The changing face of New Zealand’s population

Introduction

Population analysts, planners and decision-makers throughout the developed world envisage a more strategic role for demographics in future planning and policy-making. This expectation is based on increasing awareness of emerging trends in population dynamics and expected shifts in population growth and structure at both national and local levels. It is also reflected in the growing demand for basic demographic data from both the public and private sectors.

Statistics New Zealand recently released a special set of long-term projections of the New Zealand resident population covering the next 100 years to 2101. They were derived to mark the beginning of the 21st century, and to provide a benchmark for comparisons with demographic trends and dynamics as they unfold in the coming decades.

A range of alternative projections has been derived combining different scenarios in fertility, mortality and external migration. The assumptions were developed using plausible contemporary and emerging patterns as well as international perspectives as a guide. These population projections are not forecasts, but merely illustrate the changes in population size, growth rate and age structure that would occur if the given assumptions were met.

Before outlining the future demographic prospects, it is instructive to review the background assumptions involved and to briefly review their historical context.

Fertility

Fertility has been the dominant element in shaping the growth rate and population age-sex profile in the last 100 years, and its impact is also likely to be substantial in the future. This is despite the fact that for most of the last 20 years, fertility has been below the level required for the population to replace itself without migration (taken as 2.10 births per woman).

Three alternative scenarios have been chosen. The low, medium and high variants assume long-term fertility levels of 1.65, 1.90 and 2.15 births per woman, respectively. The underlying expectation is for sustained low fertility: couples either barely replace themselves, or fail to replace themselves altogether, in the long term. In sharp contrast, fertility exceeded the replacement level during the first 80 years of the last century. Sub-replacement fertility is now the norm across Europe. In fact, the medium fertility variant of 1.90 births per woman is higher than in any European country at present.

Mortality

Mortality reductions added about 20 years to the life expectancy at birth of average New Zealanders during the last 100 years. Further significant reductions in mortality are expected in future, partly because New Zealand has lagged behind nations leading the longevity stakes and therefore has the capacity to catch up. For males, by 2051, the low, medium and high mortality variants assume life expectancy at birth to reach 84.0, 82.0 and 80.0 years, respectively. For females, by 2051, life expectancy at birth is assumed to reach 88.0, 86.5 and 85.0 years, respectively. These represent gains of between five and nine years from life expectancy in 1999.

Net migration

Net migration averaged 5,000 people a year during the 20th century. However, the volume and direction of external net migration has fluctuated markedly, especially in the last 40 years. The migration balance depends on the combination of ‘push and pull factors’ such as changes in immigration policy, general economic conditions and image disparities both in New Zealand and in other countries. Consequently, four alternative net migration scenarios have been developed, namely long-term annual levels of 0, 5,000, 10,000 and 20,000.

1 This paper was prepared by M Khawaja and K Dunstan of the Demography Division.
The following sections on the future population draw largely on the medium projection (series 4), which assumes that during the next 100 years:

- New Zealand women will have 1.9 children each, on average.
- Life expectancy at birth will increase by about seven years for males (to reach 82.0 years) and six years for females (to reach 86.5 years).
- There will be a net migration gain of 5,000 people a year (the annual average over the last 100 years).

The projections have as a base the estimated resident population at 30 June 1999.

Four million and beyond

There were 3.83 million New Zealand residents at 30 June 2000. Under series 4, the fourth million will be reached about 2006 (Figure 1). The population is then projected to peak at 4.64 million around 2044, before slowly declining to 4.24 million by 2101. Should fertility follow the low variant scenario (series 1), the peak will be reached earlier and at a lower level, and by 2101 the population would be nearing the 3 million mark. By contrast, a shift to the high fertility variant (series 8) would mean an extra 2.2 million people by 2101 and a total of 5.57 million. Similarly, net migration gains greater than those assumed here would have a positive effect on the rate of population change as well as population size.

Slow or no growth

The annual growth over the past one hundred years averaged 1.6 percent but varied significantly from one period to the next, largely because of fluctuations in the size and direction of the external migration balance (the difference between arrivals and departures). Under series 4, the rate of population growth is projected to fall from 0.8 percent a year in 2001 to 0.5 percent a year in 2021 and further to 0.1 percent a year in 2041. Over the second half of the 21st century the population is projected to decline slowly at an average annual rate of 0.2 percent.

Births and deaths

The post-World War II baby boom in New Zealand saw births peak at 65,400 in 1961. Since then the numbers have fluctuated, although the general trend has been downward (Figure 2). This trend is projected to continue, reflecting the combined effects of the assumed sub-replacement fertility and the shrinking number of women of childbearing age. The main contributor to the projected slow down is the narrowing gap between births and deaths. The crossover is likely to occur around 2044.

Unlike births, the general trend in deaths will be upwards over the projection period. The annual number of deaths is projected to more than double from less than 28,000 at present to 59,000 in 2060. The increase will be greatest after 2011 as the baby boomers begin to enter the ages most at risk of dying.

The excess of births over deaths, or natural increase, added an average of about 25,000 people a year to New Zealand’s population during the 20th century. This amounted to 84 percent of total growth. The gap between births and deaths is expected to decline steadily from 30,000 in 1999 to nil in 2039. Thereafter, deaths will outnumber births by a growing margin, the gap reaching about 14,000 in the late 2070s, and then remaining at that level for the remainder of the projection period.

**Figure 1**

**New Zealand Population 1901-2101**

**Figure 2**

**Births and Deaths 1901-2101**
Changes in age structure

All projection scenarios point to significant changes in age-sex structure with New Zealand’s population taking on an older profile in the future. This section examines likely changes in various broad age groups over the next 100 years.

Children (0-14 years)

For most of the 20th century the number of pre-school and school-age children has increased (Figure 3). However, this increase is unlikely to continue in the long term. Under the medium scenario, the number of children under 15 years is projected to fall from an estimated 875,000 in 1999 to 737,000 in 2051 and then to 674,000 by 2101.

Children will comprise a decreasing share of the New Zealand population in the future, down from 23 percent in 1999 to 16 percent from the early 2040s onwards.

Working-age population (15-64 years)

An important development in recent years has been the removal of the upper age limit for employment. For convenience of analysis, the working-age population is taken here as those aged 15-64 years, and has historically included the majority of people in the labour force.

The working-age population is projected to increase by 330,000 over the next two decades, from 2.49 million in 1999 to 2.82 million in 2020 (Figure 4). Over three-quarters (or 250,000) of the gain is expected to occur by 2010, as those born from 1985 to 1995 move into the working ages, and the smaller cohorts born in the decade prior to 1946 move out of the working ages. The number of workers will then decline slowly to slightly less in 2101 than in 1999, reflecting the exit of baby boomers from the workforce. Currently, the working-age population represents 65 percent of the total population. Their share is projected to drop to about 58 percent by the late 2030s and then decrease very slowly to 57 percent by 2101.

Significantly, the working-age population will take on an older profile. For example, those aged 40-64 years will make up 52 percent of all working-age people by 2051, compared with 44 percent in 1999.

Older New Zealanders (65+ years)

In 1999, New Zealanders aged 65 years and over numbered 0.45 million, up from just 30,000 in 1901 (Figure 5). Improvement in mortality – resulting in increased life expectancy – has been an important element in this growth. Over the next 50 years, the 65+ population will more than double to 1.18 million by 2051, and will peak at 1.23 million in the late 2060s. The largest increases will occur during the decades ending in 2021 (up 215,000) and in 2031 (up 250,000), when the baby boom cohorts reach this age group. There will then be a slow and steady decrease to 1.15 million by 2101.

Currently, the 65+ segment makes up 12 percent of all New Zealand residents (or roughly 1 in 8). By 2051, this will have risen to 26 percent (or about 1 in 4), a proportion that is likely to vary only slightly over the following five decades.

The 65+ group will not only grow substantially in size, but it will also get older, mainly as a result of the ageing of the baby boomers and further improvements in longevity. The 85+ age

![Figure 3](image1.png)

**Figure 3**

Population Aged 0-14 Years

1901-2101

![Figure 4](image2.png)

**Figure 4**

Population Aged 15-64 Years

1901-2101
The number of centenarians is projected to climb from 300 in 1999 to 12,000 in 2051 and 18,000 by 2101. These changes have direct implications for health expenditure because of the significant rise of disability with age, and the increased need for health treatment and social services.

Population ageing
The substantial shifts described above point to further ageing of New Zealand’s population in future, a feature shared with Australia, Canada, USA, UK and other European nations. These shifts are caused by the movement of the baby boomers up the age scale, the assumed continuation of sub-replacement levels of fertility and increasing life expectancy. By the mid-2040s, half of our population will be older than 45 years, compared with a median age of 34 years in 1999. The median age is projected to remain fairly stable from 2050 onwards. Large gains in net migration are unlikely to retard the effects of the ageing process significantly, although a shift from medium to high fertility would have a greater impact.

Dependency ratios
Demographic dependency ratios are often used to relate the number of people in dependent age groups (such as 0-14 years and 65 years and over) to the working age population (15-64 years). They are crude measures because they do not recognise that some people aged 15-64 years may not be in the workforce and that some people aged 65 years and over may still be in the workforce.

Nevertheless, over the next four decades the 65+ dependency ratio will more than double, from 18 people aged 65+ years per 100 people aged 15-64 years in 1999, to 43 per 100 in 2040 (Figure 6). After this time the ratio will continue increasing, but at a much slower pace, to reach a level of 47 per 100 in the early 2060s, and then remain steady. Meanwhile the child dependency ratio will remain relatively stable during the 21st century.

Conclusion
Low fertility and the ageing of the large baby boom cohort have raised the prospect of slow or no growth in the future. Regardless of which projection is chosen, the general demographic outlook for New Zealand over the coming decades is for slowing growth, a narrowing gap between births and deaths, and an ageing population. This is a radical departure for a society accustomed to a growing population. Any innovative or expansionist planning or business programme must take account of structural shifts in progress.

More information
This article outlines the trends at the national level only. Statistics New Zealand has released a variety of other projections including subnational (regions, cities, districts, urban areas), ethnic (Maori, Pacific, Asian) and household projections. More detailed projection results, including projections for area units (‘suburbs’) or specified areas, or projections by age and sex, are also available. Information on these is on the SNZ website (http://www.stats.govt.nz then see ‘population projections’).