

National Ethnic Population Projections: 2013(base)–2038

Embargoed until 10:45am – 21 May 2015

Key facts

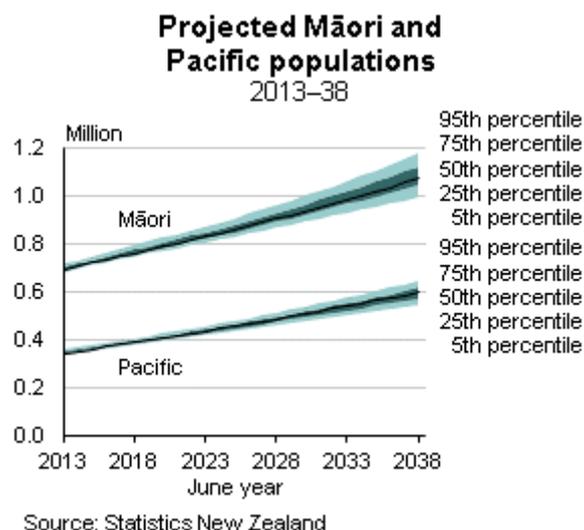
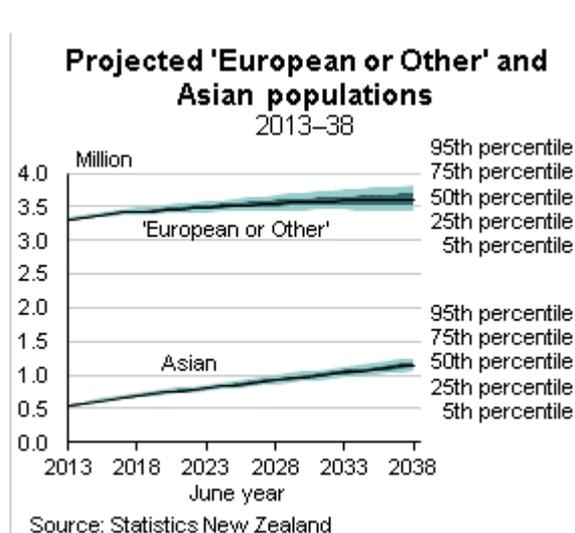
National ethnic population projections indicate New Zealand's future population for four broad and overlapping ethnic groups.

The projections indicate a 90 percent chance that New Zealand's:

- 'European or Other' population (3.31 million in 2013) will increase to 3.43–3.62 million in 2025 and to 3.43–3.82 million in 2038.
- Māori population (0.69 million in 2013) will increase to 0.83–0.91 million in 2025 and to 1.00–1.18 million in 2038.
- Asian population (0.54 million in 2013) will increase to 0.81–0.92 million in 2025 and to 1.06–1.26 million in 2038.
- Pacific population (0.34 million in 2013) will increase to 0.44–0.48 million in 2025 and to 0.54–0.65 million in 2038.

The projections also indicate:

- The Māori, Asian, and Pacific populations will continue to grow faster than New Zealand's population overall, so will increase their share of the total population.
- The number of people identifying with Asian ethnicities is likely to exceed the number identifying with the Māori ethnicity from the mid-2020s.
- All four ethnic populations will age, with increasing numbers and proportions of their populations at the older ages.



Liz MacPherson, Government Statistician
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Important advice for using these projections

National ethnic population projections indicate the future population usually living in New Zealand for four broad and overlapping ethnic groups: 'European or Other (including New Zealander)', Māori, Asian, and Pacific. New Zealand's ethnic populations are not mutually exclusive because people can and do identify with more than one ethnicity. People are included in each ethnic population they identify with.

The projections indicate probable outcomes based on different combinations of fertility, mortality, migration, and inter-ethnic mobility assumptions. Users can make their own judgement as to which projections are most suitable for their purposes.

These projections are not predictions. 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.

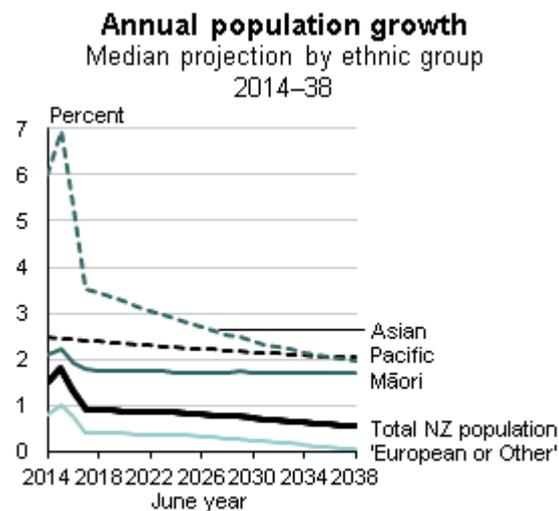
At the time of release, the median projection (50th percentile) indicates an estimated 50 percent chance the actual value will be lower, and a 50 percent chance the actual value will be higher, than this percentile. Other percentiles indicate the distribution of values (eg projection results or assumptions). For example, the 25th percentile indicates an estimated 25 percent chance the actual value will be lower, and a 75 percent chance 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.

The following results highlight the main trends from the projections.

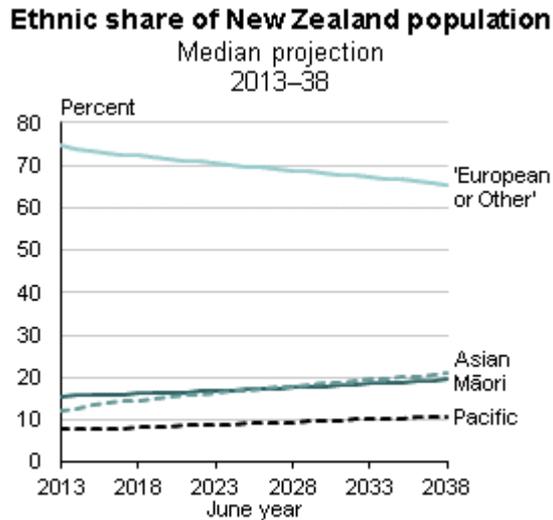
See [population projections tables](#) for links to more detailed projection assumptions and results in NZ.Stat.

Population growth expected across all ethnic groups

All four ethnic populations are projected to grow between 2013 and 2038. Relatively high population growth is expected between 2013 and 2018, due to high levels of net migration from high levels of arrivals and low levels of departures. In the longer term (2018–38), growth is likely to slow due to lower levels of net migration and the gradual ageing of the ethnic populations.



Source: Statistics New Zealand



Source: Statistics New Zealand

Increasing Māori, Asian, and Pacific shares of the population

The Māori, Asian, and Pacific populations will all increase their share of the total New Zealand population over the projection period because of their higher growth rates. From the median projection, the:

- Māori population will make up 19.5 percent of the total New Zealand population in 2038, compared with 15.6 percent in 2013
- Asian population will make up 20.9 percent, compared with 12.2 percent in 2013
- Pacific population will make up 10.9 percent, compared with 7.8 percent in 2013
- 'European or Other' population will make up 65.6 percent, compared with 74.6 percent in 2013.

In addition, about 1 percent of New Zealand's population identified with Middle Eastern, Latin American, or African ethnicities in 2013. Projections are unavailable of this small, albeit growing, ethnic group with an estimated resident population of 53,000 at 30 June 2013.

The percentages do not sum to 100 percent because people can and do identify with multiple ethnicities. People are included in each of the ethnic groups they identify with. Projected ethnic shares for broad age groups are included in table 2 of the downloadable Excel file in the 'Downloads' box on our website.

Different drivers of ethnic growth

The different rates of population growth largely reflect past and likely future differences in fertility, the effect of intermarriage, different age structures, and different migration patterns.

Māori and Pacific population growth will be mainly driven by their high rates of birth and natural increase (births minus deaths). During 2012–14, their total fertility rates were 2.5 and 2.7 births per woman, respectively. By comparison, the 'European or Other' and Asian rates were 1.9 and 1.7 births per woman, respectively. The overall New Zealand total fertility rate was 2.0 births per woman in 2012–14. (See [age-specific fertility rates for the major ethnic groups](#).)

Ethnic intermarriage (parents with different ethnicities) also makes an important contribution to Māori and Pacific population growth. In about one-quarter of Māori births (ie where the child is identified as Māori), the mother is non-Māori and the father is Māori. Similarly, in about one-quarter of Pacific births (ie where the child is identified as Pacific), the mother is non-Pacific and the father is Pacific.

In addition, the Māori, Asian, and Pacific populations have a much younger age structure, with relatively high proportions at the child and childbearing ages, and low proportions at the older ages. These age structures provide greater built-in momentum for future growth compared with the 'European or Other' population. Half the 'European or Other' population is aged over 41 years, compared with median ages of 24, 31, and 22 years for the Māori, Asian, and Pacific populations, respectively, in 2013.

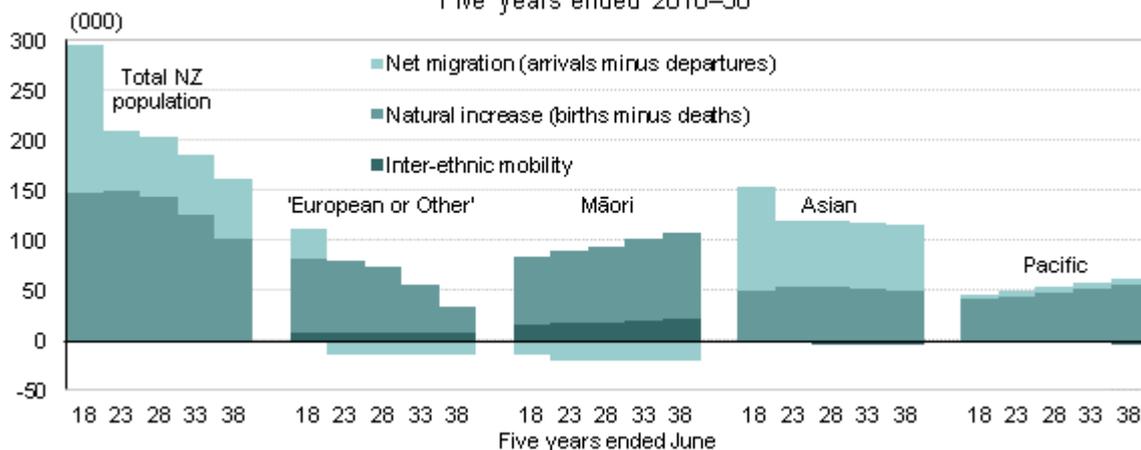
The increase in the Asian population share will be largely driven by net migration (arrivals minus departures). The median projection assumes a net inflow of about 360,000 migrants over the 25-year period. Natural increase will account for about 260,000 (two-fifths) of the projected Asian population growth.

In contrast, the projected lower 'European or Other' population growth largely reflects the combination of lower fertility rates and an older age structure. The increasingly older age structure means fewer births (because fewer women will be in the childbearing ages), more deaths (because more people will be in the older ages where most deaths occur), and lower momentum for future population growth compared with the Māori and Pacific populations.

In summary, natural increase is projected to be the main component of population growth for the 'European or Other', Māori, and Pacific populations during 2013–38. Net migration plays a more important role in the projected growth of the Asian population, while inter-ethnic mobility plays a relatively minor role for all ethnic populations.

Components of population change

Median projection by ethnic group
Five years ended 2018–38



Source: Statistics New Zealand

Deaths increasing faster than births

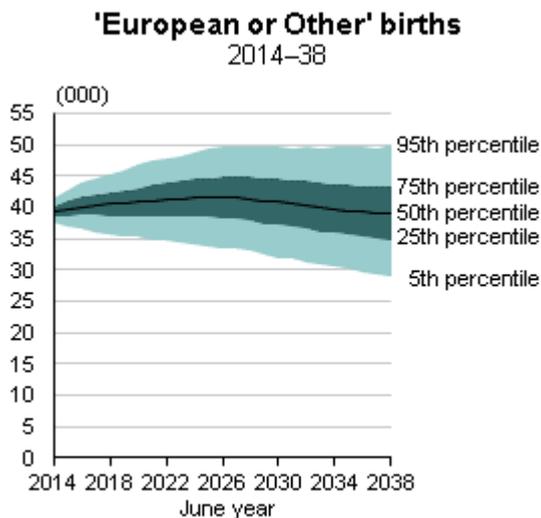
Deaths are projected to increase for all ethnic groups despite assumed lower death rates and increasing life expectancy. This increase reflects more people reaching the older ages where most deaths occur. In 2014, 90 percent of deaths in New Zealand occurred at ages 55 years and over.

More Māori, Asian and Pacific births can also be expected, although the number of 'European or Other' births is likely to remain more stable. These birth trends largely reflect trends in the number of women of childbearing age in each ethnic population.

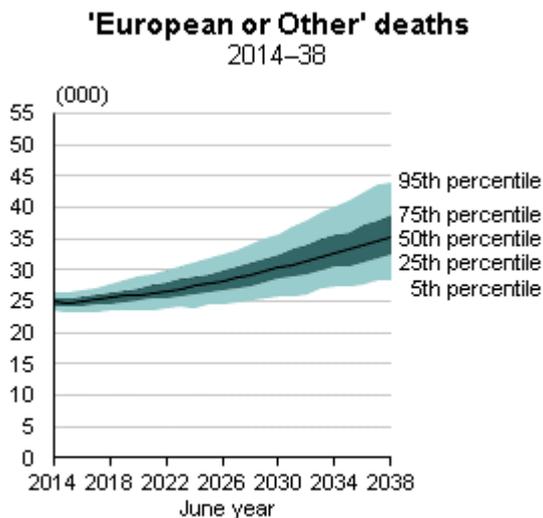
There is much more uncertainty in the future number of births than deaths. This uncertainty is because trends in age-specific fertility rates are less certain than trends in age-specific death rates. Also, future birth numbers depend on the number of women of childbearing age – which is affected by migration and future births – as well as fertility rates.

The net difference between births and deaths – natural increase – is likely to rise for the Māori and Pacific populations. The median projection sees Māori natural increase rising from over 13,000 in 2014 to over 17,000 a year in the late 2030s. Pacific natural increase will rise from 8,000 to over 11,000 a year over the same period.

The median projection sees Asian natural increase rising from 9,000 in 2014 to 10,000–11,000 a year during the period 2016–38. 'European or Other' natural increase will average 15,000 a year during 2014–18, but will fall sharply after the mid-2020s as births decrease and deaths increase. By the late 2030s, 'European or Other' natural increase will fall to 4,000 a year. There is roughly a 1 in 3 chance that 'European or Other' deaths will exceed 'European or Other' births – natural decrease – by the late 2030s.

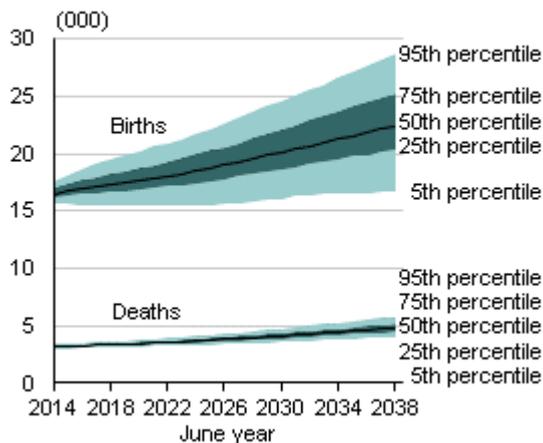


Source: Statistics New Zealand



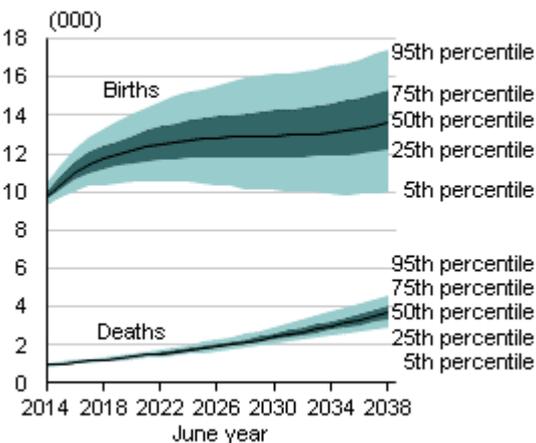
Source: Statistics New Zealand

Māori births and deaths
2014–38



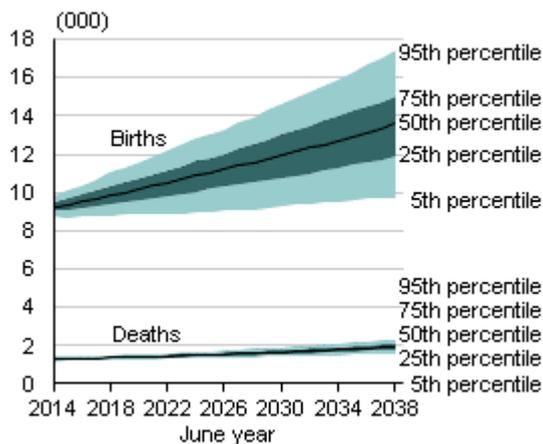
Source: Statistics New Zealand

Asian births and deaths
2014–38



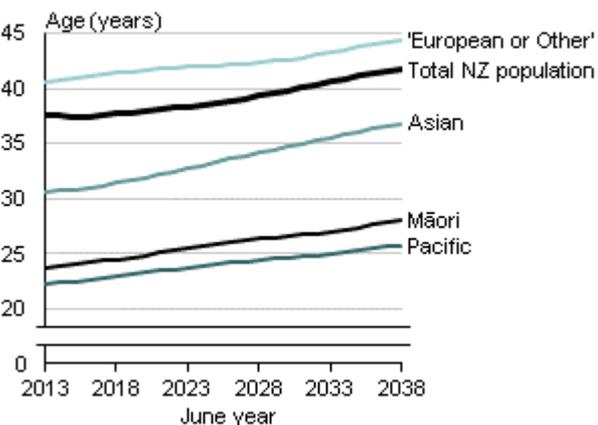
Source: Statistics New Zealand

Pacific births and deaths
2014–38



Source: Statistics New Zealand

Median age of population
Median projection by ethnic group
2013–38



Source: Statistics New Zealand

All ethnic populations are ageing

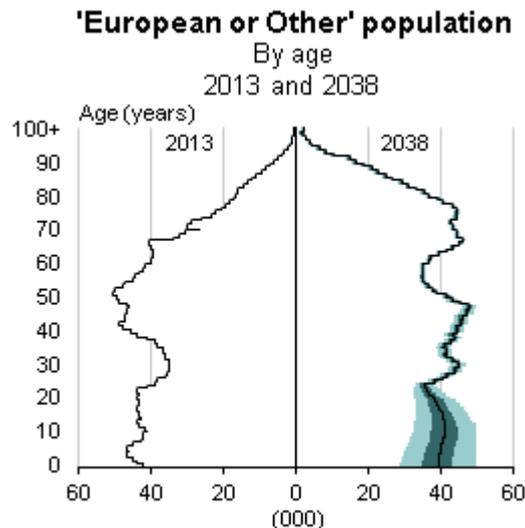
The projections indicate with relative certainty that all four ethnic populations will gradually age over the coming decades. Increasing numbers and proportions of people in the older ages reflect the combined effect of gradually reducing fertility rates – people having fewer children – and people living longer.

However, the Māori and Pacific populations will continue to have a much younger age structure than the total New Zealand population because of their higher birth rates. Half the Māori population will be older than 28 years in 2038, compared with 24 years in 2013. Half the Pacific population will be older than 26 years in 2038, compared with 22 years in 2013.

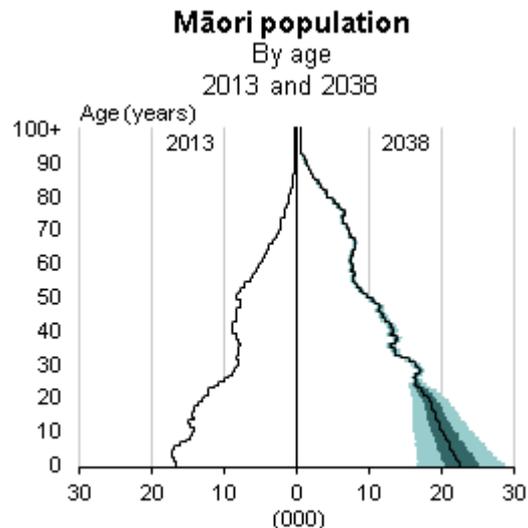
The Asian population will also continue to have a younger age structure than the overall New Zealand population, mainly due to immigration (which is concentrated in ages 14–29 years). Half the Asian population will be older than 37 years in 2038, compared with 31 years in 2013.

The 'European or Other' population will age further, with the median age rising from 41 years in 2013 to 44 years in 2038. The median age of the total New Zealand population is projected to rise from 38 years to 42 years over the same period.

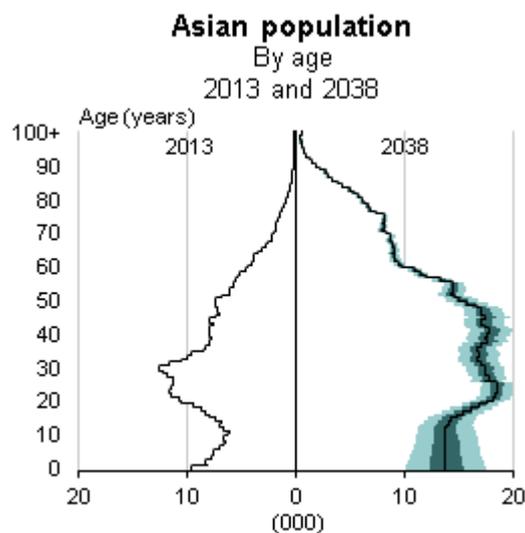
Projections of the population aged 50 years and over have more certainty than projections of the population aged under 50 years. All those aged 50+ throughout the projection period are already alive, so only deaths and migration can affect their future number. Death rates at all ages have trended downward over a long period of time, while migration plays a relatively small role at these ages. In contrast, the fertility and migration components are more uncertain and both directly affect the population at younger ages.



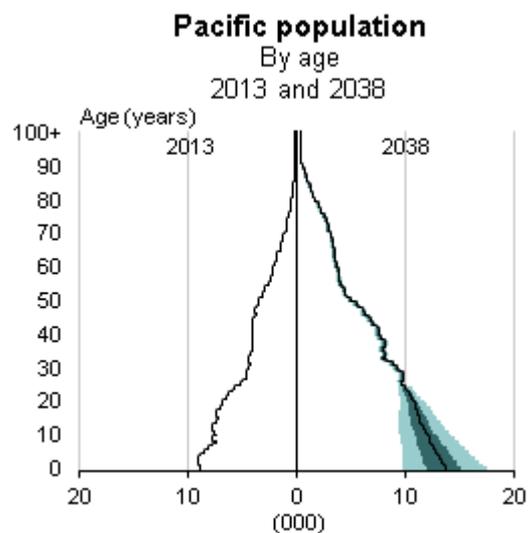
Source: Statistics New Zealand



Source: Statistics New Zealand



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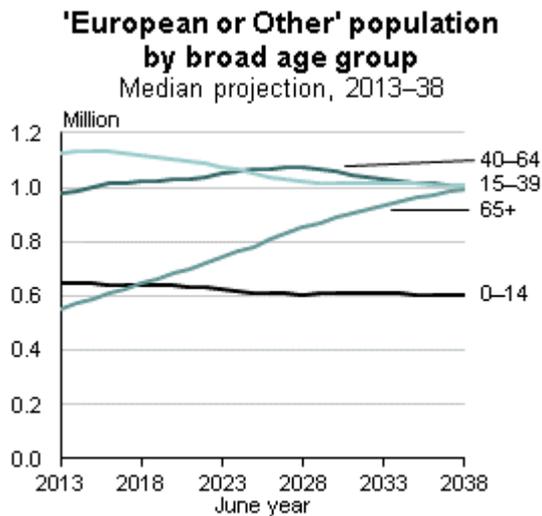
Source: Statistics New Zealand

Note: Percentiles shown for 2038 are, left to right, 5th, 25th, 50th, 75th, and 95th.

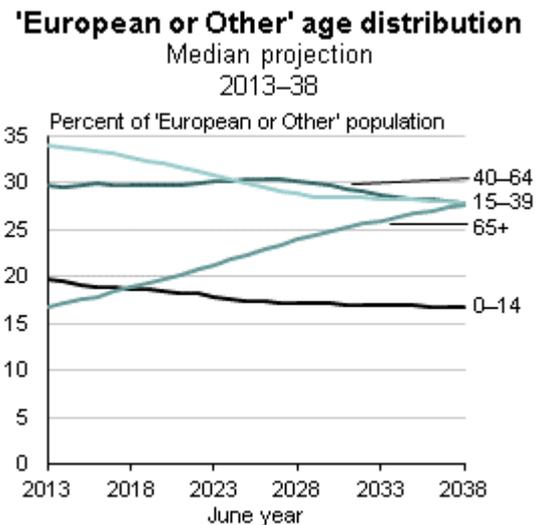
Changes in age structures

The projections indicate gradual changes in the age structure of all four ethnic populations. Perhaps most strikingly, the number of people aged 65 years and over (65+) identifying with a

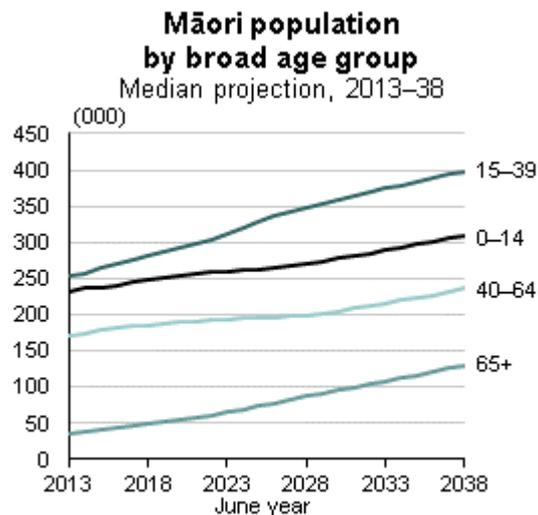
'European or Other' ethnicity is set to reach 1 million by the late 2030s – the same number as in each of the broad working-age groups – 15–39 and 40–64 years. The median projection indicates 28 percent of the 'European or Other' would be in each of those three broad age groups, with just 17 percent aged 0–14 years.



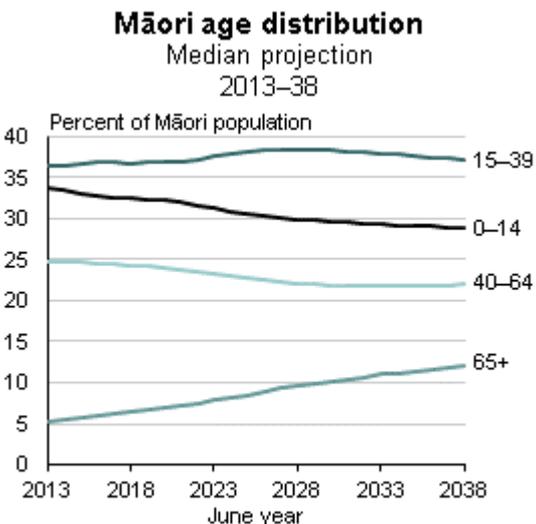
Source: Statistics New Zealand



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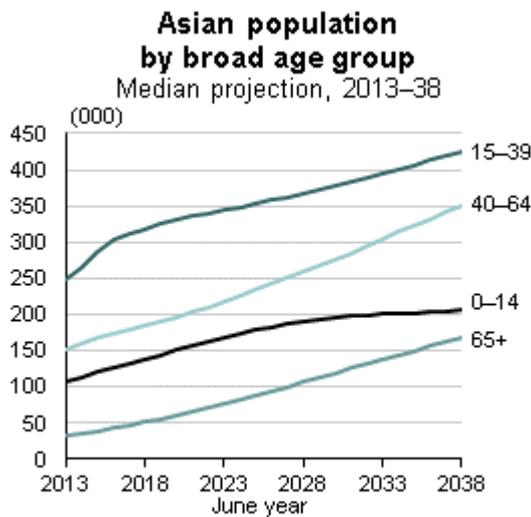
Smaller share in the youngest age group

The projections indicate a reduction in the proportion of the population aged 0–14 years across all four ethnic groups. However, the number of Māori, Asian, and Pacific children (aged 0–14 years) is likely to increase, in contrast to the number of 'European or Other' children. These trends reflect current and future assumed fertility rates, as well as the gradual ageing of the populations.

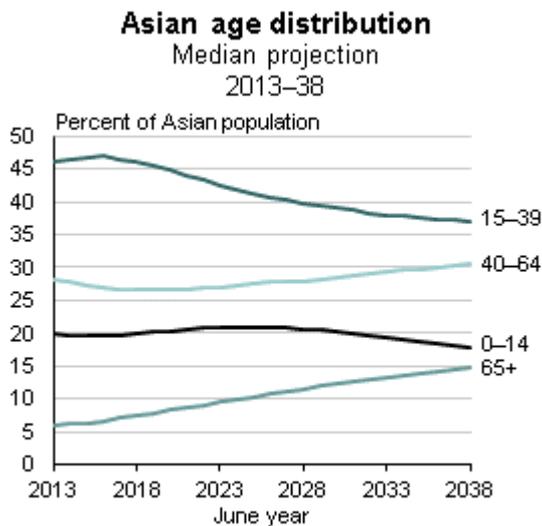
These changes will result in further changes in ethnic composition. The median projection indicates that of all New Zealand children (aged 0–14 years):

- 'European or Other' children will make up 63.2 percent in 2038, compared with 71.6 percent in 2013.
- Māori children will make up 32.6 percent in 2038, compared with 25.6 percent in 2013.
- Asian children will make up 21.6 percent in 2038, compared with 11.9 percent in 2013.
- Pacific children will make up 19.6 percent in 2038, compared with 13.4 percent in 2013.

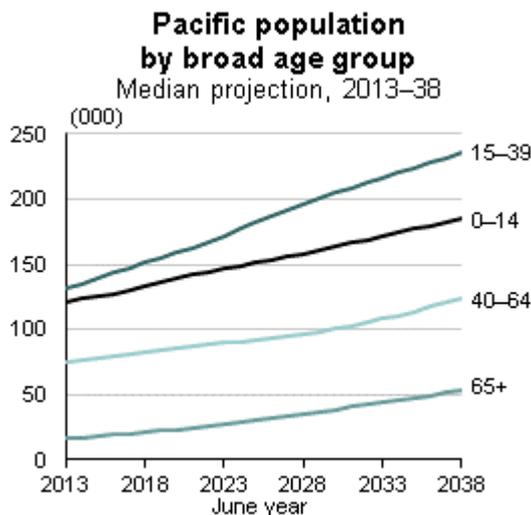
The level of ethnic overlap is particularly significant among children, reflecting the incidence of multiple ethnicity. At the 2013 Census, 23 percent of children identified with more than one ethnicity (20 percent in 2006), compared with 11 percent of the population overall (10 percent in 2006). Among birth registrations in 2012–14, 31 percent of children were registered with more than one ethnicity.



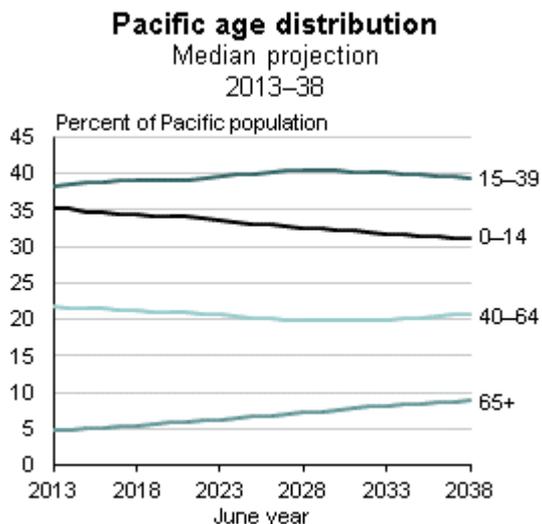
Source: Statistics New Zealand



Source: Statistics New Zealand



Source: Statistics New Zealand



Source: Statistics New Zealand

Fastest growth at older ages

The number of older people in all ethnic groups is projected to increase significantly. This will see an increasing proportion of all ethnic populations aged 65+ years. Within that age group, the number and proportion of people aged 85+ will also increase.

The New Zealand population aged 65+ comprises mainly 'European or Other' people. In 2013, this ethnic group's share was 88.3 percent. The median projection indicates this will drop to 77.5 percent in 2038 despite a substantial increase in number. In contrast, the Māori, Asian, and Pacific shares are all projected to increase. By 2038, the Māori share will be 10.1 percent (up from 5.8 percent in 2013), the Asian share 13.1 percent (up from 5.1 percent), and the Pacific share 4.1 percent (up from 2.6 percent).

The level of ethnic overlap is less significant among older people, although there is an increasing incidence of multiple ethnicity overall. At the 2013 Census, 3 percent of people aged 65+ identified with more than one ethnicity (4 percent in 2006), compared with 11 percent of the population overall (10 percent in 2006).

For more detailed data, see the Excel tables in the 'Downloads' section.

More information about ethnic populations, multiple ethnicity, and birthplace

The 2013 Census asked people "Which ethnic group do you belong to? Mark the space or spaces which apply to you." The census usually resident population count of 4,242,048 included 230,649 people without an ethnic response and 4,011,399 people who identified with at least one ethnicity:

- 3,030,051 people with a 'European' or 'Other' ethnicity
- 598,605 with the Māori ethnicity
- 471,708 with an Asian ethnicity
- 295,941 with a Pacific ethnicity
- 46,953 with a Middle Eastern/Latin American/African (MELAA) ethnicity.

'European' or 'Other'

Of the 3,030,051 people who identified with a 'European' or 'Other' ethnicity:

- 2,969,391 identified with a 'European' ethnicity, including New Zealand European 2,727,009; English 38,913; Dutch 28,503; South African not elsewhere classified 28,656; Australian 22,470; Scottish 14,412; Irish 14,193; and German 12,810.
- 67,752 identified with an 'Other' ethnicity, including New Zealander 65,973.
- 2 percent (53,208) identified with more than one 'European or Other' ethnicity (eg Irish and New Zealander).
- 12 percent (362,838) identified with ethnicities outside the 'European or Other' group.
- 83 percent (2,500,602) of those who stated a birthplace were born in New Zealand, and 11 percent (330,867) were born in Europe (including the United Kingdom).

Māori

Of the 598,605 people identifying with Māori ethnicity:

- 54 percent (320,409) identified with at least one other ethnicity.
- 98 percent (579,639) of those who stated a birthplace were born in New Zealand.

Asian

Of the 471,708 people identifying with an Asian ethnicity:

- The number identifying with Chinese ethnicities was 171,411 (including 5,715 people identifying with Taiwanese ethnicity); Indian ethnicities 155,178 (including 10,929 with Fijian-Indian); Filipino 40,350; Korean 30,171; Japanese 14,118; Sri Lankan/Sinhalese 11,274; Cambodian 8,601; Thai 8,052; Vietnamese 6,660; Malay 4,794; and Indonesian 4,137.
- 2 percent (7,563) identified with more than one Asian ethnicity (eg Chinese and Indian).
- 9 percent (40,579) identified with ethnicities outside the Asian group.
- 23 percent (105,726) of those who stated a birthplace were born in New Zealand, and 66 percent (306,201) were born in Asia.

Pacific

Of the 295,941 people identifying with a Pacific ethnicity:

- The number identifying with Samoan was 144,138; Cook Island ethnicities 61,842; Tongan 60,336; Niuean 23,883; Fijian 14,445; and Tokelauan 7,176.
- 9 percent (25,356) identified with more than one Pacific ethnicity (eg Samoan and Tongan).
- 32 percent (95,622) identified with ethnicities outside the Pacific group.
- 62 percent (181,791) of those who stated a birthplace were born in New Zealand, and 37 percent (108,108) were born elsewhere in Oceania (including Australia).

See [2013 Census QuickStats about culture and identity](#), [2013 Census totals by topic](#), and [information about the ethnicity variable](#) for more information from the 2013 Census.

Definitions

About national ethnic population projections

National ethnic population projections indicate the future population usually living in New Zealand for four broad and overlapping ethnic groups: 'European or Other (including New Zealander)', Māori, Asian, and Pacific. Each ethnic population consists of all people who identify with ethnicities within that ethnic group. People who identify with more than one ethnicity are included in each ethnic population they identify with.

How ethnic population projections are used

Ethnic population projections contribute to an understanding of New Zealand's changing demography. Local and ethnic communities use them to understand their changing populations. They are used in planning and policy-making in areas such as health and education. For example, changes in the number and proportion of people at different ages can have implications for future need for services.

Definition of terms

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

Base population: the starting population for the projections.

Estimated resident population: an estimate of all people who usually live in New Zealand at a given date. It excludes visitors from overseas. 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).

Ethnicity: the ethnic group or groups that people identify with or feel they belong to. Ethnicity is self-perceived and people can identify with more than one ethnicity. Ethnicity is different from ancestry, birthplace, and nationality. For example, people can identify with Māori ethnicity even though they may not be descended from a Māori ancestor. Conversely, people may choose to not identify with Māori ethnicity even though they are descended from a Māori ancestor.

See [Review of the measurement of ethnicity](#) or the [ethnicity classification](#) for more information about ethnicity including information about the Statistical Standard for Ethnicity 2005.

'European or Other (including New Zealander)': includes people who belong to the 'European' or 'Other' ethnicity groups. People who belong to both groups are only counted once. Almost all people in the 'Other' ethnicity group belong to the New Zealander sub-group.

Separate projections are not available for the 'European' or for the 'Other (including New Zealander)' ethnic groups. This is because sufficient demographic data is available to derive projections for the combined ethnic grouping, but not for the separate ethnic groups. This approach is consistent with [Guidelines for using ethnicity data: 2006 Census](#).

Inter-ethnic mobility: people changing their ethnic identification over time. This may reflect a person's cultural affiliations changing over time. Or it may occur when different people respond to the ethnicity question. For example, the ethnicity of babies and young children is usually identified by their parents. However, in a later census when these children are old enough to complete their own forms, they decide which ethnicity they identify with. This may differ from the ethnicity identified by their parents. Inter-ethnic mobility can also occur when different ethnicities are reported for a person in different collections (eg birth registrations, death registrations, census).

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: half the population is younger, and half the population is older, than this age.

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

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 population aged 15–39 and 40–64 years cannot be added together to give the equivalent percentile for the population 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 a population based on an assessment of past trends and assumptions about the future course of demographic behaviour (eg fertility, mortality, migration).

Resident population concept: a statistical basis for a population in terms of those who usually live in a given area at a given time. For example, the 'estimated resident population' of New Zealand is an estimate of all people who usually live in New Zealand at a given date, including New Zealand residents who are temporarily overseas, but excluding visitors from overseas.

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

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. The total fertility rate for the year 2014 is based on age-specific fertility rates in that year, and takes no account of changes in age-specific fertility rates after that year.

Total paternity rate (period): the average number of live births that men would have during their life if they experienced the age-specific paternity rates of a given period. In these ethnic population projections, it specifically refers to births that men of a given ethnic group have with women not of that ethnic group. For example, the average number of live births that Māori men would have during their life with non-Māori women.

Related links

Next releases

The next *National Ethnic Population Projections* will be released in 2017.

Subnational ethnic population projections (2013-base) will be released on 30 September 2015.

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

Past releases

See National ethnic population projections – information releases for links to past releases.

Related information

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

National population projections: indicate the future 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.

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 one of the following tables:

- National ethnic population projections, by age and sex, 2013(base)–2038
- National ethnic population projections, characteristics, 2013(base)–2038
- National ethnic population projections, projection assumptions, 2013(base)–2038

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

Data quality

Period-specific information

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

- [Reference period](#)
- [Consistency with other projections](#)
- [Changes since the previous 2006-base projections](#)
 - [Stochastic projections](#)
 - [Review of assumptions](#)
- [Projection assumptions](#)
 - [Base population](#)
 - [Fertility and paternity](#)
 - [Mortality](#)
 - [Migration](#)
 - [Inter-ethnic mobility](#)
- [Which projection should I use?](#)

General information

This section contains information that does not change between releases.

- [Ethnic concept](#)
- ['European or Other \(including New Zealander\)'](#)
- [Availability of other ethnic projections](#)
- [Method](#)
- [Nature of projections](#)
- [Rounding](#)
- [Accuracy](#)
- [Confidentiality](#)
- [More information](#)

Period-specific information

Reference period

This release contains 2013-base population projections for four broad ethnic populations of New Zealand: 'European or Other (including New Zealander)', Māori, Asian, and Pacific. These supersede the updated 2006-base projections released in April 2010. The new projections have the estimated resident population of each ethnic group at 30 June 2013 as a base, and cover the period 2014–38 at one-year intervals.

Consistency with other projections

These ethnic population projections complement the projections of the total New Zealand population ([National Population Projections: 2014\(base\)–2068](#)) released on 28 November 2014. However, only the median projection (50th percentile) of the ethnic population projections and

the median projection of the national population projections are designed to be directly comparable. Other percentiles cannot be directly compared because the projection assumptions may be incompatible.

Changes since the previous 2006-base projections

Stochastic projections

For the first time, Statistics NZ has applied a stochastic (probabilistic) approach to producing ethnic population projections. This follows the application of a stochastic approach to the [national population projections](#) (2011-base and 2014-base) and [national labour force projections](#) (2006-base, August 2012 update).

Stochastic projections provide a means of quantifying demographic uncertainty, although it is important to note that the estimates of uncertainty are themselves uncertain. By modelling uncertainty in each of the projection assumptions and deriving simulations, estimates of probability and uncertainty are available for each projection characteristic. The simulations can be summarised by percentiles, with the 50th percentile equal to the median.

Review of assumptions

Deriving the projections involves a review of all projection assumptions for each ethnic group. These national ethnic population projections are updated to incorporate the latest demographic information, notably the 2014-base [national population projections](#) (released 28 November 2014), which incorporated results from the 2013 Census of Population and Dwellings and subsequent [national population estimates](#). [Birth and death registrations](#) and [international travel and migration](#) are also important data sources.

The main changes from the previous 2006-base projections (released April 2010) are:

The Pacific **base population** at 30 June 2013 is 18,000 (5.0 percent) lower than the mid-range projection released in April 2010. The 'European or Other' base population is 32,000 (1.0 percent) lower, the Māori base population is 2,000 (0.3 percent) lower, and the Asian base population is 3,000 (0.5 percent) higher than the equivalent mid-range projections at 30 June 2013.

The median **annual net migration** is assumed to be 1,000 higher for Asian in the long term (2017–38), consistent with the higher levels assumed in recent national population projections. In the short term (2014–16), the median net migration assumptions are higher than the long-term levels for 'European or Other', Māori, and Asian.

The **inter-ethnic mobility** assumptions are based on new analysis from linking individuals in the [New Zealand Longitudinal Census](#) and observed net changes in ethnic identification. In a reversal from previous ethnic projections, Māori are now assumed to gain people through inter-ethnic mobility in the median assumption, although this gain is partly offset by lower net migration over the projection period.

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. The 'National ethnic population projections, projection assumptions, 2013(base)–2038' table in [NZ.Stat](#) provides a summary of the assumptions for each ethnic group.

Base population

These projections have as a base the estimated resident population of each ethnic group at 30 June 2013. This population was based on the census usually resident population count of each ethnic group at 5 March 2013 with adjustments for:

- non-response to the census ethnicity question
- net census undercount
- residents temporarily overseas on census night
- births, deaths, and net migration between census night (5 March 2013) and 30 June 2013
- reconciliation with demographic estimates at ages 0–9 years.

The 'Estimated resident population (ERP), adjustments to derive ERP at 30 June 2013 (from census usually resident population)' table in [NZ.Stat](#) provides a summary of the ERP and adjustments to derive ERP at 30 June 2013 for each ethnic group.

The ERP is the best available measure of the number of people of each ethnic group 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 arise 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').

For each ethnic group, 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 and paternity

New birth cohorts are added to the population by applying fertility assumptions to the female population of childbearing age (12–49 years) and paternity assumptions to the male population (15–54 years). The paternity rates allow for births that men of a given ethnic group have with women not of that ethnic group. The assumptions are formulated relative to those in the [National Population Projections: 2014\(base\)–2068](#) using birth registrations, period fertility rates, and census data on 'number of children born alive' (including rates of childlessness).

Total fertility rates (TFRs) are assumed to vary throughout the projection period. Under the median assumption, the TFR decreases between 2014 and 2038 for the:

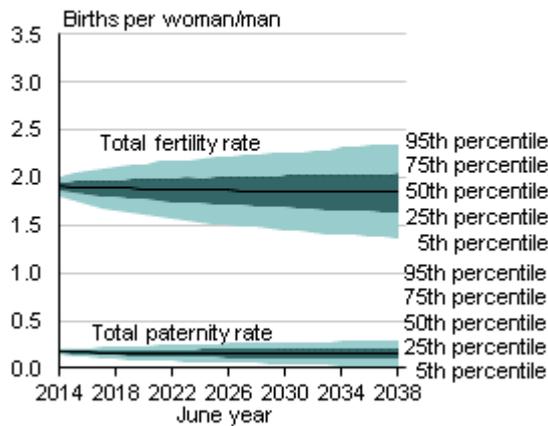
- 'European or Other' population from 1.91 to 1.85 births per woman
- Māori population from 2.47 to 2.20 births per woman
- Asian population from 1.64 to 1.60 births per woman

- Pacific population from 2.75 to 2.30 births per woman.

Age-specific fertility rates (ASFRs) are assumed to vary throughout the projection period. Under the median assumption, ASFRs decrease between 2014 and 2038 for:

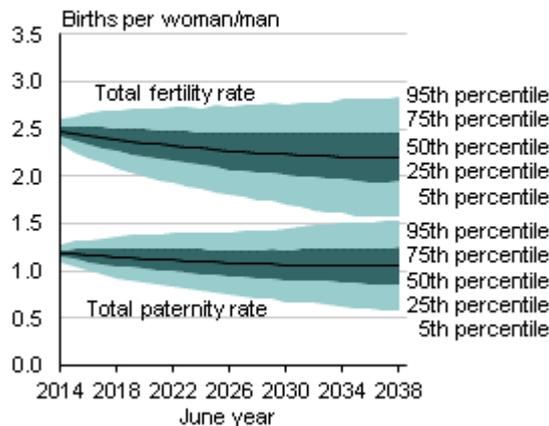
- 'European or Other' women aged under 32 years, and increase for women aged 32 years and over
- Māori women aged under 33 years, and increase for women aged 33 years and over
- Asian women aged under 33 years, and increase for women aged 33 years and over
- Pacific women aged under 37 years, and increase for women aged 37 years and over.

**Assumed 'European or Other'
total fertility and paternity rates
2014–38**



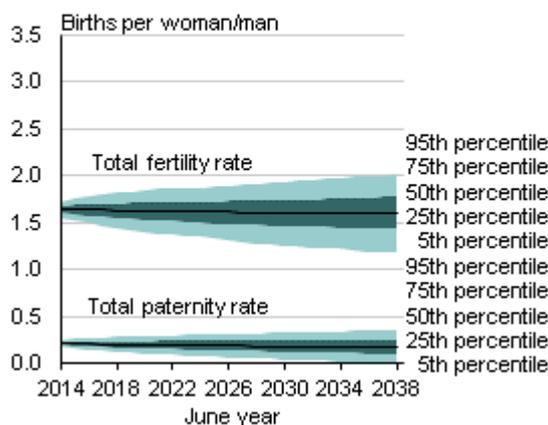
Source: Statistics New Zealand

**Assumed Māori
total fertility and paternity rates
2014–38**



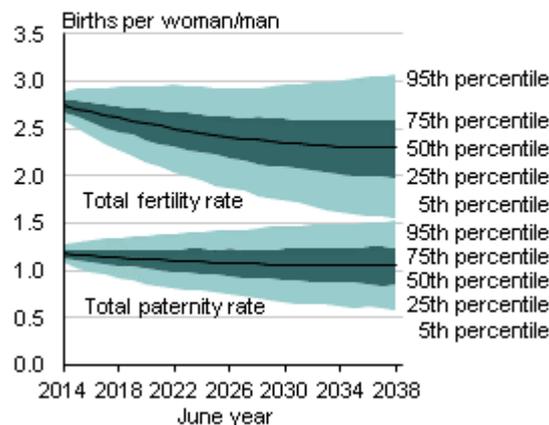
Source: Statistics New Zealand

**Assumed Asian
total fertility and paternity rates
2014–38**



Source: Statistics New Zealand

**Assumed Pacific
total fertility and paternity rates
2014–38**



Source: Statistics New Zealand

For each ethnic group, simulations of TFRs are produced using a simple random walk with drift model. Random errors are sampled from a normal distribution with a mean of zero and different standard deviations for each ethnic group: 0.06 for 'European or Other', 0.08 for Māori, 0.05 for Asian, and 0.09 for Pacific. 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.

Total paternity rates (TPRs) are assumed to vary throughout the projection period. Under the median assumption, the TPR decreases between 2014 and 2038 for the:

- 'European or Other' population from 0.14 to 0.13 births per man (with non-European and non-Other women)
- Māori population from 1.02 to 0.90 births per man (with non-Māori women)
- Asian population from 0.18 to 0.15 births per man (with non-Asian women)
- Pacific population from 1.01 to 0.90 births per man (with non-Pacific women).

Age-specific paternity rates (ASPRs) are assumed to vary throughout the projection period. Under the median assumption, ASPRs decrease between 2014 and 2038 for:

- 'European or Other' men aged under 38 years, and increase for men aged 38 years and over
- Māori men aged under 38 years, and increase for men aged 38 years and over
- Asian men aged under 42 years, and increase for men aged 42 years and over
- Pacific men aged under 37 years, and increase for men aged 37 years and over.

For each ethnic group, simulations of TPRs are produced using a simple random walk with drift model. Random errors are sampled from a normal distribution with a mean of zero and different standard deviations for each ethnic group: 0.015 for 'European or Other', 0.050 for Māori, 0.018 for Asian, and 0.050 for Pacific. The drift function shifts the median of the TPR simulations to follow the assumed median TPR. Median ASPRs are scaled to sum to the simulated TPR.

The projections allow for births to parents of each ethnic group that are not registered as children of that ethnic group. Simulations of this loss factor for each ethnic group and year are produced by drawing a random number sampled from a normal distribution with different means and standard deviations based on historical data for the December 2006–14 years for:

- 'European or Other' – a mean of 1.8 percent and standard deviation 0.21
- Māori – a mean of 4.0 percent and standard deviation 0.35
- Asian – a mean of 2.4 percent and standard deviation 0.71
- Pacific – a mean of 3.2 percent and standard deviation 0.39.

The projections then allocate births between male and female. Simulations of the sex ratio at birth for each ethnic group and year are produced by drawing a random number sampled from a normal distribution with a mean of 105.5 males per 100 females and different standard deviations for each ethnic group: 1.2 for 'European or Other', 1.4 for Māori, and 1.9 for Asian and Pacific, respectively. The mean and standard deviation are based on historical data for the December 1996–2014 years.

Future fertility trends are uncertain and depend on a range of factors:

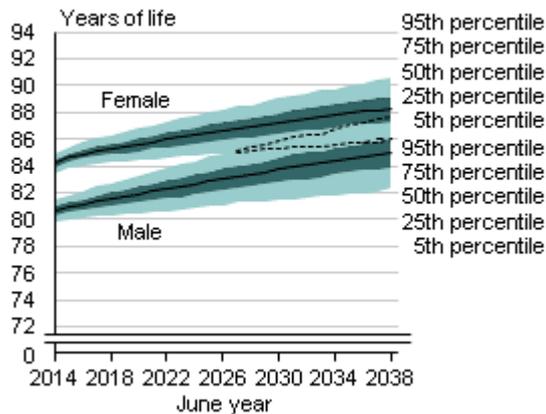
- Changes in population composition and different trends in population subgroups (including ethnic groups).
- Trends in ideal family size and the strength of individual desires for children.
- Trends in the patterns of education and work, including the timing, duration, and proportion of time dedicated to those activities.
- Changing macro-level conditions (eg government policies, childcare facilities, and housing) that influence the cost of children in a broad sense.
- Changing nature and stability of partnerships, including rates of partnership formation (including re-partnering) and dissolution.

- Changing biomedical conditions (eg female fecundity, new methods for assisted conception).

Mortality

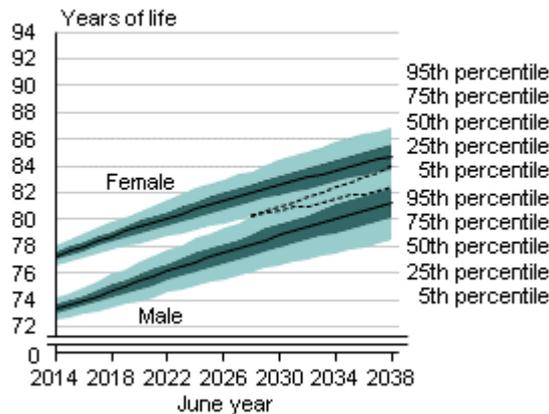
Mortality assumptions are applied to each age-sex group to allow for deaths. The assumptions are formulated relative to those in [National Population Projections: 2014\(base\)–2068](#) using death registrations and period life tables. In those national population projections, the assumptions are essentially driven by historic trends in age-sex-specific death rates.

**Assumed 'European or Other'
life expectancy at birth
2014–38**



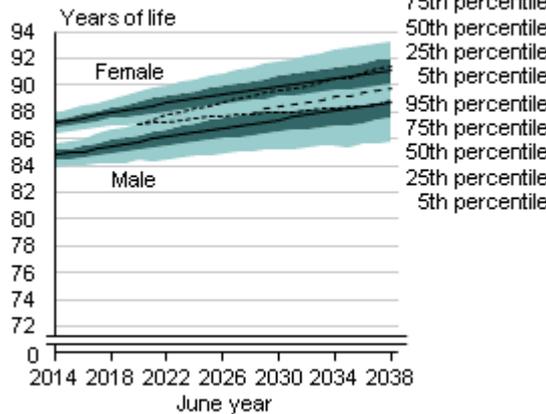
Source: Statistics New Zealand

**Assumed Māori
life expectancy at birth
2014–38**



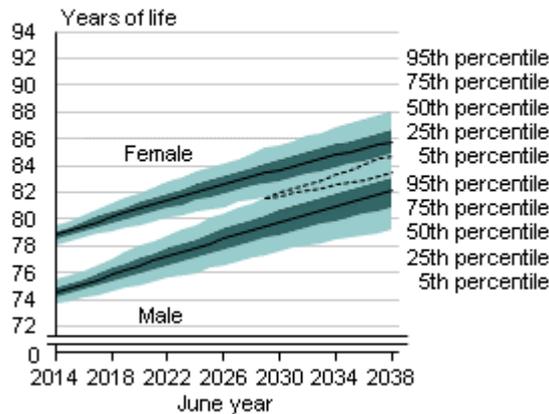
Source: Statistics New Zealand

**Assumed Asian
life expectancy at birth
2014–38**



Source: Statistics New Zealand

**Assumed Pacific
life expectancy at birth
2014–38**



Source: Statistics New Zealand

Under the median assumption, life expectancy at birth (e_0) increases between 2014 and 2038 for the:

- 'European or Other' population from 80.7 to 85.0 years for males, and from 84.2 to 88.3 years for females
- Māori population from 73.4 to 81.3 years for males, and from 77.3 to 84.7 years for females

- Asian population from 84.8 to 88.7 years for males, and from 87.2 to 91.1 years for females
- Pacific population from 74.6 to 82.1 years for males, and from 78.8 to 85.8 years for females.

As with the national population projections, death rates change at different rates at different ages, and age-specific survivorship rates (ASSRs) are assumed to vary throughout the projection period.

For each ethnic group, simulations of e_0 are produced using a simple random walk with drift model. Random errors are sampled from a normal distribution with a mean of zero and standard deviations for each ethnic group which are twice that implicitly assumed for the total New Zealand males and females in each year. The drift function shifts the median of the e_0 simulations to follow the assumed median e_0 . Median ASSRs are scaled to sum to the simulated e_0 .

Although mortality reductions are expected to continue in the future, the extent of the trends is uncertain and depends on a range of 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 (eg smoking, exercise, diet).
- Changes in infectious diseases and resistance to antibiotics.
- Environmental change, disasters, and wars.

Migration

Migration assumptions are applied to each age-sex group to allow for net migration (arrivals minus departures). Ethnicity is not collected in external migration data, but the migration assumptions are based on an assessment of recent and expected trends of arrivals and departures of New Zealand citizens and non-New Zealand citizens by birthplace, as well as observed intercensal ethnic population change.

Under the median assumption, the long-term (2017–38) annual net migration levels are for:

- 'European or Other' -3,000
- Māori -4,000
- Asian 13,000
- Pacific 1,000.

For each ethnic group, simulations of net migration are produced using an autoregressive integrated moving average or ARIMA (1,0,1) with drift model. Random errors are sampled from a normal distribution with mean of zero and different parameters for:

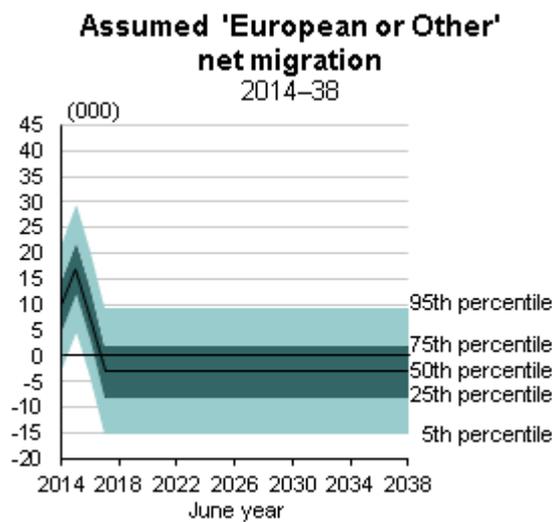
- 'European or Other' – a standard deviation of 7,500, autoregressive parameter 0.06, and moving average parameter 0.024
- Māori – a standard deviation of 1,900, autoregressive parameter 0.06, and moving average parameter 0.142

- Asian – a standard deviation of 7,300, autoregressive parameter 0.05, and moving average parameter -0.089
- Pacific – a standard deviation of 950, autoregressive parameter 0.10, and moving average parameter -0.105.

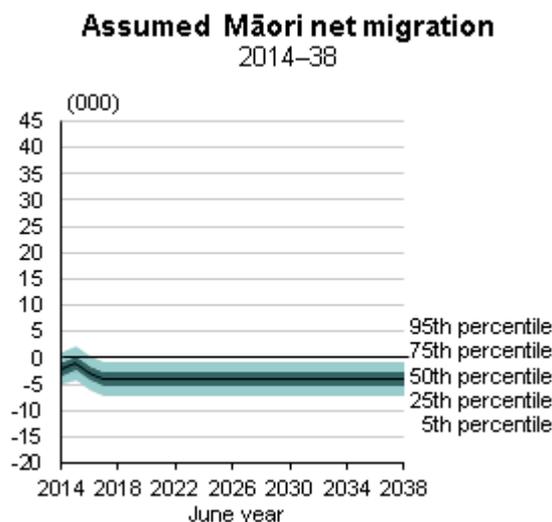
The drift function shifts the median of the net migration simulations to follow the assumed median net migration. Net migration by age-sex is interpolated between a high and low pattern, to sum to the simulated net migration level.

There is a 50 percent chance that long-term (2017–38) annual net migration will be in the range for:

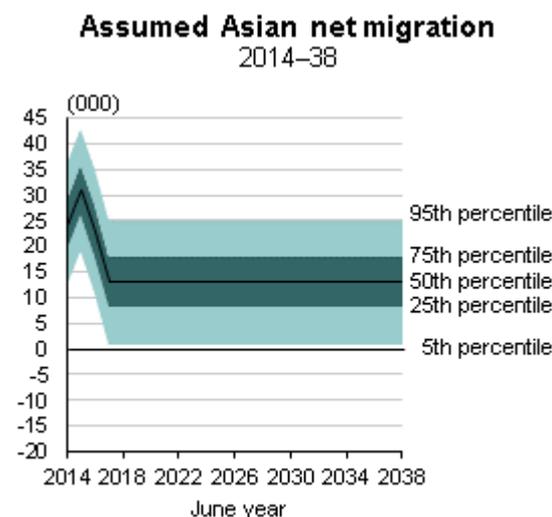
- 'European or Other' of -8,000 to 2,000
- Māori of -5,300 to -2,700
- Asian of 8,000 to 18,000
- Pacific of 400 to 1,600.



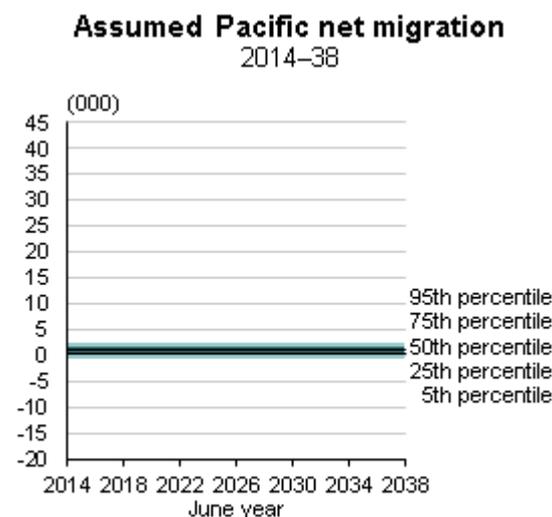
Source: Statistics New Zealand



Source: Statistics New Zealand



Source: Statistics New Zealand



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.

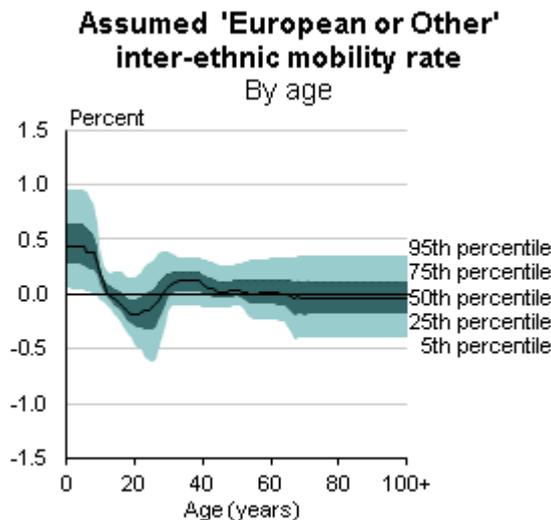
Inter-ethnic mobility

Inter-ethnic mobility (IEM) assumptions are applied to each age-sex group to allow for the net effect of people changing their ethnic identification over time. Comparisons of demographic estimates and census populations before the 1990s suggest that IEM generally resulted in a loss from the Māori population of between 0.3 and 0.9 percent per year. However, changes in census questionnaire design, ethnicity classification, and coding always made it difficult to accurately measure IEM, especially when there were no explicit estimates of ethnic migration. It was even more difficult to measure IEM for other ethnic populations as equivalent ethnic identifiers were not available in birth and death registrations.

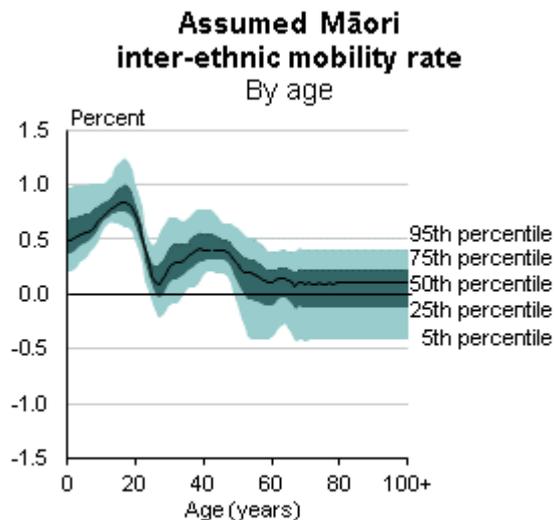
New IEM assumptions have been developed using rates derived from the New Zealand Longitudinal Census (NZLC), specifically the three most-recent linked census pairs (1996–2001, 2001–06, and 2006–13). IEM rates represent the net propensity for individuals to enter or leave an ethnic group during the following year, relative to the ethnic population at the start of the year. The rates are based on linked records where ethnicity was specified in both census years. No account of any bias introduced as a result of non-response among linked records has been taken into account. Similarly no adjustment was made to weight for unmatched records.

IEM generally affects only a small proportion of the population-at-risk, so derived rates tend to be volatile both by age within an intercensal period and between intercensal periods. The assumed rates are therefore an average of the three intercensal periods and smoothed across age. Observed male and female rates were sufficiently similar to justify using combined rates by age. Because age-specific rates are applied, the overall net IEM changes over time. Under the median assumption, there is an average net change to the population in 2014–38 due to people changing their ethnic identification for:

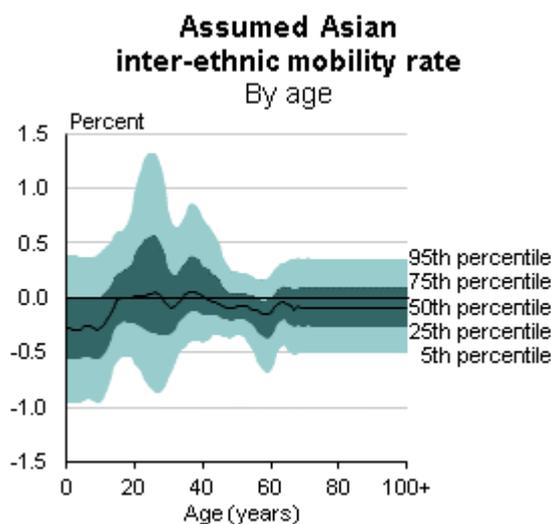
- 'European or Other' – 0.04 percent a year
- Māori – 0.43 percent a year
- Asian – -0.08 percent a year
- Pacific – -0.11 percent a year.



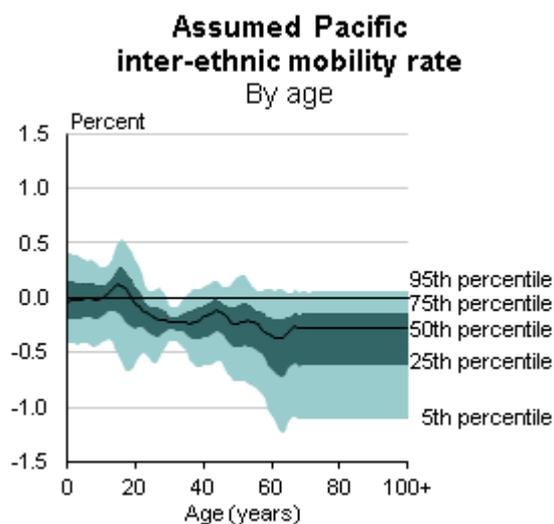
Source: Statistics New Zealand



Source: Statistics New Zealand



Source: Statistics New Zealand



Source: Statistics New Zealand

For each ethnic group, simulations of IEM by age are produced using an ARIMA (1,0,1) with drift model. Random errors are sampled from a normal distribution with mean of zero and different parameters for each ethnic group. The drift function shifts the median of the IEM simulations to follow the assumed median IEM.

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 median is equivalent to the 'medium' (or mid-range) projection provided in previous deterministic projections. 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

Ethnic concept

The ethnic concept used in these projections is the ethnic group or groups that people identify with or feel they belong to. Ethnicity is self-perceived and people can identify with more than one ethnicity. Ethnicity is different from ancestry, birthplace, and nationality. For example, people can identify with Māori ethnicity although they may not be descended from a Māori ancestor. Conversely, people may choose to not identify with Māori ethnicity even though they are descended from a Māori ancestor.

See [Review of the Measurement of Ethnicity](#) or the [ethnicity classification](#) for more information about ethnicity including information about the Statistical Standard for Ethnicity 2005.

'European or Other (including New Zealander)'

Projections have been derived for the combined 'European or Other (including New Zealander)' ethnic group. Sufficient demographic data is available to enable projection assumptions to be derived for the combined ethnic group, but not for the separate 'European' or 'Other (including New Zealander)' ethnic groups defined in level one of the [ethnicity classification](#). This approach is consistent with [Guidelines for Using Ethnicity Data: 2006 Census](#). If a person belongs to both the 'European' and 'Other' ethnic groups, they have only been counted once. Almost all people in the 'Other' ethnicity group belong to the 'New Zealander' sub-group.

Availability of other ethnic projections

Projections are not available for the 'Middle Eastern/Latin American/African' (MELAA) ethnic group or for individual ethnicities (eg Chinese, Samoan). For smaller ethnic populations, it is difficult to derive robust measures of the components of ethnic population change – fertility, paternity, mortality, migration, inter-ethnic mobility – to enable projections to be readily produced.

Method

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

The method differs from the conventional cohort component method in two respects:

1. For each ethnic group, births are projected separately for women, and for men where the mother is not of that ethnic group.
2. The projections allow for population change due to inter-ethnic mobility (ie people changing their ethnic identification over time).

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

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 made about future fertility, mortality, migration, and inter-ethnic mobility patterns of the population. 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.

Projections of ethnic populations are more uncertain than projections of the total population for several reasons:

- Ethnic identification can change over time. See the inter-ethnic mobility section for further explanation.
- There are greater difficulties in establishing past trends in fertility, mortality, and migration. Different ethnicities can be reported in different collections (eg birth registration form, death registration form, census form), which makes deriving ethnic-specific fertility and mortality rates problematic. Furthermore, the measurement of ethnicity has changed over time in many collections, while it is not captured at all in some collections (eg international travel and migration data).
- Ethnic populations are not mutually exclusive because people can and do identify with more than one ethnicity. People are not asked to prioritise their ethnic responses. Hence, Statistics NZ includes people in each of their reported ethnic groups.
- Births to parents of different ethnicities add complexity. The parents may consider the child to belong to one or more of their ethnicities, or indeed to another ethnicity.
- There is greater future uncertainty about the components of population change. For example, it is uncertain whether the fertility and mortality of different ethnicities will converge, and if so, at what pace. Assumptions about future migration, notably for people of Asian and Pacific ethnicities, are particularly susceptible to changes in migration patterns.

Statistics NZ incorporates these factors into its methodology for ethnic population projections and has developed stochastic population projections to illustrate uncertainty. However, it is because of these factors that ethnic population projections are currently limited to the four broad ethnic groups and the 25-year projection period.

Rounding

All figures in this release were rounded independently, and all derived figures were calculated using data of greater precision than published.

Accuracy

The accuracy of these projections is unknown at the time of release. An evaluation of previous Statistics NZ national and subnational population projections, but not ethnic 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 population 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

[Population projections tables](#) provides links to detailed projection results, including projections by single-year of age and sex, on [NZ.Stat](#).

See [demographic projections](#) in DataInfo+, which also include information about methods and assumptions.

[Subnational ethnic population projections](#) (2013-base) are scheduled for release on 30 September 2015.

Customised projections, such as projections using client-specified assumptions, are available on request. Email: demography@stats.govt.nz.

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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Email: info@stats.govt.nz

Tables

The following tables are 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 ethnic population projections, by projected probability distribution (percentiles), 2013(base)–2038
2. Ethnic share of New Zealand population, median projection by broad age group, 2013(base)–2038

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 ethnic population projections, by age and sex, 2013(base)–2038
- National ethnic population projections, characteristics, 2013(base)–2038
- National ethnic population projections, projection assumptions, 2013(base)–2038

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