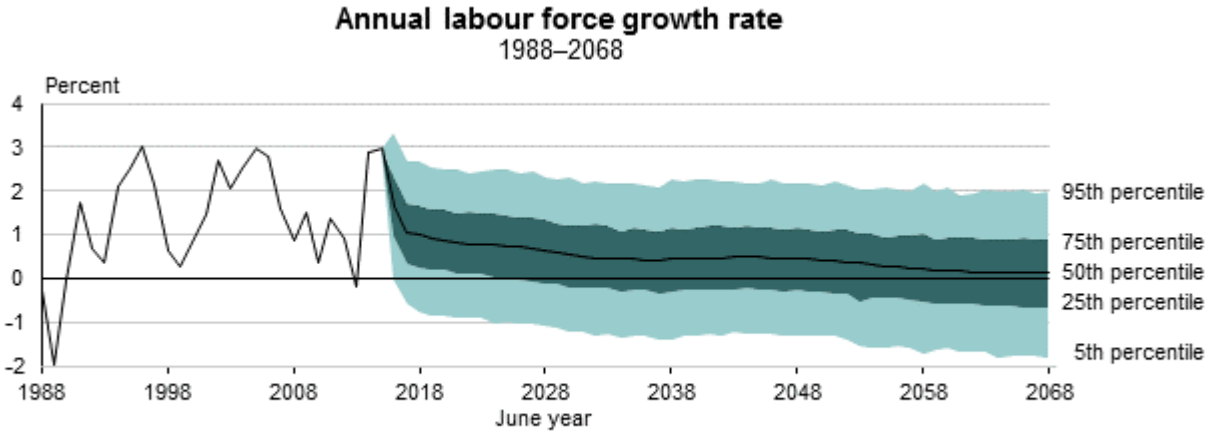
The total labour force is projected to rise from an estimated 2.5 million people at 30 June 2015 to 2.9 million in 2038 and 3.2 million in 2068 under the median projection. There is uncertainty, however, in both the future population (size and structure) and future labour force participation rates. It is highly likely that the labour force will be in the range of 2.7–3.2 million in 2038, and 2.7–3.8 million in 2068.

The projections indicate that the male labour force will grow from 1.3 million in 2015 to 1.4–1.7 million in 2038 and 1.5–2.1 million in 2068. The female labour force will grow from 1.2 million in 2015 to 1.3–1.5 million in 2038 and 1.2–1.7 million in 2068.

Slower labour force growth

The labour force is currently growing strongly due to high net migration, increasing participation rates, and age structure effects (eg people moving into ages where participation rates are higher).

In the longer term, however, labour force growth is likely to slow as net migration is likely to be generally lower than the current high levels, and age structure effects are likely to be less positive. For example, the projections indicate increasing proportions of people aged 65+ in the population, who are less likely to participate in the labour force than people at younger ages. Indeed, the projections indicate that new and returning entrants into the labour force are likely to exceed the number of people retiring from the labour force, but by a narrowing margin.



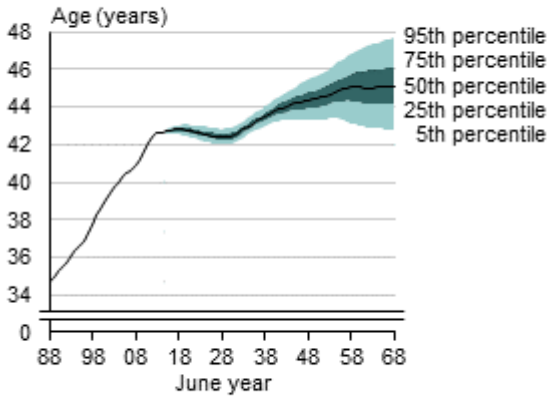
Source: Statistics New Zealand

Ageing labour force

The labour force is projected to continue ageing. The median age of New Zealand's labour force increased from 35 years in the late 1980s to nearly 43 years in 2015. While the median age is unlikely to increase in future as fast as it has in recent decades, half the labour force could be

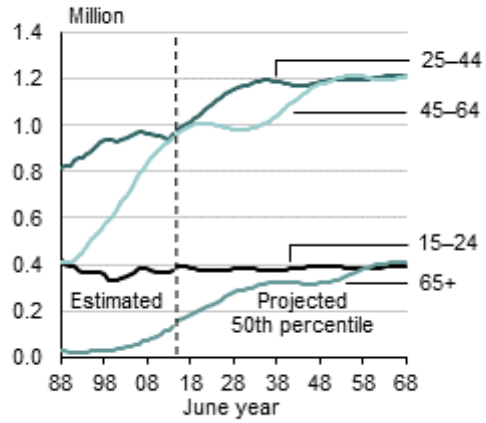
older than 45 years by the late 2050s. The increase in the historical and projected median age reflects increasing labour force participation among males and females aged 50 years and over, and the general ageing of the population, accentuated by the large number of people born between 1950 and the early 1970s moving into older working ages.

Median age of labour force
1988–2068



Source: Statistics New Zealand

Labour force by broad age group
1988–2068



Source: Statistics New Zealand

Lower proportion of younger workers

The labour force aged under 25 years is projected to remain under 400,000 between 2015 and 2068 under the median projection. Because of growth in the older segment of the labour force, the proportion of the labour force aged under 25 years is likely to decrease. From about 1 in 4 of the labour force during the late 1980s, young workers will account for about 1 in 7 of the labour force in 2021, and 1 in 8 by the 2050s (median projection).

Growth of labour force aged 25–64 years

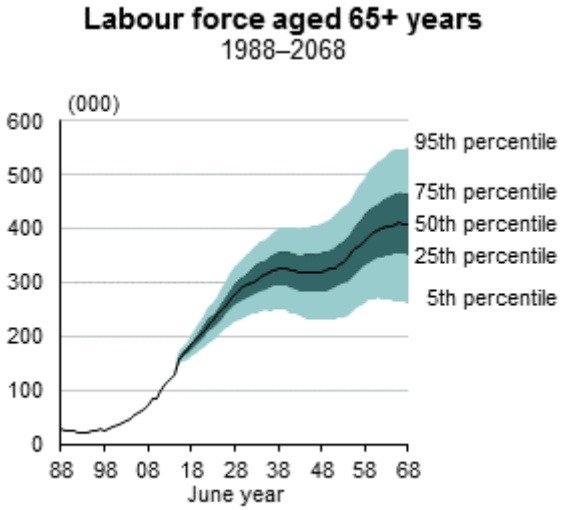
The labour force aged 25–64 years totalled 1.9 million in 2015, and is projected to increase steadily to 2.2 million in the mid-2030s and 2.4 million in the 2050s (median projection). This broad age group made up 78 percent of the total labour force in 2015, but its share is projected to decrease to 76 percent in the early 2030s and 75 percent in the 2060s (median projection).

A comparison of labour force numbers in age groups 25–44 years and 45–64 years shows how New Zealand's age structure has changed. In the late 1980s, the labour force aged 25–44 years (820,000) was double the labour force aged 45–64 years (410,000). Between then and 2015, the labour force aged 25–44 years increased by 20 percent to 980,000, while the labour force aged 45–64 years increased by 130 percent to 960,000. The labour force numbers in these two broad age groups will vary as different-sized birth cohorts move through the age structure, but the size of the two groups will remain within 200,000 of each other.

Fastest growth at older ages

The number of people aged 65+ in the labour force climbed from 25,000 in the late 1980s to an estimated 150,000 or more in 2015. Further increases in labour force participation, coupled with more people at older ages, is likely to grow the older segment of the labour force further. It is highly likely that there will be 240,000–400,000 people aged 65+ in 2038, and 260,000–550,000

in 2068. The largest growth will occur between now and the early 2030s, as the bulk of the baby boomers move into the 65+ age group.



Source: Statistics New Zealand

Among those aged 65+, barely 6 percent were in the labour force in 1991. Labour force participation among those aged 65+ (Household Labour Force Survey) is now about 22 percent – about 28 percent among men and 17 percent among women – and is projected to increase to perhaps 27 percent overall by the late 2020s. Beyond the 2020s, even greater numbers of people aged 80 years and over (80+) are likely to push the overall 65+ participation rate downwards.

As a result, by 2038, it is expected that between 9 and 13 percent of the labour force will be aged 65+, compared with 6 percent in 2015. By 2068, between 9 and 16 percent of the labour force will be aged 65+.

Within the labour force aged 65+, the number of people aged 80+ will increase significantly. From roughly 7,000 in 2015, it is highly likely there will be 17,000–40,000 people aged 80+ in the labour force in 2038, and 18,000–68,000 in 2068.

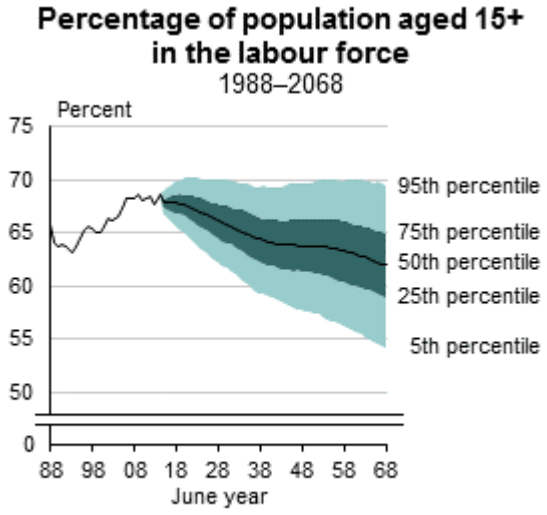
Among those aged 80+, about 1 percent were in the labour force in 1991. It is now 4 percent, and is projected to increase to over 6 percent by the late 2020s.

Lower proportion overall in the labour force

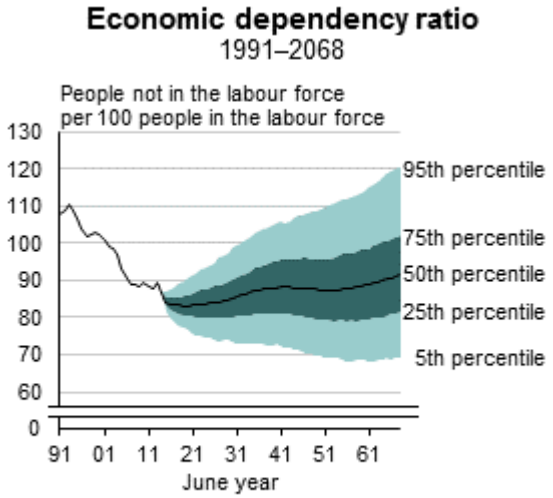
The projections indicate that New Zealand is currently near peak labour force participation, and this is likely to fall over the coming decades. In recent years, 68–69 percent of adults (aged 15 years and over) were in the labour force. The median projection indicates a gradual drop to 64 percent in 2038 and to 62 percent in 2068. This drop is despite the assumptions of static or increasing labour force participation rates (LFPRs) at most ages. This apparent paradox is caused by the changing age structure of the population, which sees a growing number and proportion of the population at the oldest ages where LFPRs are at their lowest. See Projection assumptions in the data quality section for more information about LFPR assumptions.

Among males aged 15 years and over, 74–75 percent were in the labour force in recent years. Under the median projection this proportion drops gradually to 70 percent in 2038 and to 68 percent in 2068.

Among females aged 15 years and over, 63–64 percent were in the labour force in recent years. This proportion is also near its peak, declining to 59 percent in 2038 and to 56 percent in 2068 (median projection).



Source: Statistics New Zealand



Source: Statistics New Zealand

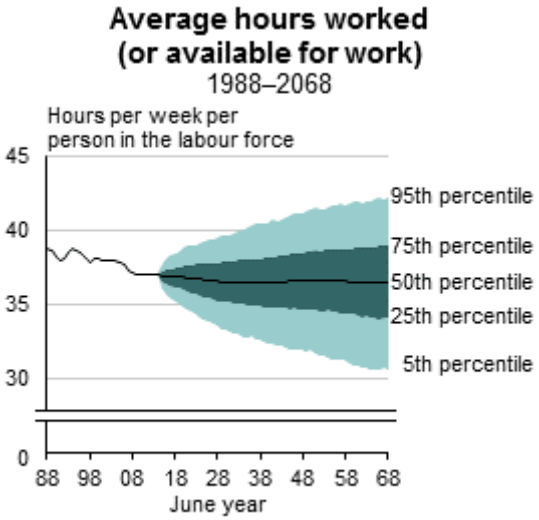
At ages 18–64 years, most males and females are in the labour force. Over all ages, there are more people in the labour force than not. The ratio of those not in the labour force to those who are (the economic dependency ratio) stands at 84 per 100 in 2015. The projections indicate that the ratio may decline to about 83 per 100 around 2020, before gradually increasing. However, there is significant uncertainty in this ratio, largely reflecting the uncertainty in future LFPRs, although uncertainty in the age distribution of the population (from the interplay of fertility, mortality, and migration) also has an effect and increases over the projection period.

Average hours worked stable overall

The average number of hours that people in the labour force are working (or available for work) has dropped slightly from about 39 per week in the late 1980s to 37 per week in 2015. The projections indicate that this average is likely to remain around that level, assuming current age-specific trends continue.

Among males in the labour force, average hours worked has dropped from 44 per week in the late 1980s to 41 per week in 2015. This is projected to drop to 40 hours per week beyond the 2020s, reflecting small further decreases in hours worked of males aged 15–59 years, and the changing age composition of the male labour force, which more than offsets the assumed increases in hours worked by males aged 60–79 years.

Females in the labour force have averaged about 32 hours work per week since the late 1980s. The average is projected to remain around 32 hours per week despite assumed increases in average hours worked at some ages, especially at ages 55–66 years. As with males, changes in the age composition of the labour force has a deflationary effect on the average across all ages, as a higher proportion of the female labour force will be in ages where average hours worked is lower.



Source: Statistics New Zealand

Growing number and proportion of people not in the labour force

In 2015, the number of people not in the labour force (at all ages) numbered 2.1 million, compared with 2.5 million in the labour force (aged 15 years and over). By 2038, people not in the labour force and people in the labour force are projected to total 2.6 million and 2.9 million, respectively (median projection). By 2068, people not in the labour force and people in the labour force are projected to be 3.0 million and 3.2 million, respectively.

The majority of people aged 65+ have retired from the labour force. The median projection indicates that the number of people aged 65+ who are not in the labour force will increase steadily from 520,000 in 2015 to 960,000 in 2038, and to 1.3 million in 2068. Future LFPRs are particularly uncertain at these ages because LFPRs are currently increasing strongly and there is considerable scope for LFPRs to increase further. Future LFPRs will also be strongly influenced by non-demographic factors such as the age of eligibility for government superannuation, although these projections are necessarily based on current policies (ie they assume no change to the age of eligibility and other policies which may affect future LFPRs).

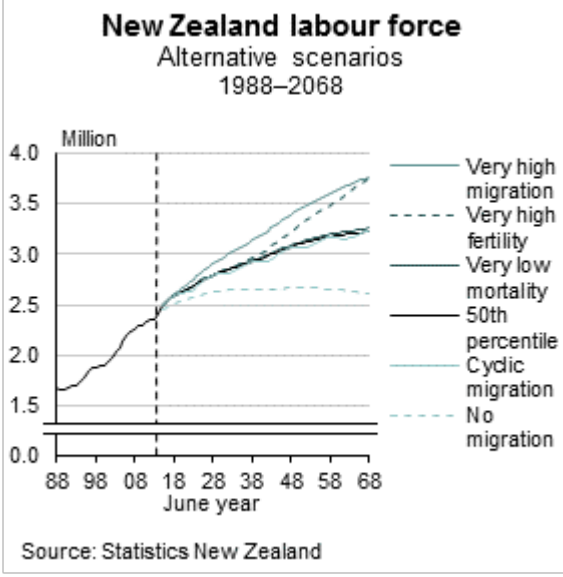
Projected population by labour force status, age, and sex
50th percentile in 2015, 2038, and 2068

Source: Statistics New Zealand

Additional 'what if?' scenarios

The projections discussed above cover a range of possible outcomes based on different combinations of assumptions about the population (fertility, mortality, migration) and labour force (labour force participation, average hours worked). Five additional projections have been derived to explore other scenarios of interest.

The median projection indicates that the labour force will increase by more than 700,000 people, from 2.5 million in 2015 to 3.2 million in 2068. Labour force growth would be higher if fertility, life expectancy, or net migration (arrivals minus departures) were higher.



What if fertility was higher?

The labour force would reach nearly 3.8 million by 2068 with a total fertility rate of 2.5 births per woman (very high fertility). The very high fertility scenario would also produce a younger age structure. The number of young workers (15–24 years) would rise by 40 percent between 2015 and 2068, compared with virtually no change under the median projection. Labour force ageing would be less pronounced, with a median age of 42–43 years over the projection period. By comparison, in the median projection, the median age increases gradually to 45 years in 2068.

The very high fertility scenario results in a higher economic dependency ratio in 2068 of 100 per 100 – equal numbers of people in the labour force as not – compared with 92 per 100 in the median projection.

What if migration was higher?

Net migration of 25,000 a year would also produce a labour force of about 3.8 million in 2068 – 17 percent larger than the median projection. A very high migration scenario would have only a small impact on the ageing of the labour force, because the migrants themselves age. The median age would be about 45 years in 2068, the same as in the median projection. The economic dependency ratio would be slightly lower – 89 per 100 in 2068, compared with 92 per 100 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 labour force would reach 3.3 million in 2068. This is 33,000 (1 percent) more than under the median projection. About 19,000 of these people would be in the 65+ age group in 2068. The 80+ age group would increase to about 55,000 in 2068 – 11,000 more than the median projection.

With more workers at older ages, labour force ageing would be slightly more pronounced than in the median projection. The median age of the labour force would still be about 45 years in 2068, but the economic dependency ratio would be 98 per 100 in 2068, compared with 92 per 100 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 labour force is affected solely by births and deaths. With no migration, the labour force would peak at under 2.7 million in the early 2050s, then slowly decline as retirements outnumber new entrants. Despite the decline, the labour force of 2.6 million in 2068 would still be 150,000 higher than the 2015 labour force. Compared with the median projection, the labour force would be lower in all age groups, but the median age and economic dependency ratio would be higher.

What if migration fluctuated?

The projections assume that net migration varies each year, although the median assumption equates to a constant level of 12,000 from 2017. However, actual net migration tends to fluctuate significantly from year to year. The cyclic migration scenario assumes net migration fluctuates between -10,000 and +35,000 on a 10-year cycle. The net migration gain between 2015 and 2068 is the same as the median projection.

The labour force in 2068 is just 2,000 lower in the cyclic migration scenario than the median projection (3.2 million). However, between 2015 and 2068, the labour force varies by as much as 48,000 between the two projections, because of the annual differences in net migration. Other characteristics of the labour force (eg age distribution, economic dependency ratio) are very similar between the two projections. A constant level of migration in the long term is therefore a sufficient assumption for most purposes.

For more detailed data see the Excel tables in the ‘Downloads’ box.

Definitions

About national labour force projections

National labour force projections give an indication of the future supply of people, usually living in New Zealand, available for work. The projections are based on different combinations of fertility, mortality, migration, and labour force participation assumptions.

These projections are not predictions. The projections 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.

More definitions

Assumption: statement about a future course of behaviour (eg fertility, mortality, migration, labour force participation) from which projections of the labour force are derived.

Average hours worked (AHW): the average number of hours worked (or available for work) per week by people in the labour force.

Average working life (AWL): the average number of years a person would spend in the labour force if they experienced the labour force participation rates at each age 15–79 years. For example, the AWL for the year 2015 is based on labour force participation rates in that year, and takes no account of changes in labour force participation rates after that year.

Baby boomer: someone born in the years 1946–65, although the definition of the baby boom period varies between sources and between countries.

Cohort: a group of people sharing a common experience. For example, the 1900 birth cohort refers to people born in the year 1900.

Estimated resident population: an estimate of all people who usually live in New Zealand at a given date. It includes:

- all residents present in New Zealand and counted by the census (census usually resident population count)
- residents who are temporarily overseas (who are not included in the census)
- an adjustment for residents missed or counted more than once by the census (net census undercount).

It excludes visitors from overseas.

Fertility: the demographic process relating to births, often summarised by birth rates and fertility rates. Fertility should not be confused with fecundity, which is the biological capacity of a population to bear children.

Labour force: the population aged 15 years and over who regularly work for one or more hours per week for financial gain, or work without pay in a family business, or are unemployed and actively seeking part-time or full-time work. This definition is used in the Household Labour Force

Survey and the Census of Population and Dwellings, and conforms closely to the international standard definition specified by the International Labour Organization.

Labour force participation rate (LFPR): the proportion of a population in the labour force.

Life expectancy (period): the average length of life remaining at a given age, assuming people experience the age-specific death rates of a given period from the given age onwards. For example, life expectancy at birth for the period 2012–14 is based on death rates in that period, and takes no account of changes in death rates after that period.

Median age of the labour force: half the labour force is younger, and half the labour force is older, than this age.

Median projection: the 50th percentile, which indicates an estimated 50 percent chance that the actual result will be lower, and a 50 percent chance that the actual result will be higher, than this percentile.

Mortality: the demographic process relating to deaths, often summarised by death rates, survival rates, and life expectancy.

Percentile: indicates the distribution of values (such as projection results or assumptions). For example, the 25th percentile indicates an estimated 25 percent chance that the actual result will be lower, and a 75 percent chance that the actual result will be higher, than this percentile.

Percentiles are non-additive except the 50th percentile (median). For example, percentiles for the labour force aged 15–39 and 40–64 years cannot be added together to give the equivalent percentile for the labour force aged 15–64 years.

Shading in graphs indicates the chance that actual results will fall within a certain range. Different shading is used to distinguish different ranges.

Projection: indication of the future characteristics of the labour force based on an assessment of past trends and assumptions about the future course of demographic behaviour (eg fertility, mortality, migration, labour force participation).

Stochastic (probabilistic) projection: a projection which varies randomly according to the probability distributions of the assumptions (eg about fertility, mortality, migration, labour force participation).

Total fertility rate (period): the average number of live births that women would have during their life if they experienced the age-specific fertility rates of a given period. For example, the total fertility rate for the year 2014 is based on fertility rates in that year, and takes no account of changes in fertility rates after that year.

Related links

Next release

Updated demographic projections, including *National Labour Force Projections,* will be released from late 2016 to 2017.

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Past releases

National Labour Force Projections – information releases has links to past releases.

Related information

National population projections: indicate the future population of New Zealand.

Labour market statistics: provides New Zealand's official employment and unemployment statistics and wage and salary information.

Employment and unemployment: more information about employment and unemployment as well as information about occupations and industries, income and net worth, types of work, and employment conditions.

Data quality

Period-specific information

This section contains data information that has changed since the last release.

General information

This section contains information that does not change between releases.

Period-specific information

Reference period

This release contains 2015-base projections of the labour force usually living in New Zealand. These supersede the 2006-base projections released in August 2012. The new projections have the estimated resident population in the labour force at 30 June 2015 as a base, and cover the period 2016–68 at one-year intervals. The labour force projections are derived from the latest National population projections: 2014(base)–2068 (released 28 November 2014) by multiplying the projected population by the assumed labour force participation rates (LFPRs), by single year of age and sex. Detailed projection results, including projections for individual years and by single-year of age and sex, are available in NZ.Stat.

Changes since the previous 2006-base projections

Average hours worked

For the first time, these projections include projections of the average number of hours worked (or available for work) per week by those in the labour force. Projections of the total number of hours worked (or available for work) are derived by multiplying the projected labour force by the assumed average number of hours worked (or available for work), by single year of age and sex. These can then be divided by the projected labour force, in any given age-sex group, to give the average number of hours worked (or available for work) per week.

Review of assumptions

The derivation of the projections involves a review of all projection assumptions. The main changes from the previous 2006-base projections (August 2012 update) are:

- Slightly lower **male LFPRs** at most ages, especially at ages 15–16 and 78–84 years.
- Slightly higher **female LFPRs** at ages 20–55 years, and lower female LFPRs at most other ages, especially at ages 15–17 and 64–86 years.
- Slightly higher population projections in the long term. This reflects the combined impact of updated fertility, mortality, and migration assumptions.

    - The median **New Zealand population** from the 2014-base projections is 4.59 million in 2015, 5.50 million in 2038, and 6.17 million in 2068. By comparison, the equivalent populations from the previous 2011-base projections were 4.54 million in 2015, 5.42 million in 2038, and 6.16 million in 2068.
    - The median **annual net migration gain** is assumed to be 54,000 in 2015 and 33,000 in 2016. This compares with the 2011-base projections (medium variant) assumptions of 12,000 for both these years.
    - The median **period life expectancy at birth** reaches 89.0 and 91.5 years for males and females, respectively, in 2068. This is higher than the corresponding figures of 88.9 and 91.3 years in the 2011-base projections (medium variant).

Projection assumptions

Projection assumptions are formulated after analysis of short-term and long-term historical trends, recent trends and patterns observed in other countries, and government policy.

Population projections

Labour force projections for 2015–68 are based on the population projections summarised in the release National population projections: 2014(base)–2068. In brief, these population projections assume:

- a base estimated resident population (ERP) of New Zealand of 4.51 million at 30 June 2014
- fertility rates varying throughout the projection period. The median period total fertility rate declining gradually from 1.95 births per woman in 2015 to 1.90 in 2030 and beyond.
- death rates varying throughout the projection period. The median assumption has male period life expectancy at birth increasing to 84.7 years in 2038 and 89.0 years in 2068. The corresponding female period life expectancy at birth increases to 88.0 years in 2038 and 91.5 years in 2068.
- migration varying throughout the projection period. The median net migration (arrivals less departures) decreases from 54,000 in 2015 to 33,000 in 2016, and to 12,000 in 2017 and beyond.

Labour force participation

Labour force participation rates (LFPRs) measure the proportion of the population in the labour force, either part-time or full-time. LFPRs differ significantly across age for both males and females.

Assumed LFPRs are formulated from analysis of trends in the Census of Population and Dwellings and the Household Labour Force Survey (HLFS). Although the same definition of

labour force is used in the projections as in the census and HLFS, some important differences exist:

- The HLFS provides the official measure of the labour force using an interviewer-administered survey of about 15,000 households and 30,000 people each quarter. By comparison, the census provides a snapshot of the labour force (usually every five years).
- The HLFS measures labour force status over each quarter, while the census question refers to labour force status in the week before the census date.
- Unlike the HLFS, the census is not subject to sample error (although both data sources may contain non-sampling errors). As a result, the census can provide information at a more detailed demographic level (eg single year of age) than the HLFS.
- Non-response in the HLFS is minimised through the use of best survey practices. Because the census is self-administered, higher rates of item non-response occur.
- The HLFS generally excludes people in the armed forces and non-private dwellings (eg retirement homes, hospitals, prisons), while the census includes everyone who is in New Zealand on census night.

These differences explain why LFPRs, as well as numbers in the labour force, vary between census and HLFS. These differ again from the base for these labour force projections, which is the estimated resident population of New Zealand in the labour force at 30 June 2015.

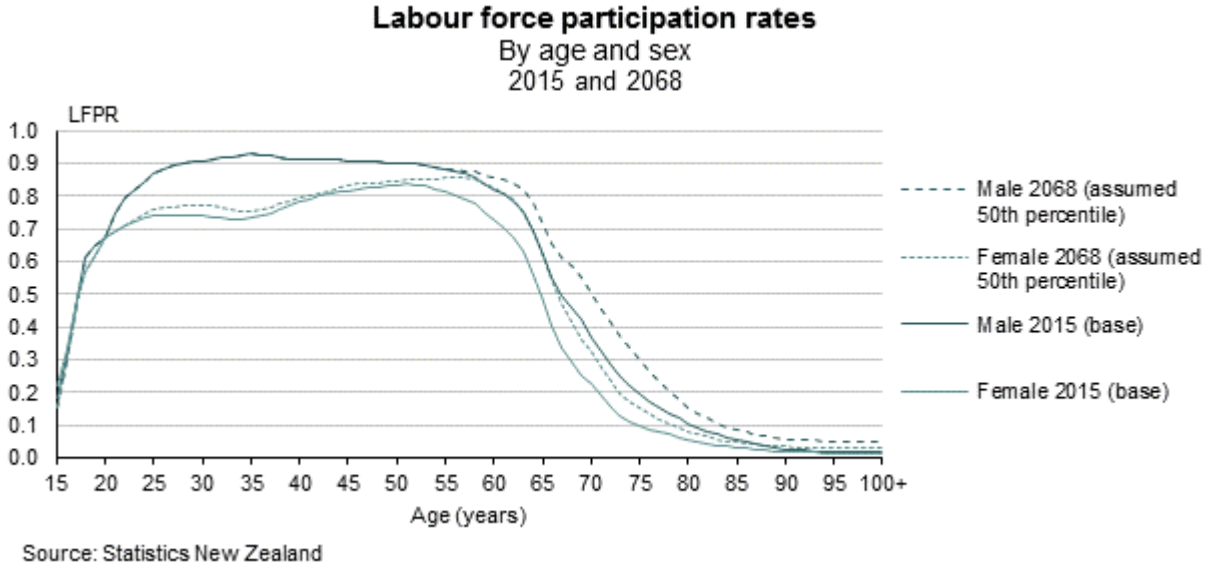
Compared with the HLFS, the 2013 Census generally indicated higher LFPRs for males and females at ages 65+ years. The 2013 Census also indicated lower LFPRs for males at ages 25–54 years.

LFPR assumptions are formulated by single year of age and sex, and for each projection year including the base year. Important considerations in formulating LFPR assumptions are:

- comparability of LFPRs across age (eg consistency between adjacent ages)
- comparability of LFPRs across projection period (eg consistency between adjacent years)
- comparability of male and female LFPRs at each age and each projection year
- plausibility of LFPRs (eg $0 \leq \text{LFPRs} \leq 1$).

The main features of the median LFPR assumptions between 2015 and 2068 are:

- increases in LFPRs for males and females aged 56+ years, especially for males aged 62–79 years and females aged 56–75 years, reflecting increased flexibility in the age of retirement (with no compulsory age of retirement), changing attitudes to retirement, and increasing life expectancy and well-being in the older ages.
- small increases in LFPRs for females aged 23–55 years, partly reflecting declines in completed family size and increases in childlessness.
- small decreases in LFPRs for males and females aged 15–17 years, partly reflecting increasing rates of participation in tertiary education.
- static LFPRs for males and females at other ages.



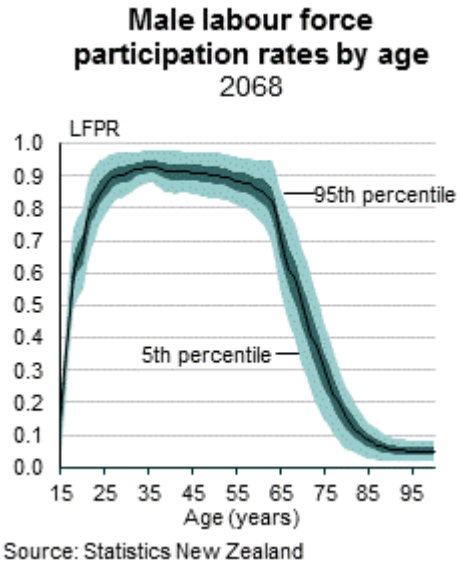
Future labour force participation trends are uncertain and depend on a range of factors.

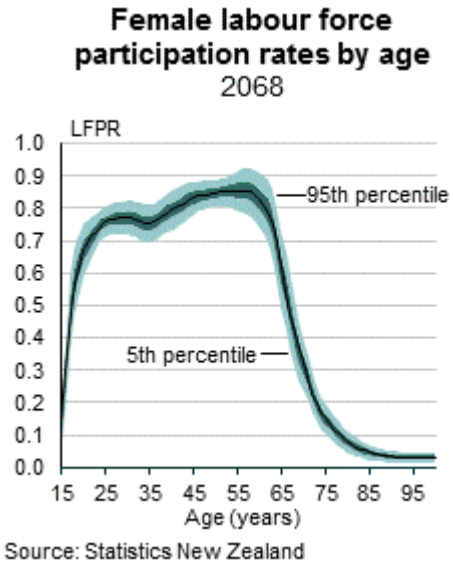
- Changes in population composition and different trends in population subgroups (including ethnic groups).
- Trends in fertility including the timing and number of births.
- Trends in the patterns of education (especially tertiary education) and work, including the timing, duration, and proportion of time dedicated to those activities.
- Trends in the balance between paid work, unpaid work, family, and leisure activities at different ages.
- Changing macro-level conditions (eg global and national economic conditions, government policies) that affect the labour market and demand for labour.
- Trends in health and mortality, affecting well-being and life expectancy, especially at ages above 50 years.
- Changes in financial considerations, including eligibility for government superannuation, especially at ages above 60 years.

Simulations of LFPRs are produced in two steps:

1. Simulations of average working life (AWL) – in this case the sum of LFPRs over ages 15–79 years, by sex – 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 0.515 for males and 0.341 for females. The standard deviations are derived by fitting an autoregressive integrated moving average or ARIMA (0,1,0) model to annual AWL by sex for June years 1986–2015. The drift function shifts the median of the AWL simulations to follow the assumed median AWL.
2. The median and standard error for LFPRs by age-sex are formulated for each projection year from historical data. These LFPRs by age-sex are scaled to each AWL simulation.

In this method LFPR simulations are correlated across age-sex (ie if LFPRs are high, they are high at all ages for both males and females), but vary randomly from year to year.





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

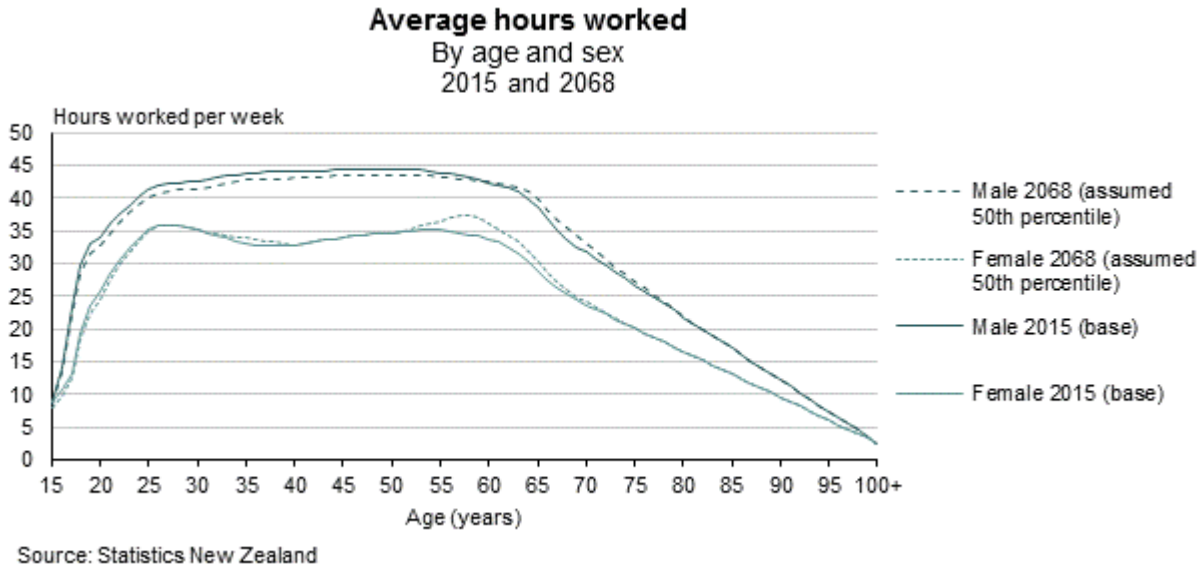
Average hours worked

Average hours worked (AHW) measures the extent to which the labour force is available for work. As with LFPRs, AHW differs significantly across age for both males and females. Assumed AHW are formulated from analysis of trends in the Census of Population and Dwellings and the Household Labour Force Survey (HLFS) based on average hours worked by those working. People in the labour force who are not working are assumed to be available for work to the same extent as those working.

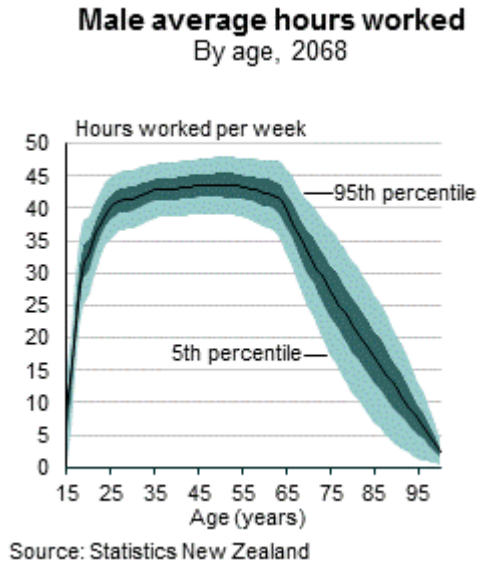
Simulations of AHW by age-sex are produced in two steps:

1. Simulations of total hours workable (THW) – in this case the sum of AHW over ages 15–79 years, by sex – 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 31.6 for males and 39.4 for females. The standard deviations are derived by fitting an autoregressive integrated moving average or ARIMA (0,1,0) model to annual THW by sex for June years 1987–2015. The drift function shifts the median of the THW simulations to follow the assumed median THW.
2. The median and standard error for AHW by age-sex are formulated for each projection year from historical data. These AHW by age-sex are scaled to each THW simulation.

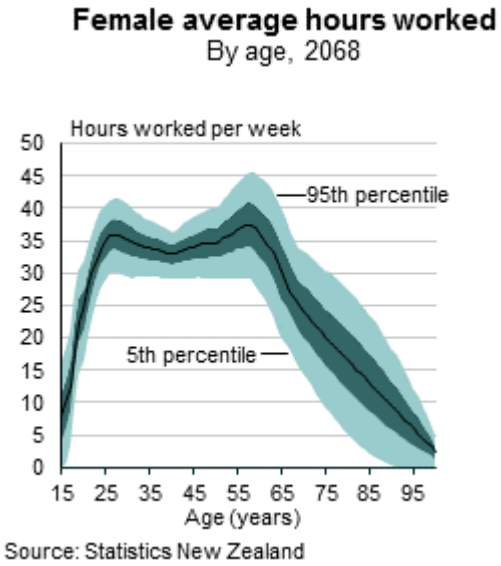
In this method AHW simulations are correlated across age-sex (ie if AHW is high, it is high at all ages for both males and females), but vary randomly from year to year.



Source: Statistics New Zealand



Source: Statistics New Zealand



Source: Statistics New Zealand

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

Which projection should I use?

The projections are summarised by percentiles, which indicate the probability distribution for any projected characteristic. Users can make their own judgement as to which projections are most suitable for their purposes. At the time of release, the 50th percentile (or median) indicates an estimated 50 percent chance that the actual result will be lower, and a 50 percent chance that the actual result will be higher, than this percentile. The 25th percentile indicates an estimated 25 percent chance that the actual result will be lower, and a 75 percent chance that the actual result will be higher, than this percentile. It is important to note, however, that the estimates of uncertainty are themselves uncertain.

General information

Method

Population

The 'cohort component' method was used to derive the population projections. Using this method, the base population is projected forward by calculating the effect of deaths and migration within each age-sex group (or cohort) according to the specified mortality and migration assumptions. New birth cohorts are added to the population by applying the specified fertility assumptions to the female population of childbearing age.

The stochastic approach involves creating 2,000 simulations for the base population, births, deaths, and net migration, and then combining these using the cohort component method.

Labour force

The labour force projections are derived by multiplying the projected population by the assumed labour force participation rates, by single year of age and sex. Stochastic labour force projections are derived by applying the 2,000 simulations of labour force participation rates to the 2,000 simulations of the population.

The labour force by total hours workable projections are derived by multiplying the projected labour force by the assumed average hours workable, by single year of age and sex. Stochastic labour force by total hours workable projections are derived by applying the 2,000 simulations of average hours workable to the 2,000 simulations of the labour force.

Nature of projections

These projections are not predictions. The projections 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 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. These projections are based on assumptions about future fertility, mortality, and migration patterns of the population combined with assumptions about future labour force participation and hours worked. 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.

Accuracy

The accuracy of these projections is unknown at the time of release. An evaluation of previous national and subnational population projections over the period 1991–2006 is available in How accurate are population projections? An evaluation of Statistics New Zealand population projections, 1991–2006.

Confidentiality

Data is combined from many sources to produce labour force projections. Therefore, it is not possible to identify individuals in our published statistics. The published statistics are also aggregated (eg to larger geographical areas), while data is also rounded to avoid conveying spurious levels of precision.

More information

Detailed projection results are available from NZ.Stat.

See Demographic projections in DataInfo+, which includes information about methods and assumptions.

Statistics in this release have been 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.

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Tables

See the following table in the ‘Downloads’ box on this page. If you have problems viewing the file, see opening files and PDFs.

1. Summary of New Zealand labour force projections, 2015(base)–2068

Access more 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 the following tables:

- National labour force projections, by age and sex, 2015(base)–2068
- National labour force projections, characteristics, 2015(base)–2068

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

Next release

Updated demographic projections, including *National Labour Force Projections,* will be released from late 2016 to 2017.